Section 14
Environmental Assessment

14.0 PROJECT DESCRIPTION

Highland Wind LLC (Highland Wind) is proposing the Highland Wind Project (Project), a 39 turbine wind energy generating facility located in Highland Plantation, Somerset County, Maine. In addition to the wind turbines, the Project includes a 34.5-kilovolt (kV) electrical collector system, an electrical collector substation, a 115-kV generator lead, an Operations and Maintenance (O&M) building, up to five permanent 80-meter meteorological (met) towers, and a series of roads to construct to access the turbines and related infrastructure. All projects components are proposed to be located in Highland Plantation; however the generator lead, which delivers power from the electrical collector substation to the New England grid, crosses through Pleasant Ridge Plantation before reaching the Central Maine Power Company (CMP)-controlled substation located in Moscow, Maine.

More specifically, the Project will consist of the following components:

- Thirty-nine turbines, along with associated electrical interconnection infrastructure, installed in two distinct strings. The western string includes the 18 turbines located on the ridgeline that connects the "Watering Tub" (aka the "Elbow", west of Witham Mountain), Witham Mountain, and Bald Mountain. The eastern string includes 21 turbines extending from the northeastern end of Burnt Hill south to Briggs Hill. The met towers will be located in association with the two turbine strings. Turbines will be located at elevations between 1,553 and 2,237 feet above mean sea level, on ridges that rise 1,300 to 1,500 feet above the surrounding valleys.

- Upgrades to and extensions of existing logging roads in the Project area. Access will be from the Long Falls Dam Road in Highland Plantation. During construction, a 32-foot wide crane path will provide access along the ridgelines. The ridgeline crane paths will be allowed to revegetate such that their maintained width is reduced to 16 feet.

- The O&M building located approximately 450 feet up the access road on the northeast side of Long Falls Dam Road.

- An electrical collector system to transfer power from the turbines to the proposed collector substation located northwest of Burnt Hill. These collector lines will be located underground along the ridgelines. The approximately 9.5-mile long, above-ground 115-kV generator lead will be co-located with an existing CMP transmission right-of-way for most of its length. The generator lead will connect the on-site collector substation to the existing Wyman Dam substation located in Moscow, Maine, where power will be transferred to the CMP system and ultimately distributed to the New England grid.

In preparing this permit application, Stantec Consulting (Stantec) conducted the following ecological field surveys in the Project area:

- two seasons of nocturnal radar surveys;
- two seasons of raptor migration surveys;
- two seasons of acoustic bat surveys;
- one season of breeding bird surveys;
- one season of vernal pool survey visits[1];
- wetland delineations;
- rare, threatened, and endangered (RTE) species surveys specifically targeting the northern spring salamander (*Gyrinophilus porphyriticus*), northern bog lemming (*Synaptomys borealis*), and Roaring Brook mayfly (*Epeorus frisoni*); and
- rare plant and natural community surveys, conducted in conjunction with wetland delineation and vernal pool surveys.

[1] Vernal pool surveys were conducted in 2009 and 2010, but individual pools were only visited during one season.

These surveys provided data to assess the Project's potential impacts to birds and bats, RTE plants and animals, breeding amphibians, and wetlands. Stantec developed the scope of the surveys based on the most recent standard pre-construction survey methods within the wind power industry (i.e., guidelines outlined by the U.S. Fish and Wildlife Service [USFWS] and Maine Department of Inland Fisheries and Wildlife [MDIFW]) and is consistent with other studies conducted recently in the state and the northeast. The scope of these surveys was further refined in direct consultation with MDIFW. Stantec met with MDIFW biologists on March 3, 2009 to discuss the work scope and methods for conducting Project surveys and subsequently submitted a finalized ecological survey work plan on April 17, 2009. Stantec also conducted an on-site meeting with MDIFW biologists in September of 2009 to review the initial survey findings.

The following is a brief review of 1) the methods used to conduct each of the natural resource surveys, 2) the results of those surveys, and 3) a discussion of potential impacts to the identified resources based on the Project design. Field surveys reports are found in the attached appendices.

14.1 HABITAT: EXISTING RESOURCES AND IMPACTS

14.1.1 Existing Habitat Types

Upland Forests

Based upon community descriptions provided in Gawler and Cutko (2010),[2] the principal upland forest communities within the Project area are Spruce-Northern Hardwoods Forest and Beech-Birch Maple Forests. The Spruce-Northern Hardwood Forests occur along the ridgelines, and Beech-Birch-Maple Forests dominate the mid and lower slopes of the ridgelines, as well as the proposed generator lead corridor. Spruce-Fir-Broom-moss Forests occur as a smaller component of the landscape, present on the summits of Witham Mountain, Stewart Mountain, and Bald Mountain. The Spruce-Fir-Broom-moss Forests on Witham Mountain and Bald Mountain also have inclusions of the Spruce Talus Woodland. Each of the four upland forested communities identified within the Project area are considered common in Maine by the Maine Natural Areas Program (MNAP).[3] In addition, as a result of past timber harvesting, most of these communities currently are second- or third-growth forests.

Based upon a site visit conducted in April 2010, MNAP determined that the area characterized as Spruce Talus Woodland on Bald Mountain is an exemplary example of this S4 community. The following are brief descriptions of each of the principal upland communities:

Beech-Birch-Maple Forests
The Beech-Birch-Maple Forest is characterized by sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), and yellow birch (*Betula alleghaniensis*) in the forest canopy with an understory typically dominated by hobblebush (*Viburnum lantanoides*), starflower (*Trientalis borealis*), wild sarsaparilla (*Aralia nudicaulis*), Canada mayflower (*Maianthemum canadense*), wild oats (*Uvularia sessilifolia*), and evergreen wood fern (*Dryopteris intermedia*). Recent and historic timber harvests have occurred throughout these communities within the Project area.

Spruce-Northern Hardwoods Forest
The Spruce-Northern Hardwoods Forest occurs primarily along the ridgeline within the Project area as well as some locations along the proposed generator lead. The canopy of this forest is dominated by red spruce (*Picea rubens*), yellow birch, sugar maple, and balsam fir (*Abies balsamea*) with an understory generally dominated by hobblebush, evergreen wood fern, mountain wood fern (*Dryopteris campyloptera*), mountain wood-sorrel (*Oxalis montana*), wild sarsaparilla, starflower, Canada mayflower, whorled aster (*Oclemena acuminata*), large-leaved

[2] Community typing within this subsection is based upon Gawler and Cutko 2010.
[3] Each community has a state rarity rank of S4 indicating that it is considered "Apparently secure in Maine."

goldenrod (*Solidago macrophylla*), and shining firmoss (*Huperzia lucidula*). Recent and historic timber harvests have occurred within most of these communities in the Project area.

Spruce Fir Matrix Forests: Spruce-Fir-Broom-moss and Spruce-Fir-Wood-sorrel-Feather-moss Forests
The Spruce-Fir matrix forests are present along the Witham, Bald, and Stewart mountain summits. These forests generally represent a transition between Spruce-Fir-Broom-moss Forests and Spruce-Fir-Wood-sorrel-Feather-moss Forests. Species diversity is typically low within these forests. The canopy is dominated by red spruce and balsam fir trees with regenerating balsam fir and red spruce in the understory. Additional understory plants include mountain wood-sorrel, mountain wood fern, evergreen wood fern, starflower, and wild sarsaparilla. Historic timber harvests have generally occurred throughout these forested areas. However, portions of the forests on Stewart Mountain, as well as the steeper slopes of Bald and Witham Mountains, are generally intact with limited visible evidence of past timber harvests.

Spruce Talus Woodland
Spruce Talus Woodland occurs as inclusions within the larger (i.e., approximately 350-acre) Spruce-Fir-Broom-moss Forest on the summits of Witham Mountain and Bald Mountain. The Spruce Talus Woodland is a small-patch community that typically occurs in low-elevation summits with shallow soils and exposed bedrock. This community is dominated by scattered red spruce tress interspersed among lichen-covered ledges and outcrops. Species diversity is generally low within this community with lowbush blueberry (*Vaccinium angustifolium*) and bunchberry (*Cornus canadensis*) dominating the understory along with several moss and lichen species including three-lobed bazzania (*Bazzania trilobata*), broom-moss (*Dicranum scoparium*), red-stemmed moss (*Pleurozium schreberi*), and Cladonia lichens (*Cladonia* spp.). For additional discussion of this community refer to Section 14.2

Wetlands

Wetlands have the potential to provide numerous functions and values such as floodwater alteration, water quality protection, wildlife habitat, and recreational opportunities. Each individual wetland's capacity to provide these functions and values is dependent upon a variety of physical characteristics including, but not limited to, size, configuration, connectivity, topography, and landscape position. In addition, the proximity to development and level of anthropogenic disturbance within and surrounding a wetland affect this capacity. The Project area includes numerous small, isolated wetlands, most of which have limited functional capacity because of their size and isolated nature. The few larger wetlands, particularly those associated with watercourses, have the capacity and the potential to provide more functions and values. Many of the wetlands in the Project area have been altered by anthropogenic activities, primarily timber harvesting operations. Such changes in the natural character of a wetland often reduce its capacity to provide many functions. Within the ridgeline portion of the Project area, the majority of the palustrine (i.e., freshwater) wetland communities are forested, although many of these wetlands have undergone some level of timber harvesting and are currently characterized as either scrub-shrub or emergent wetlands based upon the dominant type of vegetation (Cowardin *et. al* 1979).

Similarly, along the proposed generator lead, many of the wetlands are forested, but the canopy of these wetlands was removed either during timber harvesting or construction of the existing CMP transmission line. The Project area does include some naturally occurring scrub-shrub wetlands, particularly in association with watercourses such as Sandy Stream and Houston Brook. Naturally occurring areas of emergent wetland are limited, typically occurring as small inclusions within wetlands dominated by woody vegetation. Similarly, open water wetlands are limited within the Project area. Open water areas include two man-made impounds that occur along the edge of existing roads. A detailed water resources report, including a discussion of resource functions and values, and associated resource maps are included in Appendices 14-1 and 14-2.

Forested
Forested wetland communities occur throughout the Project area, often in combination with scrub-shrub or emergent communities. Prior to timber harvesting activities, this would have been the most common wetland community, but many of these resources are now in some stage of regeneration and are more accurately characterized as either scrub-shrub or emergent wetlands. Tree species common to these wetlands include yellow birch, red maple (*Acer rubrum*), balsam fir, red spruce, green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), and northern white-cedar (*Thuja occidentalis*). The shrub layer includes these same tree species and shrub species such as hobblebush, speckled alder (*Alnus incana*) and witch-hazel (*Hamamelis virginiana*). Commonly occurring herbaceous species include cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), northeastern mannagrass (*Glyceria melicaria*), fowl mannagrass (*Glyceria striata*), Canada reed grass (*Calamagrostis canadensis*), fringed sedge (*Carex crinita*) and three-seeded sedge (*Carex trisperma*). These wetlands are typically characterized by pit and mound micro-topography, are seasonally inundated, and have soils that remain saturated at or near the surface for much of the year. Representative examples of this community type include wetlands W148, W273 and W419.

Scrub-shrub
Scrub-shrub wetlands are present throughout the Project area and often appear in conjunction with either forested or emergent wetland communities. The scrub-shrub wetlands present in the Project area, particularly on the ridgelines, are typically regenerating forested wetlands that have undergone timber harvesting. Naturally occurring scrub-shrub communities are more commonly found in association with the larger watercourses present in the Project area. In those regenerating forested wetlands, the shrub layer is dominated by tree species such as balsam fir, red spruce, red maple and yellow birch. Red raspberry (*Rubus idaeus*), a common early successional species, also is present in many of these wetlands. The herbaceous layer includes species such as sensitive fern, cinnamon fern, rough-stemmed goldenrod (*Solidago rugosa*), tall white-aster (*Doellingeria umbellata*), fowl mannagrass, northeastern mannagrass, and Canada reed grass. In the naturally occurring scrub-shrub communities, the shrub layer is typically dominated by speckled alder mixed with tree species such as red spruce, northern white-cedar, and yellow birch. Species that occur within the herbaceous layer are similar to those identified in the regenerating forested wetlands. These wetlands have soils that remain saturated at or near the surface for much of the year and may experience at least periodic inundation. Representative examples of this community type include wetlands W197, W173, and W447.

Emergent
Emergent wetlands are common throughout the Project area, often in areas that have been disturbed by timber harvesting activities or within the existing maintained transmission line. These types of emergent wetlands are typically referred to as wet meadows. Wet meadows are dominated by herbaceous species that are adapted to saturated soil conditions but are not adapted to long periods of inundations as would be common in marsh habitats. The emergent wetlands within the Project area are typically dominated by herbaceous species such common woolsedge (*Scirpus cyperinus*), fowl mannagrass, Canada reed grass, fringed sedge, eastern rough sedge (*Carex scabrata*), awl-fruited sedge (*Carex stipata*), barber-pole bulrush (*Scirpus microcarpus*), dwarf raspberry (*Rubus pubescens*), and spotted-touch-me-not (*Impatiens capensis*). These wetlands also support red raspberry, rosy meadowsweet (*Spiraea tomentosa*), white meadowsweet (*Spiraea alba* var. *latifolia*) and seedlings of the tree species mentioned in the preceding subsections. These wetlands have soils that remain saturated at or near the surface for much of the year and may experience at least periodic inundation. Representative examples of this community type include wetlands W046, W306 and W409.

Open Water
Open water wetland communities only occur in two locations within the Project area. These two communities are man-made excavations adjacent to gravel access roads. They occur in wetlands W163 and W392.

Vernal Pools

The definition of a vernal pool varies among states and regulatory agencies; however, these definitions typically share several common points. Vernal pools are generally ephemeral, which means that the pools dry at some point during a typical year. In addition, vernal pools do not support established populations of fish. Finally, these habitats offer essential breeding habitat for several species of amphibians, as well as provide habitat for unique invertebrates such as fairy shrimp (*Eubranchipus* spp.) and some rare species of wildlife. In Maine, presence of a very specific subset of wildlife species is used to identify a vernal pool. This subset includes:

- Demonstrated breeding activity by wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), or blue spotted salamanders (*Ambystoma laterale*);
- Presence of fairy shrimp (*Eubranchipus* spp.);
- Presence of state-listed threatened or endangered species that are considered vernal pool dependent such as Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), or ringed boghaunter dragonfly (*Williamsonia lintneri*); or
- Presence of these state-listed species of special concern: ribbon snake (*Thamnophis sauritus*), wood turtle (*Clemmys insculpta*), swamp darner dragonfly (*Epiaeschna heros*), or comet darner dragonfly (*Anax longipes*).

Refer to Appendix 14-1 for further information on state and federal regulatory definitions of vernal pools and for specific details on vernal pool surveys conducted by Stantec. Stantec conducted seasonally appropriate vernal pool surveys in May 2009, and April and May 2010. Forty-four vernal pools were identified within the ridgeline portion of the Project area and 19 vernal pools were identified along the proposed generator lead corridor. Of these pools, 47 are man-made and occur within either a roadside ditch/excavation or a rut created by heavy equipment. The remaining 16 pools are naturally occurring and support breeding activity by wood frogs and/or spotted salamanders. Three pools met the criteria to be considered Significant Vernal Pools based upon the level of amphibian breeding activity. Forty-five additional potential vernal pools were surveyed, but no breeding activity or vernal pool-associated species were observed at these locations.

14.1.2 Impact to Habitat Types

Upland Forest Impacts

Impacts to forested uplands will involve timber removal similar to what occurs in the surrounding industrial forest as well as some direct loss of habitat associated with the physical components of the Project. Affected communities are common in the state and impacts are not expected to be unreasonable.

Wetland Impacts

In order to avoid wetland impacts, a large area was delineated so that to the extent practicable, the Project could be designed around identified resources. As a result, of the 412 identified wetlands, only 76 will be impacted by the proposed Project (Table 14-1). Of these 76 wetlands, 41 will be partially or completely filled. The total area of permanent wetland fill is approximately 30,174 square feet. These impacts include scattered fills associated with the access roads and fills associated with 11 turbines and the O&M building. No permanent wetland fill will occur at the location of the collector substation or permanent met towers. Impacts will occur as a result of upgrades to the existing access roads, as well as construction of new access roads. The selected alternative for the road alignments utilize existing road where practicable. Where new roads were necessary, the design avoided large, higher functioning wetlands where possible. The unavoidable impacts generally affect isolated and relatively small wetlands, which each having a total area of less than 5,000 square feet. Because of their small size and isolated nature, and because many of these wetlands have been altered by historic timber harvesting, these are relatively low-functioning resources. With few exceptions, impacts to larger and generally higher functioning wetlands occur as a result of upgrades to existing roads. These impacts were minimized by adjusting road side slopes and individual impacts range from approximately 1 square foot to

5,000 square feet. Impacts to larger wetlands as a result of new road construction (ex. W125) occur where individual wetlands are scattered across the summit and could not be completely avoided. To help reduce wetland impacts from roads, rock sandwiches will be used in some locations to help maintain natural subsurface flow of water between wetlands. For example, this method of minimization will be used where the access road threads between wetlands W148 and W149.

Of the 15 separate wetlands that will be filled or partially filled as a result of turbine construction, 11 are small, isolated and/or relatively low functioning. Many of these wetlands also have been altered by timber harvesting activity that has further reduced their functional capacity. Two of the wetlands, W263 and W312, which will be impacted by turbine construction, are large, intact and relatively high functioning. There will be some reduction in the functional capacity of these wetlands and some landscape level change in wetland functions and values as a result of these various fills. For a more detailed discussion of wetland functions and values, refer to Appendix 14-2.

Impacts to wetlands along the aboveground portion of the collector line and generator lead will consist primarily of a change in cover type. Approximately 282,305 square feet (6.5 acres) of vegetation clearing will occur within forested wetlands. In time, these forested wetlands will become early successional scrub-shrub or wet meadow communities. This cover type change will not significantly alter the overall functions and values of the impacted wetlands, with the exception of a change in wildlife habitat. Other wetlands that will be crossed by the collector line and generator lead are either previously cut forested wetlands, scrub-shrub, emergent, or open water, so there should be no additional change in cover type. In addition to this change in cover, there will be one H-frame structure placed within a wetland resulting in approximately 30 square feet of permanent fill. In general, there should be only limited change in the functions provided by the wetlands altered by the electrical component of the Project.

Of the approximately 175 streams identified within the Project area, 21 perennial streams and 28 intermittent streams will be crossed by roads or directly impacted by some component of the Project. Thirty of the crossings will involve culverts and 20, including the crossing of Sandy Stream, will be bridged. Three of the streams will have multiple crossings or other direct impacts. One small stream segment, approximately 16 feet in length, will be filled to construct Turbine 21E, and two stream segments ranging from approximately 5 to 25 feet in length will be filled to construct the connector road. The other streams within the Project area were avoided in an effort to minimize impacts.

Impacts to streams along the aboveground portion of the collector lines and generator lead generally will be minimal. Eighteen streams with direct impacts also will have clearing impacts associated with these electrical corridors. In addition, 32 intermittent streams and 21 perennial streams will be crossed by one of the electrical corridors, and as a result, there will be clearing of vegetation at these points. Where safety standards will allow, clearing limits at stream crossings will be reduced. These reduced clearing limits will be employed along all of the aboveground collector lines and along the portion of the generator lead with single pole construction. For these components, beginning within 100 feet of each stream the clearing limits will be reduced from 100 feet to either 40 or 50 feet depending upon whether poles are carrying one or two wires. Because the remainder of the generator lead will be constructed with H-frame structures the clearing limits cannot safely be reduced beyond the minimum required 100 feet. Along much of the generator lead, clearing activities will be an extension of clearing associated with the existing CMP transmission line. The clearing, however, should not impact the overall character of the streams.

In addition to the permanent fill impacts there will be some temporary fill impacts to both wetlands and streams associated with construction of the aboveground collector line and the generator lead. These temporary fill impacts occur within the proposed clearing limits. Temporary wetland fill will be approximately 12,626 square feet and temporary stream impacts will be approximately 792 linear feet. Following Best Management Practices, there should be no long term change in the functions and values of these resources as a result of these temporary fill impacts.

The applicant expects that wetland compensation will be required to mitigate for wetland functions and values lost as a result of this Project. Details related to wetland compensation will be discussed and

developed after regulatory and other reviewing agencies have an opportunity to review this permit application.

Vernal Pool Impacts

The Project will not directly impact the vernal pool envelopes of the three identified Significant Vernal Pools (SVP). Road alignments will impact the critical terrestrial habitat of two of these SVPs. One of the pools, 04AA, has two existing gravel roads, Sandy Stream Valley Road and an access segment to Sandy Stream, within its critical terrestrial habitat. The proposed road design would discontinue that portion of Sandy Stream Valley Road within the critical terrestrial habitat and allow it to naturally revegetate, restoring approximately 2 percent of this habitat. The new Project road would be placed at the very outer edge of the critical terrestrial habitat and would replace the discontinued portion of Sandy Stream Valley Road. The second existing gravel road that currently provides access to Sandy Stream would be incorporated into the proposed Project access road. Based upon existing and proposed condition, approximately 33 percent of the critical terrestrial habitat would be altered (9 percent of which would be the result of the proposed development). At SVP 08ED, existing clearing from timber harvesting activities is approximately 45 percent of the critical terrestrial habitat. The Project has been designed to restrict development almost completely to the previously disturbed areas including converting an existing skidder trail to a gravel road to provide access to turbines 38E and 39E. The Project will result in the additional alteration of approximately one percent of the critical terrestrial habitat. At SVP 05ED, approximately 37 percent of the critical terrestrial habitat has already been cleared by activities related to timber harvesting and the Project will alter an additional 5 percent of this habitat. Although road traffic can be a significant source of amphibian mortality, logging roads typically do not carry enough traffic to pose a high level of direct mortality (deMaynadier and Hunter 2000). These roads can, however, pose a barrier to amphibian movement, particularly to salamanders. Amphibians currently cross the existing Sandy Stream Valley Road and should cross the newly proposed road. The new access road near SVP 08ED will be approximately 25 to 30 feet wide with additional grading as needed. At this width, the road should not pose a barrier to movement of frogs and toads and only a limited barrier to salamanders (deMaynadier and Hunter 2000).

Two small man-made vernal pools will be directly impacted by the proposed Project. One vernal pool, 29KW, is located adjacent to the existing access road from Long Falls Dam Road. The pool occurs in what appears to be a roadside excavation, possibly a borrow site, at the inlet of an improperly set culvert. It will be filled to up-grade the existing road. The second vernal pool, 03ED, is located in a skidder rut near the existing access road on Briggs Hill. The vernal pool, its associated wetland and the adjacent uplands have been altered by timber harvesting activities and installation of the nearby meteorological tower. The pool will be filled to construct the pad for Turbine 32E. These vernal pools are both relatively shallow and the chance of amphibian larvae successfully developing to emergence appears low. In early May of 2009, vernal pool 29KW had a water depth of approximately 6 to 10 inches and vernal pool 03ED had a water depth of approximately 8 inches. The culvert at the outlet of vernal pool 29KW limits the maximum water depth to the bottom of the culvert. Because 03ED occurs within a skidder rut, it is both relatively small (approximately 48 square feet) and shallow. Within the generator lead, there will be vegetation clearing in uplands near several man-made vernal pools. These pools occur in locations that are currently partially developed or otherwise altered. Pools including 05AA and 11ED occur adjacent to existing gravel roads and pool 45KW occurs within an existing transmission corridor. Vegetation clearing will have some effect on the micro-habitats where the adult amphibians spend much of their time. Provided that low shrubs are allowed to grow within the electrical corridors to provide shade and some woody debris is left on the ground to provide refuge to migrating amphibians the effects of vegetation clearing can be reduced.

14.2 RARE PLANTS AND NATURAL AREAS

To initially assess the Project area, Stantec consulted the Land Use Regulation Commission (LURC) *Land Use Guidance Maps* and contacted MNAP to determine if there were any known occurrences of rare, threatened or endangered plants, as well as rare or exemplary natural communities within the Project area. In addition to the MNAP database inquiry, Stantec field botanists and ecologists completed

a series of ecological field surveys and evaluations in 2008 and 2009. Investigations of the occurrences of unusual botanical resources, including rare and exemplary natural communities present within the Project area, were completed concurrently with these field surveys (see above sections). The field surveys were completed throughout the Project area, including both the summit area and proposed generator lead corridor. The following discusses the results of these field efforts relative to rare, threatened, and endangered plants, and rare and exemplary natural communities.

According to LURC *Land Use Guidance Maps* for Highland Plantation and Pleasant Ridge Plantation, there are no Unusual Area Protection Subdistricts,[4] which would include unique natural areas, mapped within the Project area. The response from MNAP indicated that there were no rare, threatened, or endangered plant species documented within the Project area. However, MNAP did indicate that the forests on Witham and Bald mountains were identified in a landscape analysis as a potential exemplary natural community (see correspondence in Appendix 14-1). MNAP recommended a field survey be conducted to determine if the forests on Witham Mountain and Bald Mountain meet the criteria of an exemplary natural community.

14.2.1 Survey Results

Field surveys were conducted concurrently with other field evaluations, including wetland and stream delineations, vernal pool surveys, and rare wildlife surveys. Delineations were conducted systematically throughout the Project area by walking evenly-spaced transects approximately 75 to 150 feet apart to provide thorough coverage of the Project area.

The dominant communities observed during Project surveys are commonly occurring in Maine including Spruce-Northern Hardwoods Forest and Beech-Birch-Maple Forests (Refer to Section 14.1 for additional details). The summit area around Witham Mountain and Bald Mountain contain inclusions of Spruce Talus Woodland within the larger (i.e., approximately 350-acre) Spruce-Fir matrix forest along this ridgeline. The Spruce Talus Woodland is a small-patch community that typically occurs in low-elevation summits with shallow soils and exposed bedrock. This community is considered apparently secure (state rarity rank of S4) in Maine. Based upon the April 23, 2010 site visit conducted by Stantec and MNAP biologist/ecologist, Don Cameron, two areas on Bald Mountain were identified as exemplary examples of this community. One approximately 47-acre area occurs along the summit and southern slope, and a smaller 6-acre area occurs on the eastern slope. Approximately 2.2-acres of this community will be directly impacted as a result of the proposed development.

14.3 WILDLIFE USE

Topography and Setting

The Project area is located within the Central and Western Mountains Ecoregion as defined in Maine's Comprehensive Wildlife Conservation Strategy (MDIFW 2005). This ecoregion is a consolidation of the Western Mountains and Central Mountains biophysical regions originally described by McMahon (1990). The Central and Western Mountains Ecoregion extends from the New Hampshire boarder south to the White Mountains National Forest, north to Aroostook County and east to the western foothills. The average elevation within the western portion of the ecoregion is between approximately 305 meters and 610 meters (1,000' to 2,000') with several peaks exceeding 823 meters (2,700'). The northern portion of this ecoregion includes some of the highest peaks in the state, with elevations ranging from 183 meters to 1,603 meters (600' to 5,258'). Ridges within the Project area rise 1,300 to 1,500 feet above the surrounding valleys. The climate of this ecoregion is characterized by relatively low annual precipitation and cool temperatures. Heavy snow fall prolongs the winter, resulting in a relatively short growing season (McMahon 1990).

[4] Unusual Area Protection Subdistricts include, but are not limited to historic or archeological sites or structures, scientific phenomena, natural areas, or important water supply sources.

General Wildlife Use

Bird species that nest on the ground or in shrubs and that were observed in the Project area include ovenbird (*Seiurus aurocapillus*), dark-eyed junco (*Junco hyemalis*), ruffed grouse (*Bonasa umbellus*), and chestnut-sided warbler (*Dendroica pensylvanica*). Cavity and canopy nesting birds observed in the Project area include rose-breasted grosbeak (*Pheucticus ludovicianus*), American robin (*Turdus migratorius*), blue jay (*Cyanocitta cristata*), black-capped chickadee (*Poecile atricapillus*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), northern flicker (*Colaptes auratus*), pileated woodpecker (*Dryocopus pileatus*), American redstart (*Setophaga ruticilla*), black-throated green warbler (*Dendroica virens*), and red-eyed vireo (*Vireo olivaceus*). Raptor and owl species observed include broad-winged hawk (*Buteo platypterus*), sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), and barred owl (*Strix varia*).

Large mammals observed within or near the Project area include white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), black bear (*Ursus americanus*), coyote (*Canis latrans)* and bobcat (*Lynx rufus*). Small mammal species observed in the Project area include bog lemming (*Synaptomys* sp*.),* red squirrel (*Tamiasciurus hudsonicus*), eastern chipmunk (*Tamias striatus*), snowshoe hare (*Lepus americanus*), and porcupine (*Erethizon dorsatum*). Some of the other small mammals that were not observed, but which may be present based upon available habitat include short-tailed shrew (*Blarina brevicauda*), southern red-backed vole (*Clethrionomys gapperi*), deer mouse (*Peromyscus maniculatus*), and white-footed mouse (*Peromyscus leucopus*). Eight species of bat also could occur in the area based upon their normal geographical range. These include the little brown myotis (*Myotis lucifugus)*, northern myotis *(Myotis septentrionalis*), eastern small-footed bat (*Myotis lebeiii*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and tri-colored bat (*Perimyotis subflavus*).[5]

Amphibians and reptiles observed in the Project area include spotted salamander, wood frog), American toad (*Bufo americanus*), green frog (*Rana clamitans*), spring peeper (*Pseudacris crucifer*), northern spring salamander, two-lined salamander (*Eurycea wilderae*), northern dusky salamander (*Desmognathus f. fuscus*), and eastern garter snake (*Thamnophis sirtalis*).

14.3.1 Nocturnal migrants

Unlike raptors, which migrate during the day, the majority of North American passerines (songbirds) migrate at night. Documenting the patterns of nocturnal migrants, including passerines and bats, requires the use of radar or other non-visual technologies. The goal of the surveys conducted for this Project was to document the overall passage rates for nocturnal migration in the vicinity of the Project area, including the number of migrants, their flight direction, and their flight altitude.

In the fall of 2008 and spring of 2009, Stantec conducted nocturnal radar surveys using marine surveillance radar. This radar has the ability to track small animals, including birds and bats, but it cannot distinguish between different types or species of animals. Consequently, all animals observed on the radar screen were identified as either bird/bat targets or insect "targets" based on their flight speeds. To help maximize the airspace sampled and reduce "ground clutter"[6] on the radar screen, the radar antennae were elevated to the height of the surrounding trees (i.e., approximately 3 meters or 10 feet). In 2008, Stantec conducted the radar surveys from the southern summit of Stewart Mountain, which afforded coverage of the Stewart Mountain ridgeline to the north and Witham Mountain to the east. In 2009, a radar unit was located at the southern summit of Stewart Mountain and a second unit was placed on Briggs Hill. Surveys were conducted from sunset to sunrise each survey night. The fall 2008 surveys occurred on 20 nights between August 30 and October 7. During the spring 2009 surveys, data was collected on 21 nights at the Briggs Hill radar site (April 29 to May 31, 2009) and 19 nights at the south

[5] Formerly known as the eastern pipistrelle (*Pipistrellus subflavus*).
[6] Ground clutter is the return or reflection back to the radar of obstructions such as nearby trees and hills. These returns can obscure targets appearing on the radar screen.

Stewart Mountain radar site (April 29 to May 26, 2009). Of those nights, Stantec performed surveys simultaneously at both radar sites on 16 nights.

During the fall 2008 surveys, the mean passage rate for the entire survey period was 549 targets/kilometer/hour (t/km/hr) ± 32 t/km/hr and mean flight direction was to the southwest. The seasonal mean flight height of all targets was 348 ± 8 meters (1142' ± 26') above the radar site. The percent of targets observed flying below 130.5 meters (428'), the proposed maximum height of the turbine at the time of the surveys, averaged 17 percent for the season and varied by night from 4 to 28 percent. At the request of the MDIFW, the data was further analyzed to determine the percent of targets specifically with the rotor zone of a turbine with a maximum height of 130.5 meters, as well as turbine with a maximum height of 135 meters. The percent of targets within the rotor zone would be 14 percent for both a turbine with a maximum height of 130.5 meters and a turbine with maximum height of 135 meters (Table 14-2).

During the spring 2009 surveys, the mean passage rate for the entire survey period was 496 ± 31 t/km/hr at Briggs Hill and 511± 46 t/km/hr at south Stewart. For both sites the mean flight direction was to the northeast. The seasonal mean flight height of all targets at Briggs Hill was 287 ± 8 m above the radar site and at South Stewart it was 314 ± 10 m. The percent of targets observed flying below 130.5 m averaged 26 percent at Briggs Hill for the season and 23 percent at south Stewart for the season. For a turbine with a maximum height of 130.5 meters, the percent of targets within the rotor zone would be 20 percent at both the Briggs Hill site the Stewart Mountain site. For a turbine with a maximum height of 135 meters, 21 percent of the targets would occur with the rotor zone at the Briggs Hill site and 20 percent at the Stewart Mountain site (Table 14-2).

Table 14-2: Nocturnal Radar Target Analysis.

	Fall 2008	Spring 2009 Briggs Hill	Spring 2009 Stewart Mountain
Targets below 130 m	17	26	23
Targets within rotor zone for 130.5 m turbine [29 m to 130 m]*	14	20	20
Targets below 135 m	17	27	25
Targets within rotor zone for 135 m turbine [35 m to 135m]	14	21	20

*The summary tool does not allow the use of numbers with decimals so the analysis was conducted using a turbine height of 130 meters rather than 130.5 meters.

Results of pre-construction radar surveys cannot be used to predict collision risk and do not translate to the number of fatalities that can be expected by an operational facility. Pre-construction radar surveys can be useful for comparing migration characteristics within similar geographic regions. Comparisons of parameters such as the level of migration activity and estimated flight heights help identify potential issues that may warrant further investigation. Although the percent of targets recorded below 130.5 meters at Briggs in the spring of 2009 is one of the highest percentages recorded for projects in Maine and New Hampshire, four other surveyed sites also recorded percentages over 20 percent. For the fall of 2008, the percentage of targets below turbine height of 17 percent at Highland falls within the range of results recorded at other Maine and New Hampshire projects (2 to 23 percent).

14.3.2 Breeding Birds

Stantec conducted breeding bird surveys during three separate visits to the Project area on May 21-22, June 9-10, and June 21 and 25-26, 2009. This time frame corresponds to typical peak spring avian breeding season in Maine. Surveys were conducted at a total of 35 point-count locations across the Project area ridgelines. These point-count locations included six sites located on central and north Stewart Mountain, which are not part of the current Project area. The data collected on Stewart Mountain

has been maintained as part of the larger data set since it provides a characterization of avian use in the area.

Point-counts were categorized as being within one of four habitat types based upon dominant vegetation: coniferous forest, deciduous forest, mixed forest, and disturbed habitat. The disturbed habitat category included clearings created for met towers, as well as early successional cuts created by timber harvesting. Protocol followed the United States Geological Survey North American Breeding Bird Survey methods, and surveys targeted days when weather would not inhibit detection of birds. During the point-count surveys, 1,057 individual birds were detected. These birds represented 52 species plus an unidentified woodpecker and two unidentified ducks. Three additional species were detected incidentally between point-count locations: American kestrel (*Falco sparverius*), American woodcock (*Scolopax minor*), and eastern phoebe (*Sayornis phoebe*).

Species with the greatest relative abundance[7] (RA) among the 35 point-count locations were white-throated sparrow (*Zonotrichia albicollis*; RA=1.02), chestnut-sided warbler (RA=0.68), black-throated-blue warbler (*Dendroica caerulescens*; RA=0.67), and dark-eyed junco (RA=0.60). With the exception of the black-throated blue warbler, these species are often associated with clear cuts or second-growth forests. The black-throated blue warbler has been associated with increased timber harvest levels in eastern Maine but is generally considered a species associated with large, continuous tracts of forests (DeGraaf and Yamasaki 2001).

No state- or federally-listed endangered or threatened bird species were observed during the 2009 breeding bird surveys; however, 10 state-listed Species of Special Concern were documented (Refer to Section 14.4.5).

14.3.3 Diurnal Migrating Raptors

Stantec conducted surveys for raptors within the Project area in 2008 and 2009. These surveys were based on Hawk Migration Association of North America (HMANA) methods (HMANA 2007), but supplemental data was collected, including relative flight heights, general flight path through the Project area, and total raptors observed (resident and migrant based upon flight behavior).

In 2008, Stantec conducted fall raptor surveys from Witham Mountain and Burnt Hill. From the Witham Mountain location, there were relatively unobstructed views in all directions. At Burnt Hill, although some views were slightly obstructed, the observer had good opportunities to see southerly moving migrants. Between September 3 and October 21, 2008, Stantec conducted raptor surveys on 15 days (5 of which were performed simultaneously by observers in both locations) for a total of 135 survey hours. A total of 301 raptors[8] representing 10 species, plus individuals that could not be identified to species, were observed. These results yielded an average observation rate of 2.25 individuals/hour. Broad-winged hawks and sharp-shinned hawks were the most commonly observed species (n=134 and n=74, respectively). Based upon observed flight behavior, approximately 90 percent of these two species were categorized as migrants. As raptors passed through the area, observers documented the flight positions of each individual in relationship to the ridge tops, slopes of the ridges, or adjacent valleys. For those flight positions within the Project boundary most likely associated with the proposed turbine locations, flight heights were categorized as above or below 130.5 meters (428'), the proposed maximum height for the turbines at the time of the survey. Of those raptors observed within the 1 kilometer-radius circle from the observer (n=251), 43 percent were flying at or below 130.5 meters above the ground for at least a portion of their flight through the Project area, and 40 percent were observed flying above 130.5 meters.

[7] Relative abundance measures the number of individuals of a species within a habitat classification or across the Project area, and takes into account the number of times each point is surveyed and the number of points per habitat, or per Project area.

[8] While turkey vultures are not phylogenetically considered true raptors, they are diurnal migrants that exhibit flight characteristics similar to *Buteos, Accipiters* and other *Falconiformes* species, therefore vultures are typically included during these surveys.

The remaining 17 percent of raptors were observed outside of the 1 km-radius circle with an average estimated flight height of 286 m (938') above ground.

In 2009, Stantec conducted spring raptor surveys from Witham Mountain and Briggs Hill. Briggs Hill was chosen for the spring surveys because it falls within the southern portion of the Project area and provided good opportunities to view migrants moving north. Raptor surveys were conducted from March 25, 2009, to May 19, 2009, resulting in a total of 139 survey hours. Surveys included 12 days (83 hours) on Witham Mountain and 8 days (56 hours) on Briggs Hill. During these surveys, a total of 260 raptors representing 10 species, as well as unidentified raptors and unidentified buteos, were observed. The overall passage rate was 1.87 birds per hour (birds/hr). At Witham, a total of 153 raptors were observed for a passage rate of 1.84 birds/hr. At Briggs, a total of 107 raptors were observed resulting in a passage rate of 1.91 birds/hr. Turkey vultures (*Cathartes aura*) were the most commonly observed species from both observation sites (Witham, n=57; Briggs, n=75). At Witham, red-tailed hawks (n=46) and sharp-shinned hawks (n=15) were the next most commonly observed species. Similarly, at Briggs red-tailed hawks (n=14; 13 percent) were the most commonly observed species after turkey vultures. Sixty-three percent of all raptors observed during these surveys were considered to be non-migrants, 33 percent were considered to be migrants, and 4 percent could not be categorized based on observed flight behaviors. Eighty percent of the raptors observed from Witham and 86 percent observed from Briggs Hill occurred below 130.5 meters during some point of their flight.

In 2008, no state or federally-listed threatened or endangered species were documented during the course of the raptor surveys.[9] In 2009, a single juvenile peregrine falcon (*Falco peregrinus*), the breeding population of which is a state-listed threatened species, was documented within the Project area. Two state-listed Species of Special Concern, bald eagle (*Haliaeetus leucocephalus*) and northern harrier (*Circus cyaneus*), were documented during both the 2008 and 2009 surveys. Four bald eagles were observed within the Project boundary in 2008 and seven in 2009. Of the four bald eagles observed in 2008, only one had any portion of its flight height below 130.5 meters. Of the seven bald eagles observed within the Project boundary in 2009, four crossed over one of the Project ridgelines, and three of these had some portion of their flight path below 130.5 meters. For additional discussion of bald eagles within the Project area, refer to Section 14.4.1.

The results of the surveys appear to be representative of typical migrations for the Project area despite variations that might be caused by regional population fluctuations and weather conditions. When the respective Project area surveys were compared to survey results from HMANA hawk watch sites, passage rates within the Project area were relatively low in both 2008 and 2009. The results of the Project area raptor surveys fell within the range of data for other proposed wind power development projects in this region, but were generally at the lower end of the data range. Studies have documented that raptors display high turbine collision avoidance behaviors at modern wind facilities (Whitfield and Madders 2006, Chamberlain *et al.* 2006), so despite the relatively low flight heights of raptors within the Project area, there appears to be a relatively low collision risk. As most raptors are diurnal, they may be able to visually, as well as acoustically, detect turbines during periods of fair weather. Foraging raptors that may become distracted by prey, or migrant raptors flying during periods of reduced visibility, may be at increased risk of collision with wind turbines.

14.3.4 Bats

Eight species of bats occur in Maine, based upon their normal geographical range. These are the big brown bat, silver-haired bat, eastern red bat, hoary bat, eastern small-footed bat, little brown bat, northern bat, and tri-colored bat (BCI 2001 and 2009). Of these, the eastern small-footed bat, eastern red bat, hoary bat, and silver-haired bat are listed in Maine as Species of Special Concern. All but the eastern small-footed bat are believed to be present in most of the state (DeGraaf and Yamasaki 2001). Foraging habitat for these species includes forest openings, trail and road corridors, open wetlands, and waterbodies. Mature trees, particularly those with loose bark or cavities, caves, and a variety of

[9] Information presented here reflects currently listed state and federal threatened and endangered species.

man-made structures provide sites for roosting and hibernation. The Project area currently includes a variety of natural and artificial edge habitats such as wetlands, road edges and regenerating cuts.

In the late summer/early fall of 2008 and the spring/summer of 2009, Stantec conducted acoustic surveys for bats using Anabat II and Anabat SD1 detectors (Titley Electronics Pty Ltd.) The objectives of acoustic surveys at the Project were (1) to document bat activity patterns in airspace near the anticipated rotor zones of the proposed turbines and at an intermediate height and (2) to document bat activity patterns in relation to weather factors, including wind speed, temperature, and barometric pressure. Because acoustic surveys include several major assumptions (Hayes 2000), results should not be used to determine the number of bats inhabiting an area or to determine the number of bats that may collide with the proposed turbines. However, acoustic surveys can provide insight into seasonal patterns in activity levels and examine how weather conditions influence bat activity.

Six bat detectors were deployed during the course of each survey period. In 2008, detectors were initially deployed in trees along the ridgeline and were placed at an approximate height of two to eight meters above the ground. Following construction of met towers on Stewart Mountain, Witham Mountain, and Briggs Hill, the detectors were relocated. At each of the three locations, two detectors were suspended from the met tower guy wires. One was placed at approximately 25 meters (low detector) and one at approximately 45 meters (high detector) above the ground. In 2009, detectors were deployed at the three met tower locations and at the same heights within the met towers used in 2008. Detectors were deployed from August 11 to October 20, 2008, and from April 23 and August 17, 2009. With the exclusion of time during which any one detector malfunctioned, recordings were made on 360 detector-nights in 2008 and 553 detector-nights in 2009.

In 2008, met tower detectors recorded a total of 67 bat call sequences (0.3 recordings/detector/night), and tree detectors recorded a total of 11,516 call sequences (106 recordings/detector/night). There also was a distinction in the composition of species detected at the met tower detectors versus the tree detectors, although this was influenced to some degree by the high percentage of call sequences characterized as “Unknown” because of the quality or duration of the call. Only one percent of identified call sequences at the met towers were determined to be of the genus *Myotis*, whereas 57 percent of the call sequences at the tree detectors were of the genus *Myotis*. The difference in detection levels, as well as the composition of species detected, is likely a combination of several factors. First, the tree detectors were all placed at a height of 8 meters (25') or less; therefore, they were primarily picking up the activity of species that forage or are active closer to the ground. Based upon all of the call sequences collected during this field season, the highest percentage of identified calls (56.3 percent) were from genus *Myotis*, and these species are more commonly detected beneath canopy level (Arnett *et al.* 2006). Putting these two factors together, the detectors placed in the trees were in a position to pick up more of the *Myotis* activity. Secondly, timing or seasonality of deployment also likely influenced call detection. Nightly activity rates at ground-level detectors were generally greatest during the first two weeks of sampling, and appeared to be generally declining by the end of August and early September when the detectors were moved to the met towers. Given the emerging relationship between bat activity and temperature at ground-level detectors documented in recent studies (Arnett *et al.* 2006), it is likely that ground-level detectors would have documented a substantial decline in activity during September and October had they remained deployed at these locations. Since nightly average temperatures from September through October averaged only 8.6° Celsius, with only 32 percent of nights having average nightly temperatures over 10° Celsius, a decline in activity would have been expected.

In 2009, a total of 166 bat call sequences were recorded (0.3 recordings/detector/night). This is same detection rate that was recorded by the detectors deployed in the met towers in 2008; however, this detection rate is relatively low for the summer season. Weather conditions during this time period, particularly high rainfall amounts, may have significantly influenced bat activity and resulting detection rates. In addition, the 2009 spring/summer survey did not include the activity peak that typically occurs later in the season (mid-August to early September). This later peak season period was captured during the 2008 acoustic surveys. Most recorded call sequences were classified as the big brown bat/silver haired bat guild (n = 63; 38.0%), followed by call sequences characterized as Unknown (n = 57; 34.3%). Remaining sequences were split roughly evenly between hoary bat (n = 26; 15.7%) and bats in the genus

Myotis (n = 20; 12.0%). Sixty-eight percent of Unknown sequences were identified as being low-frequency Unknown, which would include the hoary bat, silver-haired bat, and big brown bat.

Detection rates at detectors suspended from met towers were low (less than 1 recording/detector/night), and detectors operating at ground-level exhibited tremendous variation, ranging from less than 10 to over 300 recordings/detector/night. This type of variation reflects differing conditions (e.g., habitat, microclimates) and differing timing of operation among detectors. The results of these Project-specific surveys, including variability in bat activity and generally low detection rates above canopy height, are consistent with other publicly available acoustic surveys conducted at proposed wind developments in the Northeast. However, this Project area does appear to have activity levels that are consistently below those of similar surveys conducted in the region. For further details and the complete acoustic survey results, refer to the *Fall 2008 Bird and Bat Migration Report* and the *Spring 2009 Ecological Survey Report* in Appendix 14-3.

14.4 SIGNIFICANT OR SENSITIVE WILDLIFE HABITAT AND POTENTIAL IMPACTS

Under Chapter 10, the Land Use Regulation Commission regulates activities that would impact Significant Wildlife Habitat. Significant Wildlife Habitats include the following areas as they have been identified by MDIFW: habitats of state or federally-listed threatened or endangered animal species; Deer Wintering Areas (DWA) and travel corridors; high and moderate value Inland Waterfowl and Wading Bird Habitats (IWWH); shorebird nesting, feeding and staging areas; seabird nesting islands; and significant vernal pools. Significant Wildlife Habitat also includes critical spawning and nursery areas for Atlantic sea run salmon (*Salmo salar*) as determined by the Atlantic Sea Run Salmon Commission. State and federal resource agencies were contacted in regard to the proposed Project and have provided comments in Appendix 14-1. Refer to Section 14.1.2 above for details on significant vernal pools.

14.4.1 Bald Eagle Nest Sites

Bald eagles (*Haliaeetus leucocephalus*) are widely distributed throughout Maine and as of 2008, there were at least 477 nesting pairs in the state (Todd and Matula 2008). In 2007, this species was removed from the federal list of endangered and threatened species, but it remains protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (Buehler 2000). In September 2009, the bald eagle was removed from the State of Maine's list of endangered and threatened species, but it remains on the list of Species of Special Concern.

Bald eagles typically nest close to water in proximity to lakes and large rivers, and along the marine coast (Baicich and Harrison 1997). They have high nest-site fidelity and will use nest for multiple years, although nesting territories often include more than one nest (MDIFW 2003). Bald eagles lay between one and three eggs annually, but clutches typically consist of two eggs (Baicich and Harrison 1997). In Maine, eggs typically are laid during March and April, and incubation lasts approximately 35 days (MDIFW 2003). Bald eagles are opportunistic foragers, but fish are their primary food source. Research conducted in Maine found that although bald eagles consumed a variety of prey including birds, mammals, and invertebrates, fish comprised 79 percent of the remains collected from breeding and wintering areas in the interior portion of the state (Todd *et al.* 1982). The most common fish species documented during this study in interior Maine were white sucker (*Catostomus commersoni*), chain pickerel (*Essox niger*), and brown bullheads (*Ictalurus nebulosus*).

Bald eagles nest sites occur in the larger region surrounding the Project area, but no nests are documented within the Project area. Based upon available information, the nearest known nests are located more than four miles from the Project ridgeline[10].

In the fall of 2008 and spring of 2009, Stantec conducted surveys within the Project area to document migratory movements of raptors, including bald eagles. A total of 12 separate bald eagle observations

[10] Bald eagle nest site locations based on data available from the Maine Department of Inland Fisheries and Wildlife dated 2009.

were documented during the two survey periods. In 2008, these observations included two adults and two juveniles. Observations occurred within a one-kilometer buffer zone of the Project area as the individuals crossed the ridgelines, and one bird had a portion of its flight path below the proposed maximum turbine height. Three of the four individuals observed appeared to be residents based on their flight paths and behavior patterns. In 2009, seven bald eagles were documented in the Project area, including four adults, one sub-adult, one juvenile, and one eagle of indeterminate age. Four of the bald eagles crossed over the ridge and three of these were below 130.5 meters for a portion of their flight. Six observations included flight paths along the slope, three of which included portions below maximum turbine height. One additional bald eagle was observed during the 2009 surveys, but it occurred outside of the one-kilometer Project boundary. Studies have documented that raptors generally employ a high level of collision avoidance behaviors at modern wind facilities (Whitfield and Madders 2006, Chamberlain *et al.* 2006). At 14 wind projects in the United States (outside California), over 15,000 turbine searches have been conducted over a 15-year period. During these searches, fewer than 40 raptor fatalities have been reported, and none were bald eagles. As most raptors are diurnal, they may be able to visually, as well as acoustically, detect turbines during periods of fair weather. Foraging raptors that may become distracted by prey, or migrant raptors flying during periods of reduced visibility, may be at increased risk of collision with wind turbines. For further details and the complete raptor survey results, refer to the *Fall 2008 Bird and Bat Migration Report* and the *Spring 2009 Ecological Survey Report* in Appendix 14-3.

14.4.2 Canada Lynx Habitat

The Canada lynx (*Lynx canadensis*) is federally listed as a threatened species and is considered a Species of Special Concern in Maine. The federal government has designated a portion of Northern Maine as Critical Habitat[11] Unit 1 for the lynx. This approximately 9,497-square mile unit extends from northern Aroostook County south to a line roughly extending from Route 11 south of Millinocket west to the Maine/Quebec border (50 CFR pt. 17). The proposed Project is located outside of this designated Critical Habitat. The Project is located within the extended review area developed by the Maine Field Office of the USFWS shortly after the Critical Habitat units were codified.

Canada lynx typically occur in moist boreal forests in regions with cold and snowy winters and a well established prey base of snowshoe hare (50 CFR pt. 17). Canada lynx populations are strongly tied to their primary prey, snowshoe hare, and lynx will disperse from areas following declines in hare populations. In Maine, good habitat for the Canada lynx is characterized as large tracts of young, dense balsam fir and northern hardwood species, which corresponds to habitat that supports larger snowshoe hare populations (MDIFW 2003, 50 CFR pt. 17). These preferred forest stands typically become established 15-30 years following a disturbance such as a fire or clear cut. In general, timber management practices (i.e., clear cutting) that encourage dense understory development are considered beneficial for this species (MDIFW 2003, 50 CFR pt. 17). Forest management roads are not considered a barrier to movement for the Canada lynx, although they can increase the potential for human intrusion into this habitat (MDIFW 2003). A desktop analysis using aerial photography and cover type maps provided by the land manager for Wagner Forest Management indicate that there is minimal high value snowshoe hare habitat in Highland Plantation. No potential high value habitat was documented within the Project area and potential moderate value habitat is limited to a few scattered locations, suggesting good habitat for the Canada lynx is not present.

14.4.3 Inland Waterfowl and Wading Bird Habitat

Based upon information provided by the MDIFW, there are seven IWWH mapped in the vicinity of the Project area, but none occurs within the actual Project area. The nearest habitat, which is associated with Stony Brook, is located north of Witham Mountain and is approximately 0.2 miles from the Project area. Since construction activities will be outside of this habitat or its associated buffer, no adverse impacts are expected.

[11] Critical habitat as defined by the federal Endangered Species Act is a designated geographic area that contains critical elements for the conservation of a threatened or endangered species and that may require special management or protection.

14.4.4 Deer Wintering Areas

There is no mapped Dear Wintering Area (DWA) within or in proximity to the ridgeline portion of the Project area. A single mapped DWA is located approximately 0.5 mile west of the proposed generator lead corridor in Pleasant Ridge Plantation and is separated from the corridor by Pleasant Ridge Road. As designed, the proposed Project is not expected to have an adverse impact on this DWA.

14.4.5 Rare, Threatened and Endangered Species

Targeted surveys for rare, threatened and endangered wildlife species were conducted in 2009 based upon a work plan developed by Stantec in consultation with MDIFW. Refer to the *Highland Wind Project Rare, Threatened and Endangered Wildlife Survey Report* in Appendix 14-4 for additional details related to these surveys. Other Project specific surveys also resulted in incidental observations of rare, threatened and endangered wildlife species. In some instances, the area in which these other surveys were conducted is located outside of the current Project area as presented in this application; however the results of the northern spring salamander and Roaring Brook mayfly surveys, including those incidental observations that occurred outside of the current Project area are presented and discussed.

Northern Spring Salamander

The northern spring salamander is listed as a Species of Special Concern in Maine. The species prefers cold, clean and relatively undisturbed steep mountain streams that have limited to no populations of fish (Hunter *et al*. 1999; DeGraaf and Yamasaki 2001; Lowe and Bolger 2002). In addition, they also may inhabit cool seeps and springs within forested settings. Based upon Stantec's wetland delineations conducted in 2008 and 2009 and additional landscape-level analysis, 23 streams within the ridgeline portion of the Project area were identified as having strong potential to support northern spring salamanders. Stantec provided MDIFW with a representative sample of photographs showing streams selected for survey and those rejected an unsuitable habitat to demonstrate this selection process. After reviewing these photographs, MDIFW indicated that Stantec had made suitable choices of streams to survey. Surveys of these streams were conducted between July 27 and July 29, 2009. Northern spring salamanders were observed in two of the 23 surveyed streams, both of which are located in the Stony Brook watershed. A single larval northern spring salamander was documented in stream 57AA, and two adult northern spring salamanders (one dead and one alive) were found in stream 35CF. A larval northern spring salamander also was found in stream 35CF during the course of surveys for the Roaring Brook mayfly in August 2009. Four additional streams, 03CF, 32CF, 45CF and 96AA, are large perennial streams with suitable habitat, but no northern spring salamanders were found in these water courses. The other surveyed streams did not contain suitable habitat for this species. In addition to these targeted surveys, northern spring salamanders were observed incidentally in three other streams during the course of wetland delineations. Northern spring salamander were observed in stream 33KW, located outside of the current Project area on the north side of Witham Mountain, and two streams along the generator lead corridor in Pleasant Ridge Plantation. A large salamander observed within stream 29ED on the lower slopes of south Stewart Mountain also may have been a northern spring salamander.

After a September 21, 2009, site visit with staff from MDIFW, the applicant decided that those perennial streams with suitable habitat would be treated as if they supported northern spring salamanders. To that end, the Project design avoided direct impacts to those perennial streams where practicable and utilized existing stream crossings when possible. To limit impacts, new crossings of most perennial streams will be accomplished using a bridge or open-bottom arch culvert. In addition, some existing crossings of streams involving culverts will be replaced with bridges. Because of engineering restrictions involved in providing access for the construction crane, the smallest perennial stream crossing will be done with closed-bottom culverts. The Project design includes the maintenance of existing forested buffers where possible along streams and the use of BMPs to reduce potential sedimentation of these resources. For example, clearing within the proposed collector line and that portion of the generator lead with single pole construction will have reduced clearing limits at all stream crossings. Within 100 feet of each stream, the typical 100-foot clearing width will be reduced to a maximum of 50 feet.

Northern Bog Lemming

The northern bog lemming is a state-listed threatened species in Maine. Information on the life history and habitat requirements of this species is not well known. In Maine, the northern bog lemming is reported to occur in habitats with deep, moist peat moss (*Sphagnum* spp.) and to be present in both low and high elevation areas (MDIFW 2003). Other general habitat characteristics include the presence of springs or other sources of water and moss covered logs and rocks. During Stantec's wetland delineations in the fall of 2008, six areas with potentially suitable habitats were identified along the Project area ridgelines. In general, these areas were characterized as forested wetlands dominated by scattered trees and shrubs of red spruce, balsam fir, and northern white cedar. The understory contained a thick layer of peat moss and three-seeded sedge over deep, mucky organic soils.

On July 27 and 28, 2009, Stantec conducted field surveys of those six areas with potentially suitable habitat within the Project area. Field surveys consisted of meander surveys within suitable habitat to locate evidence such as runways and tunnels through peat moss, browse and clippings on graminoid vegetation, and fecal pellets. According to Kurta (1995), bright green fecal pellets and evenly clipped stems of grasses and sedges along well-defined runways indicate bog lemming activity. Since northern bog lemmings and southern bog lemmings (*Synaptomys cooper*) can only be separated based upon dental characteristics, any evidence was considered to be northern bog lemming. Of the six surveyed areas, evidence of bog lemming activity was found in three wetlands: W011, W067, and W134. Evidence included well defined runways and tunnels through peat moss and sedges, clipped stems of three-seeded sedge, and bright green fecal pellets. Bog lemming activity was not observed in wetlands W072, W073 and W112 despite the presence of similar habitat characteristics.

The Project was designed with the presumption that all bog lemming activity was attributed to the northern bog lemming. The proposed Project design avoided direct impacts to those wetlands where Stantec observed bog lemming activity, as well as those wetlands immediately adjacent to wetland W067 where suitable bog lemming habitat also exists. To minimize potential indirect impacts, the applicant redesigned the road alignment northeast of wetland W134 to place the road at least 170 feet from this wetland. The road design at this location also will include a bridge to cross a small stream, which should reduce potential changes to the hydrology of wetlands W135 and W134. In addition, the pad for Turbine 13W was redesigned to minimize its size, reduce necessary grading and provide drainage that will direct stormwater away from wetland W134. The final design placed the turbine outside of the micro-watershed for wetland W134. The intent of these efforts was to minimize potential sedimentation or other effect on this wetland. Project components have been placed outside of the micro-watershed of all of the wetlands where bog lemming activity was observed, as well as the micro-watersheds of other potential habitat identified within the Project area.

Roaring Brook Mayfly

The Roaring Brook mayfly [also known as the flat-headed mayfly (*Epeorus frisoni*)] is listed as a state-endangered species. The life history of this species is not well documented, in large part because it is known from so few locations. Its habitat is described as cold, undisturbed, perennial streams in high elevation habitats (i.e., above 1,000 feet in elevation), which contain high ephemeral flows (Swartz *et al.* 2004, Burain *et al.* 2008). Other stream characteristics include cascades, large boulders, and coarse granite substrates (MDIFW 2003). Suitable stream habitats typically occur in undisturbed mixed forested stands with a semi-open to closed canopy. Based upon Stantec's wetland delineations conducted in 2008 and 2009 and an additional landscape-level analysis, five streams were identified as providing potentially suitable habitat for this species. Stantec further verified the suitability of these streams during northern spring salamander surveys completed in July 2009. Roaring Brook mayfly surveys conducted on August 20, 2009. Survey methods followed guidelines presented in the *DRAFT Recommended Survey Protocol for the Roaring Brook Mayfly* (*Epeorus frisoni*) (Siebenmann and Swartz 2009). Under a Scientific Collection Permit issued by MDIFW, Stantec ecologists collected larvae of the genus *Epeorus* from the targeted streams using dip nets. Stantec then sent the collected specimens to Southern Connecticut State University for identification. Roaring Brook mayflies were identified from two of the five

sampled streams, 33CF and 35CF. A total of three Roaring Brook mayfly larvae were identified from the 27 *Epeorus* specimens collected during the surveys.

The Project is designed to avoid direct impacts to streams 33CF and 35CF. In addition, the Project is designed to avoid direct impacts to streams 32CF and 03CF, where suitable habitat exists, but surveys documented no Roaring Brook mayfly larvae. In these locations an existing access road will be used to avoid new crossings of these streams. The Project design also will incorporate bridges for the majority of road crossings involving perennial streams, including replacing some existing culvert crossings with bridges. The use of BMPs will reduce potential sedimentation of these resources during construction and subsequent maintenance.

Rare, Threatened and Endangered Avian Species

In 2008, no state or federally-listed threatened or endangered avian species were documented during the course of the raptor surveys. In 2009, a single juvenile peregrine falcon, the breeding population of which is a state threatened species, was documented within the Project area. Two state-listed Species of Special Concern, bald eagle and northern harrier, were documented during both the 2008 and 2009 surveys. Four bald eagles were observed within the Project boundary in 2008 and seven in 2009.

No state- or federally-listed endangered or threatened species were observed during the 2009 breeding bird surveys. Ten state-listed Species of Special Concern were documented during those surveys (Table 14-3). In addition, incidental observations made during the Project raptor surveys included six state-listed Species of Special Concern: tree swallow (*Tachycineta bicolor*), chimney swift (*Chaetura pelagica*), American redstart (*Setophaga ruticilla*), black-and-white warbler, chestnut-sided warbler, and white-throated sparrow. Although these species are listed as Species of Special Concern in Maine, several of them are considered globally and regionally secure (NatureServe Explorer 2009). For example, the chestnut-sided warbler has shown no statistically significant decline and no clear population trends across its range. White-throated sparrow and chestnut-sided warbler, two species that respond well to regeneration following timber harvesting, had the highest relative abundance (RA) during the point count surveys. With the possible exception of the black-throated blue warbler, the species with the greatest RA among all points sampled are forest edge-dwelling species and will inhabit areas with past forest disturbances such as timber harvesting. In general, the species that were detected on-site are common and regionally abundant species, and they are representative of the habitats in which they were detected. For further details and the complete breeding bird survey results, refer to the *Spring 2009 Ecological Survey Report* in Appendix 14-3.

Table 14-3. Maine Species of Special Concern detected during the 2009 breeding bird surveys

Species	Relative abundance among all points
least flycatcher	0.01
yellow warbler	0.01
Tennessee warbler	0.03
Canada warbler	0.04
American redstart	0.24
black-and-white warbler	0.28
chestnut-sided warbler	0.68
white-throated sparrow	1.02
olive-sided flycatcher	*
eastern wood-pewee	*
*Observed greater than 100 meters from observer.	

14.5 FISHERIES

The ridgeline portion of the Project area includes numerous stream resources, many of which are small and high-gradient with only intermittent flows. It is unlikely that these smaller intermittent streams would be able to support fish. Further, because of their high gradient and very low summer flow, even many of the larger perennial streams such as Stony Brook have only limited potential to support fisheries. The presence of northern spring salamanders in some of these perennial streams further indicates that fisheries are limited, since northern spring salamanders typically select streams without fish. Although these intermittent and smaller perennial streams may not directly support fish, their flows do feed watercourses lower in the watershed where fisheries are present. The larger, named perennial streams located in the lower lying valleys, including Sandy Stream, Churchill Brook and Houston Brook, each have existing fisheries.

Although other fisheries are present, Sandy Stream, which is an indirect tributary to the Kennebec River, is not designated as critical habitat for Atlantic salmon. According to the Federal Register (50 CFR pt. 226), unoccupied habitat, including the area upstream of the confluence of the Kennebec River and Sandy River, did not qualify as critical habitat because these waters were not occupied by Atlantic salmon at the time the species was federally listed as endangered. During a site visit to the Project area by Wende Mahaney of the USFWS, she confirmed that Sandy Stream is not critical habitat. The Kennebec River is located at the eastern extent of the Project area at the point where the proposed generator lead will connect to the existing CMP substation below Wyman Dam. The Kennebec River has existing fisheries, including a self-sustaining population of rainbow trout (*Oncorhyncus mykiss*) located below Wyman Dam (MDIFW 2002). As with Sandy Stream, this portion of the Kennebec River is not considered critical habitat for Atlantic salmon as it was not occupied by the species at the time it was federally listed as endangered. Note that the crossing of the Kennebec River will be addressed in a separate permit application.

Both Sandy Stream and the Kennebec River immediately below Wyman Dam are designated as Essential Fish Habitat for Atlantic salmon. Essential Fish Habitat (EFH) as determined by the National Marine Fisheries Service (NMFS) is defined as all waters currently or historically accessible to Atlantic salmon including streams, rivers, lakes, ponds, wetland and other water bodies within the six New England states. Norm Dube from the Maine Department of Marine Resources and Sean McDermont from the NMFS stated in e-mail communications that natural barriers to Atlantic salmon passage are located up-stream of Wyman Dam and above Sandy Stream so although this species is not currently present in these areas it could have been historically[12]. In regard to EFH, the NMFS will assess the potential of the Project to have an adverse effect on this habitat. An adverse effect would include any impact that reduces the quality and/or quantity of EFH whether that is a direct or indirect effect and whether the effect is individual or cumulative.

To reduce potential impacts to habitat quality, the crossing of Sandy Stream will be accomplished using a bridge that will be located at a former road crossing. This approach will avoid direct in-stream work and because the bridge will be located at a former crossing, stream-side clearing of vegetation should be minimal. The bridge should have a positive effect on the thermal character of the stream by providing shading at this location; however this may be offset by some potential thermal gain from aboveground electrical lines that will cross immediately adjacent to and upstream of the bridge. The Project also will use existing roads in the immediate Sandy Stream watershed, which will reduce the number of new crossings of tributary streams.

Impacts to stream resources from access roads and turbine construction include crossings of 28 intermittent streams and 21 perennials streams, some of which involve more than one crossing of the individual resources. The largest of the new crossings will be the bridge constructed over Sandy Stream for the connector access road. As stated above, the proposed bridge will not require any in-stream work and will be located at a previous road crossing, which will reduce the need for vegetation clearing. Of

[12] E-mail communications from Norm Dube and Sean McDermott to Karol Worden of Stantec dated November 23, 2009.

these 49 streams crossed by Project roads, fish were only observed in one, Sandy Stream, during the course of Project wetland delineations.[13] Impacts to fisheries associated with road and turbine construction are expected to be limited.

The proposed generator lead, combined with the portion of the collector line system not located with the access roads, will cross a total of 32 intermittent streams and 21 perennials streams, including Churchill Brook and Houston Brook. Stantec did not observe any fish in the intermittent streams during the course of the resource delineation, and it is unlikely that they are capable of supporting fish. During the course of wetland delineations completed for the Project, fish were observed in seven of the perennial watercourses, including Sandy Stream, Churchill Brook, and Houston Brook. It is also possible that the other perennial streams may support limited fisheries. Impacts to the streams will only occur through limited clearing of the vegetated buffer and temporary impacts related to construction access. The clearing width at Sandy Stream will be approximately 65 feet along each bank and clearing width at the crossing of the other two named resources will be approximately 100 to 200 feet. Some vegetation clearing will be required on both banks at the proposed Sandy Stream and Churchill Brook crossings. The northwestern side of Houston Brook at the proposed crossing is maintained by at least periodic mowing so vegetation clearing should only be required along the southeast bank. A small amount of thermal gain is expected directly after clearing, but these areas will revegetate with a shrub buffer. Crossings of all streams within the aboveground portion of the collector line and the portion of the generator lead constructed with single poles will have clearing limits reduced to at least 50 feet to reduce thermal gain and protect water quality.

14.6 LITERATURE CITED

Alerstam, T. 1990. Bird Migration. Cambridge University Press, Cambridge, United Kingdom.

Arnett, E. B., J. P. Hayes, and M. M. P. Huso. 2006. An evaluation of the use of acoustic monitoring to predict bat fatality at a proposed wind facility in south central Batschelet, E. 1965. Statistical Methods for the Analysis of Problems in Animal Orientation and Certain Biological Rhythms. AIBS Monograph. American Institute of Biological Sciences. Washington, DC.

Baicich, P. J. and C. J. O. Harrison. 1997. A Guide to the Nests, Eggs, and Nestlings of North American Birds. 2nd edition. Academic Press, San Diego, CA. 347pp.

(BCI) Bat Conservation International. 2001. Bats in Eastern Woodlands. http://www.batcon.org/nabcp/newsite/forrep.pdf. Accessed in November 2007.

BCI. http://batcon.org/index.php/all-about-bats/species-profiles.html. Accessed in October 2009.

Buehler, D.A. 2000. Bald Eagle. The Birds of North America, No. 506. The Birds of North America, Inc. Philadelphia, PA. 40 pp.

Burian, S.K., B.I. Swartz, and P.C. Wick. 2008. Taxonomy of *Epeorus frisoni* (Burks) and a key to New England Specie of *Epeorus*. Pages. 277-294 *in* F.R. Hauer, J.A. Stanford, and R.L. Newell (eds.). International advances in the ecology, zoogeography, and systematics of mayflies and stoneflies. University of California Publications in Entomology.

Chamberlain, D.E., M.R. Rehfisch, A.D. Fox, M. Desholm, and S.J. Anthony. 2006. The effect of avoidance rates on bird mortality predictions made by wind turbine collision risk models. Ibis: 148, pp. 198-202.

DeGraaf, R. M. and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History and Distribution. University Press of New England, Hanover, NH. 482pp.

[13] Although streams were searched for evidence of aquatic life during the course of the delineation, specific surveys for fish were not conducted.

deMaynadier, P.G. and M.L. Hunter, Jr. 2000. Road effects on amphibians movements in a forested landscape. Natural Areas Journal. 20:56-56.

Gawler, S.C. and A.R. Cutko, 2010. Natural Landscapes of Maine: A Guide to Natural Communities and Ecosystems. Maine Natural Areas Program, Maine Department Of Conservation, Augusta, Maine. 347pp.

Hawk Migration Association of North America. 2007. http://www.hmana.org/forms.php

Hayes, J.P. 2000. Assumptions and practical considerations in the design and interpretation of echolocation-monitoring studies. Acta Chiropterologica 2(2):225-236.

Hunter, M.L., Jr., A. J. K. Calhoun, and M. McCollough (eds.). 1992. Amphibians and Reptiles of Maine. The University of Maine Press, Orono, ME. 252pp.

Kerlinger, P. 1995. How Birds Migrate. Stackpole Books. Mechanicsburg, PA.

Kurta, A. 1995. Mammals of the Great Lakes Region. The University of Michigan Press, Ann Arbor, MI.

Lowe, W.H. and D.T. Bolger. 2002. Local and landscape-scale predictions of salamander abundance in New Hampshire headwater streams. Conservation Biology 16: 183-193.

(MDIFW) Maine Department of Inland Fisheries and Wildlife. 2005. Maine's Comprehensive Wildlife Conservation Strategy. Augusta, Maine.

MDIFW. 2003. Bald eagle (*Haliaeetus leucocephalus*) Fact Sheet. Augusta, Maine.

MDIFW. 2003. Canada lynx (*Lynx canadensis*) Fact Sheet. Augusta, Maine.

MDIFW. 2003. Roaring Brook Mayfly (*Epeorus frisoni*), fact sheet. Maine Department of Inland Fisheries and Wildlife, Augusta, Maine.

MDIFW. 2002. *Fishes of Maine*. Maine Department of Inland Fisheries and Wildlife, Augusta, Maine.

MDIFW. 1990. Conservation of Inland Fisheries and Wildlife Habitat. Maine Dept. of Inland Fisheries and Wildlife. Augusta, Maine 17pp.

McMahon, J. S. 1990. The biophysical regions of Maine: patterns in the landscape and vegetation. M.S. Thesis, Univ. of Maine, Orono. 120 pp.

Siebenmann, M. and B. Swartz. August 18, 2009. *DRAFT Recommended Survey Protocol for the Roaring Brook Mayfly* (*Epeorus frisoni*). Maine Department of Inland Fisheries and Wildlife, Augusta, Maine.

Swartz, B.I., P.C. Wick, S.K. Burian, and A.D. Huryn. 2004. Status of the Endangered "Roaring Brook Mayfly" (MOHF grant #021-03-09): A Final Report to the Maine Outdoor Heritage Fund Board and Baxter State Park. November 19, 2004

Todd, C. and G. J. Matula, Jr. 2008. Delisting the Bald Eagle in Maine – An Amazing Success Story. Maine Department of Inland Fisheries and Wildlife, Augusta, ME.

Todd C. S., L. S. Young, R. B. Owen, Jr. and F. J. Gramlich. 1982. Food Habits of Bald Eagles in Maine. Journal of Wildlife Management. 46(3): 636-645.

Whitfield, D.P. and M. Madders. 2006. A review of the impacts of wind farms on hen harriers (Circus cyaneus) and an estimation of collision avoidance rates. Natural Research, LTD, Natural Research Information Note 1 (Revised).

Table 14-1: Summary of wetland and water resource impacts. Table lists wetland impacts first followed by direct stream impacts (i.e., culvert crossings) and then stream clearing impacts. These categories are separated in the table by a **bold** line. Several streams have separate direct impacts and clearing impacts. In these instances, the fill impact is listed first in the cell and the clearing impact second.

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
C-101	W079	Wet meadow	P-WL2a		603				
C-2, C-101	W325	Forested	P-WL1c6, P-WL3		1748				
C-207	W099	Wet meadow	P-WL2a		439				
C-208, C-209	W119	Wet meadow	P-WL2a		220				
C-211	W125	Forested	P-WL3		4990				
C-211	W126	Scrub-shrub	P-WL2a		2996				
C-211	W127	Forested	P-WL3		337				
C-213	W139	Scrub-shrub	P-WL2a		139				
C-213 C-219	W140	Forested	P-WL3		1275				
C-212 C-213	W136	Scrub-shrub	P-WL2a		452				
C-212 C-213	W137	Forested	P-WL3		1043				
C-213 C-214	W141	Wet meadow	P-WL2a		336				
C-106	W148	Forested	P-WL1c6, P-WL3		485				
C-106	W149	Forested	P-WL1c6, P-WL3		859				
C-107	W159	Scrub-shrub	P-WL1c6, P-WL2a		1697				
C-107	W155	Scrub-shrub	P-WL1c6, P-WL2a		137				
C-107, C-108	W162	Forested	P-WL1c6		136				

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
C-108	W163	Wet meadow/Open water	P-WL1c6, P-WL2a		563				
C-108	W164	Wet meadow	P-WL2a		5				
C-108	W165	Wet meadow	P-WL1c6		39				
C-108	W166	Scrub-shrub	P-WL2a		65				
C108	W353	Forested	P-WL3		396				
C-108	W354	Forested	P-WL3		149				
C-108	W355	Forested	P-WL3		0	192			
C-109	W167	Scrub-shrub	P-WL2a		941				
C-109	W168	Scrub-shrub	P-WL1c6, P-WL1c3, P-WL2a		229				
C-109	W359	Wet meadow	P-WL2a		220				
C-109	W174	Forested	P-WL1c6, P-WL1c3, P-WL3		100	225			
C-109	W176	Scrub-shrub	P-WL1c6		240				
C-109	W177	Scrub-shrub	P-WL2a		260				
C-301	W246	Wet meadow	P-WL2a		111				
C-113 C-301	W244	Scrub-shrub	P-WL2a		1428				
C-301 C-302	W239	Scrub-shrub/Wet meadow	P-WL2a		323				
C-302, C-303 C-304	W234	Forested	P-WL3		50				
C-306, C-307	W257	Wet meadow	P-WL2a		569				
C-306, C-307 C-308	W263	Forested/Wet meadow	P-WL2a P-WL3		1673				

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
C-307, C-308 C-309	W268	Forested	P-WL3		2938				
C-310, C-311	W282	Scrub-shrub/Wet meadow	P-WL2a		504				
C-312 C-315	W297	Forested	P-WL3		37	146			
C-313 C-314	W312	Forested	P-WL3		846				
C-313 C-314	W309	Wet meadow	P-WL2a		571				
E-404, E-704	W414	Forested/Wet meadow	P-WL2a P-WL3		30	109950	5427		
E-401	W375	Forested	P-WL3			1625	0		
E-401	W376	Forested	P-WL3			350	0		
E-401	W378	Forested	P-WL3			191	0		
E-403, E-703	W396	Wet meadow/Scrub-shrub	P-WL2a			0	374		
E-404, E-703	W405	Forested	P-WL3			1610	277		
E-404	W406	Forested	P-WL3			277	0		
E-404	W407	Forested	P-WL3			8	0		
E-404	W408	Forested	P-WL3			123	0		
E-404, E-703	W409	Wet meadow	P-WL2a			0	341		
E-404	W413	Forested	P-WL3			379	0		
E-404, E-405	W417	Forested	P-WL3			1453	0		
E-405	W419	Forested	P-WL3			1136	0		
E-405	W420	Forested	P-WL3			296	0		
E-405	W425	Forested	P-WL3			2964	0		

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
E-405	W421	Forested	P-WL3			617	0		
E-405	W428	Forested	P-WL3			69	0		
E-405, E-704	W429	Forested	P-WL3			7235	1		
E-405	W430	Forested	P-WL3			455	0		
E-405	W431	Forested	P-WL3			20052	0		
E-405, E-704	W432	Forested	P-WL3			7533	531		
E-405	W433	Forested	P-WL3			8216	0		
E-405	W434	Forested	P-WL3			614	0		
E-405, E-704	W435	Forested	P-WL3			3437	471		
E-405, E-406	W439	Forested	P-WL3			1957	0		
E-406	W440	Forested	P-WL3			5871	0		
E-406, E-704	W441	Forested	P-WL3			13447	2337		
E-406, E-705	W442	Forested	P-WL3			7249	199		
E-406, E-705	W443	Forested	P-WL3			61650	648		
E-406	W445	Forested	P-WL3			98	0		
E-406	W444	Forested	P-WL3			47	0		
E-407	W452	Forested	P-WL3 P-WL1c3			13506	0		
E-407, E-705	W471	Scrub-shrub, Wet meadow	P-WL2a P-WL1c3			0	1302		
E-407	W474	Forested	P-WL1c3			1751	0		
E-407, E-706	W475	Wet meadow	P-WL2a			0	345		
E-407	W476	Forested	P-WL3			897	0		
E-407	W479	Forested	P-WL3			357	0		

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
E-408, E-707	W482	Forested	P-WL3			5287	311		
E-409, E-707	W483	Forested	P-WL3			1038	63		
C-201	37DD	Intermittent	P-WL1c6	40					1, 15" Culvert
C-201	39DD	Intermittent	P-WL1c6	33					1, 15" Culvert
C-201	24DD	Intermittent	P-WL1c6	6					1, 15" Culvert
C-206	18DD	Perennial	P-WL1c6	63					Bridge
C-101	28DD	Perennial	P-WL1c6	20					Bridge
C-101	29DD	Intermittent	P-WL1c6	71					1, 36" Culvert
C-101	30DD	Intermittent	P-WL1c6	54					1, 36" Culvert
C-102	29ED	Perennial	P-WL1c6	46					Bridge
C-102	31ED	Perennial	P-WL1c6	48					Bridge
C-208	06TT	Intermittent	P-WL1c6	37					1, 15" Culvert
C-208, C-209	36EDJ	Intermittent	P-WL1c6	40					1, 15" Culvert
C-209, C-211	08TT	Perennial	P-WL1c6	94					1, 15" Culvert
C-211 C-212	13TT	Intermittent	P-WL1c6	137					Bridge
C-104	27RL	Intermittent	P-WL1c6	48					1, 24" Culvert
C-104, E-303	07TT	Intermittent	P-WL1c6	16 48					1, 24" Culvert
C-104	55AA	Intermittent	P-WL1c6	5					1, 18" Culvert
C-105	69AA	Intermittent	P-WL1c6	27					1, 18" Culvert
C-105, E-303	68AA	Perennial	P-WL1c6	50 52					1, 15" Culvert
C-105, E-303	29RL	Intermittent	P-WL1c6	35 53					1, 18" Culvert
C-105	67AA	Intermittent	P-WL1c6	5					Fill
C-105	40RL	Intermittent	P-WL1c6	44					1, 15" Culvert
C-105	40RL	Intermittent	P-WL1c6	25					Fill

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
C-105	15CF	Intermittent	P-WL1c6	57					1, 24" Culvert
C-106, C-107	88AA	Perennial	P-WL1c6	36					Bridge
C-106, C-107	88AA	Perennial	P-WL1c6	53					Bridge
C-107, C-108	89AA	Perennial	P-WL1c6	33					Bridge
C-107 C-108	35CF	Perennial	P-WL1c6	37					Bridge
C-107, E-304	33CF (Stony Brook)	Perennial	P-WL1c6	76 50					Bridge
C-108, E-304	37CF	Intermittent	P-WL1c6	80 47					1, 36" Culvert
C-109, E-304	40CF (Sandy Stream)	Perennial	P-WL1c6	67 131					Bridge
C-109 E-304	92AA	Intermittent	P-WL1c6	52 27					1, 15" Culvert
C-109 C-110, E-305	45CF	Perennial	P-WL1c6	55					Bridge
C-110, E-401, E-701	96AA	Perennial	P-WL1c6	52 150				16	Bridge
C-111, E-301	58ED	Perennial	P-WL1c6	47 60					1, 15" Culvert
C-111, E-301	37AA	Intermittent	P-WL1c6	38 50					1, 24" Culvert
C-111, E-301	67DD	Intermittent	P-WL1c6	43 55					1, 24" Culvert
C-112	41AA	Intermittent	P-WL1c6	56					1, 15" Culvert

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
C-112, E-301	59ED	Perennial	P-WL1c6	68 63					Bridge
C-112	48DD	Perennial	P-WL1c6	29 42					1, 18" Culvert
C-112 C-113	03AA	Perennial	P-WL1c6	55 82					Bridge
C-112 C-113	07AA	Intermittent	P-WL1c6	53 43					1, 15" Culvert
C-112 C-113	51DD	Perennial	P-WL1c6	56 67					Bridge
C-112 C-113	06AA	Intermittent	P-WL1c6	46 70					1, 15" Culvert
C-112 C-113	54DD	Intermittent	P-WL1c6	57					1, 15" Culvert
C-112 C-113	53DD	Intermittent	P-WL1c6	19					1, 18" Culvert
C-113	60DD	Perennial	P-WL1c6	45					Bridge
C-113	60DD	Perennial	P-WL1c6	60					Bridge
C-113, C-301	60DD	Perennial	P-WL1c6	19					1, 18" Culvert
C-301	10AA	Intermittent	P-WL1c6	16					Fill
C-309	18AA	Intermittent	P-WL1c6	89 114					1, 24" Culvert
C-313 C-315	23AA	Perennial	P-WL1c6	142					1, 24" Open-bottom Culvert
C-313 C-314	30AA	Perennial	P-WL1c6	72					Bridge
C-315	46ED	Intermittent	P-WL1c6	95					1, 15" Culvert
E-303	37ED	Intermittent	P-WL1c6	10					
E-303	05TT	Intermittent	P-WL1c6	24					
E-303	51AS	Intermittent	P-WL1c6	15					
E-303	66AA	Intermittent	P-WL1c6	90				24	

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
E-303, E-701	52AS	Perennial	P-WL1c6	121				29	
E-303, E-701	10CF	Perennial	P-WL1c6	232				70	
E-303, E-701	07KW	Intermittent	P-WL1c6	397				24	
E-303, E-701	06KW	Intermittent	P-WL1c6	53				19	
E-303, E-701	05KW	Intermittent	P-WL1c6	54				17	
E-304	90AA	Intermittent	P-WL1c6	53					
E-304	91AA	Intermittent	P-WL1c6	9					
E-305	10KW	Perennial	P-WL1c6	32					
E-401	14AS	Intermittent	P-WL1c6	72					
E-401	15AS	Intermittent	P-WL1c6	24					
E-401, E-701	11KW	Intermittent	P-WL1c6	130				28	
E-401, E-701	116ED	Perennial	P-WL1c6	675				181	
E-401, E-402, E-702	117ED	Intermittent	P-WL1c6	116				5	
E-401	118ED	Perennial	P-WL1c6	26					
E-401	117ED	Intermittent	P-WL1c6	71				22	
E-401, E-402, E-702	12KW	Intermittent	P-WL1c6	157				43	
E-402	13KW (Churchill Brook)	Perennial	P-WL1c6	228					
E-402	14KW	Perennial	P-WL1c6	121					
E-402	15KW	Perennial	P-WL1c6	92					

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
E-402	126ED	Intermittent	P-WL1c6	110					
E-402, E-403	19TT	Intermittent	P-WL1c6	165					
E-403, E-703	18TT	Intermittent	P-WL1c6	160				24	
E-403	22KW	Intermittent	P-WL1c6	24					
E-403	22TT	Intermittent	P-WL1c6	49					
E-403, E-404	24TT	Intermittent	P-WL1c6	43					
E-403, E-404, E-703	25TT	Intermittent	P-WL1c6	108				17	
E-403, E-404, E-703	26TT	Intermittent	P-WL1c6	163				16	
E-404, E-703	28TT	Perennial	P-WL1c6	185				16	
E-404, E-703	29TT	Perennial	P-WL1c6	254				51	
E-404, E-703	30TT	Intermittent	P-WL1c6	42				9	
E-404, E-703	32TT	Perennial	P-WL1c6	102				16	
E-404	33TT	Perennial	P-WL1c6	37					
E-405	26KW	Intermittent	P-WL1c6	68					
E-406, E-704	35TT	Perennial	P-WL1c6	135				17	
E-405, E-406	36TT	Intermittent	P-WL1c6	51					
E-406	37TT	Intermittent	P-WL1c6	55					
E-406, E-705	39TT	Intermittent	P-WL1c6	176				16	

Plan & Profile Sheet No. or Electrical Plan No.	Resource ID	Resource Classification	Wetland Protection Subdistrict	Stream Impact (l. f.)	Permanent Wetland Fill (sq. ft.)	Wetland Clearing (sq. ft.)	Temporary Wetland Fill (sq. ft.)	Temporary Stream Fill (l. f.)	Comment
E-406	40TT	Perennial	P-WL1c6	373				19	
E-406	28KW	Intermittent	P-WL1c6	75					
E-407	135ED (Houston Brook)	Perennial	P-WL1c6	101					
E-407	07MJ	Perennial	P-WL1c6	245					
E-407, E-706	06MJ	Perennial	P-WL1c6	131				21	
E-407, E-706	134ED	Perennial	P-WL1c6	118				16	
E-407, E-706	132ED	Perennial	P-WL1c6	104				16	
E-407, E-706	131ED	Perennial	P-WL1c6	123				18	
E-407, E-408	03MJ	Intermittent	P-WL1c6	38					
E-408, E-706	130ED	Intermittent	P-WL1c6	110				17	
E-409, E-707	01MJ	Intermittent	P-WL1c6	66				6	
E-409, E-707	128ED	Perennial	P-WL1c6	137				19	
Total				Direct: 2,643 Clearing: 7,553	30,174	282,305	12,626	792	

Appendix 14-1
Wetland Delineation Report

LAND USE REGULATION COMMISSION GRID SCALE WIND ENERGY DEVELOPMENT APPLICATION

APPENDIX 14-1
Wetland and Waterbody Resource Delineation Report
Highland Wind Project
Somerset County, Maine

January 2010 (Revised December 2010)

Prepared For:
Highland Wind LLC
P.O. Box 457
Brunswick, ME 04011

Prepared By:
Stantec Consulting
30 Park Drive
Topsham, ME 04086

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LIST OF APPENDICES

1.0 INTRODUCTION

Stantec Consulting (Stantec) completed wetland and waterbody resource delineations in association with the proposed Highland Wind Project (Project) in Highland and Pleasant Ridge Plantations, Somerset County, Maine (Appendix 1, Project Location Map). Surveys for wetlands and waterbodies were conducted within the Project area that includes the following.

- The ridgeline turbine corridors include the lower slopes of Stewart Mountain, and the peaks of Witham Mountain, Bald Mountain, Burnt Hill, an unnamed peak to the west of Burnt Hill; and Briggs Hill. Each corridor is approximately 1,000 to 3,000 feet wide.
- The approximately 150-foot wide primary ridge connector road corridor extending from the base of Witham Mountain to the base of Burnt Hill. This connector road will provide access between the western and eastern portions of the Project area.
- An approximately 1,000-foot wide access road corridor extending northeast from Long Falls Dam Road to the saddle between the southern part of Stewart Mountain and Witham Mountain. This road will provide direct access to the Project area.
- The electrical collector line system that is internal to the Project area occurs within the access road corridors and as a separate overland segment. Approximately 1,800 feet of the electrical collector line occurs as an overland segment extending east from Witham Mountain to the Project connector road. This corridor is approximately 250 feet wide.
- An approximately 250-foot wide electrical generator lead corridor will extend from the Project collector substation to the existing Central Maine Power Company (CMP) substation located at Wyman Dam in Moscow, Maine. Approximately 2 miles of the generator lead will be a new overland corridor, and approximately 7.5 miles will be co-located with a CMP transmission line.

A larger area initially was delineated, which included the northern summit of Stewart Mountain. Since the northern portion of Stewart Mountain is not part of the currently proposed development area, wetlands, streams, and vernal pools in this area are not discussed in this report.

This report includes descriptions of the wetland resources within the Project area as identified above. These findings provide information normally required for the Land Use Regulation Commission (LURC) and U.S. Army Corps of Engineers (Corps) permitting processes.

2.0 SURVEY METHODS

2.1. WETLAND AND WATERBODY RESOURCE DELINEATION

Surveys for wetland and waterbody resources were conducted under seasonally-appropriate field conditions in the fall of 2008, the spring of 2009, and the fall of 2010. In September and November 2009, an approximately 2.6-mile portion of the generator lead corridor was re-aligned and delineated to accommodate this change. Similarly, in the fall of 2010, an additional area was delineated on the northeast side of Witham Mountain and northwest of Burnt Hill to accommodate design changes. Wetland boundaries under federal and state jurisdiction were determined using the technical criteria described in the Corps *Wetland Delineation Manual*.[1] Wetland boundaries were marked with pink, numbered flagging, and boundary flags were located using Trimble® Pro Series Global Positioning System (GPS) receivers. Stream locations also were recorded using the GPS receivers. Stream and *Wetland of Special Significance* determinations made during the wetland and waterbody resource delineations are based on the criteria in the LURC *Land Use Districts and Standards* (Chapter 10). Identification of these resources was limited to observable conditions within the Project area and available background information.

[1] Environmental Laboratory. 1987. United States Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

2.2. VERNAL POOL SURVEYS

Stantec conducted vernal pool surveys in May 2009, which included the entire Project area with the exception of the realigned portion of the generator lead corridor and the additional area that was delineated in 2010. Surveys within the realigned portion of the generator lead corridor were conducted in April and May 2010. No potential vernal pools were identified within the area that was delineated in 2010. The purpose of these surveys was to evaluate potential vernal pools within the defined Project area. The results of these surveys were derived using standard field techniques and represent observations made during the 2009 amphibian breeding season. The presence, absence, and number of egg masses presented in this report reflect the results of these surveys. Vernal pools are dynamic habitats that vary in water level, vegetative cover, and other physical characteristics during the course of a year, as well as from year to year. In addition, the breeding activity of amphibians, particularly the initiation of breeding, is dependent upon seasonal environmental parameters such as temperature and precipitation. Due to this variability, the presence and number of egg masses may differ between breeding seasons and during the course of a given breeding season. Based upon Stantec's observations of the on-site vernal pools, these survey events were appropriately timed to capture peak amphibian breeding activity.

Vernal pool surveys involved searching for amphibian breeding activity, primarily the presence of egg masses, and use by other vernal pool-dependent species. Information also was collected on the physical characteristics of the pool such as the likely hydro-period (i.e., how long surface water will remain in the pool) and the type of the inlet and outlet. Information on the biological and physical characteristics of the pool then was used to determine if the vernal pool met the criteria of a Significant Vernal Pool as applied by the Maine Department of Inland and Fisheries and Wildlife (MDIFW) and defined in Chapter 335 of the Maine Natural Resources Protection Act. According to this rule, a vernal pool is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanently flowing inlet or outlet and no viable populations of predatory fish. A Significant Vernal Pool contains one or any combination of the following:

- 40 or more wood frog (*Rana sylvatica*) egg masses;
- 20 or more spotted salamander (*Ambystoma maculatum*) egg masses;
- 10 or more blue spotted salamander (*Ambystoma laterale*) egg masses;
- Presence of fairy shrimp (*Eubranchipus* spp.); and/or
- Documented use by a state-listed rare, threatened or endangered species that commonly require a vernal pool to complete a critical portion of their life-history such as Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), ringed boghaunter dragonfly (*Williamsonia lintneri*), wood turtles (*Clemmys insculpta*), ribbon snakes (*Thamnophis sauritus*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*).

In addition, the characteristics of the pools were compared to the regulatory definition of a vernal pool used by the Corps. In Maine, the Corps has the following working definition for vernal pools; however, this definition is not rigidly followed by the Corps or other reviewing federal agencies, including the U.S. Fish and Wildlife Service (USFWS) and the U.S. Environmental Protection Agency.

> Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.

Once a determination was made that a regulatory vernal pool was present, a GPS receiver was used to locate the boundary of the vernal pool envelope.

2.3. AGENCY CONTACTS

Stantec contacted the Maine Department of Environmental Protection (MDEP), Maine Natural Areas Program (MNAP), MDIFW, and USFWS for information regarding documented occurrences of rare, threatened, or endangered species and communities within or in the vicinity of the Project area. The

Maine Historic Preservation Commission (MHPC) was also contacted for information regarding significant historic resources within or in the vicinity of the Project area.

3.0 SURVEY RESULTS

3.1. GENERAL SITE DESCRIPTION

The Project area includes the ridgelines of Stewart Mountain, Witham Mountain, Bald Mountain, Burnt Hill, an unnamed peak to the west of Burnt Hill and Briggs Hill, and portions of the surrounding side slopes and valleys, as well as an approximately 9.5-mile generator lead corridor extending east to Wyman Dam on the Kennebec River. Mountain elevations are generally less than 2,300 feet. The Project area is part of an actively managed industrial forest, and there is evidence of past and present timber harvesting activity on most of the ridgeline and side slopes. The landscape includes previously harvested stands that are in various stages of regeneration, as well as numerous gravel access roads and skidder trails. Communities within the Project area include forested uplands, forested wetlands, scrub-shrub wetlands, emergent wetlands, and streams. The upland forest community is dominated by Beech-Birch-Maple Forest and Spruce-Northern Hardwoods Forest.[2] Both forested communities occur in various stages of succession due to forestry management practices. The canopy of the Beech-Birch-Maple community is dominated by American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), and sugar maple (*Acer saccharum*). Additional tree species include paper birch (*Betula papyrifera*), eastern hophornbeam (*Ostrya virginiana*), red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), and eastern hemlock (*Tsuga canadensis*). The shrub layer includes the above-mentioned tree species, as well as striped maple (*Acer pensylvanicum*), hobblebush (*Viburnum lantanoides*), and beaked hazelnut (*Corylus cornuta*). Dominant herbaceous species include bracken fern (*Pteridium aquilinum*), Canada dwarf-dogwood (*Cornus canadensis*), evergreen wood fern (*Dryopteris intermedia*), and shining clubmoss (*Huperzia lucidula*). The composition of the Spruce-Northern Hardwoods Forest is similar to the Beech-Birch-Maple community and is dominated by red spruce and balsam fir with hardwood species mixed throughout. The understory is more sparsely vegetated with the above-mentioned shrub and herbaceous species.

3.2. DELINEATION AND VERNAL POOL SURVEY RESULTS

The results of the wetland and waterbody delineation are presented in Appendices 2 and 3. Appendix 2 includes wetland delineation maps that depict the location of each delineated wetland and stream identified within the Project area. Data for each of the wetland resources within the Project area are presented in a Resource Matrix Table and a Resource Summary Table (Appendix 3, Tables 3-1 and 3-2). The Resource Matrix Table is a brief summary of the general characteristics of each resource, and the Resource Summary Table provides a more in-depth description of each resource. Resource identification numbers are assigned to each resource and correspond with the same numbers that appear on the wetland delineation maps presented in Appendix 2. A table detailing observed amphibian breeding activity in each vernal pool is presented in Appendix 4. The following is a brief summary of the information presented in these tables.

- Stantec identified a total of 412 wetlands and 175 streams within the Project area. Eight-three wetlands are associated with a stream.
- Stantec identified 44 vernal pools within the ridgeline portion of the Project area and 19 vernal pools along the proposed generator lead corridor. Of these pools, 47 are man-made and occur within either a roadside ditch/excavation or a rut created by heavy equipment. The remaining 16 pools are naturally occurring and support breeding activity by wood frogs and/or spotted salamanders. Three pools met the criteria to be considered Significant Vernal Pools based upon the level of amphibian breeding activity. Forty-five additional potential vernal pools were surveyed, but no breeding activity or vernal pool-associated species were observed at these locations.

[2] Gawler, S.C. and A.R. Cutko, 2004. Natural Landscapes of Maine: A Classification of Vegetated Natural Communities and Ecosystems, Maine Natural Areas Program, Maine Department Of Conservation, Augusta, Maine.

Additional information related to wetlands, streams, and vernal pools is provided in Appendix 5 (Corps wetland delineation data forms), Appendix 6 (Significant Vernal Pool data forms), and Appendix 7 (representative site photographs).

4.0 REGULATORY INFORMATION

4.1. AGENCY CORRESPONDENCE

Full identification of *Wetlands of Special Significance* involves contacting natural resource agencies such as the MNAP, MDIFW, MDEP, USFWS, and MHPC to determine if there are any documented occurrences of rare, threatened, or endangered species and communities, or historic features within or in the vicinity of the Project area. Following is a brief discussion of their responses. Full responses are presented in Appendix 8.

- MNAP indicated that there are no rare or exemplary botanical features documented within the Project area, but this may reflect minimal survey efforts on the part of MNAP and other contributors to MNAP's Biological and Conservation Data System. They did identify the ridge top and upper slopes of Witham and Bald mountains as having the potential to support exemplary natural habitat. As defined by the MNAP, an exemplary natural community/habitat can either be a natural community that is considered rare and has been assigned a State rarity rank of S1 or S2[3] or a commonly occurring natural community with high ecological integrity. The lower slopes of Briggs Hill also were identified as potentially supporting exemplary natural habitat. Finally, MNAP identified four state-listed rare plants that have been documented within a four-mile radius of the Project area. A further discussion of the exemplary natural community on Bald Mountain is presented in Section 14 of this permit application.
- The USFWS responded that although Highland Plantation is not within the proposed critical habitat for the federally-threatened Canada lynx (*Lynx canadensis*), the Project area does occur within the range of this species. Their correspondence also noted the possibility of transient bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) in the area. These two species are protected under the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Peregrine falcons (*Falco peregrinus*) have been documented nesting on Henhawk Ridge, approximately eight miles northeast of the Project area. This species is federally protected under the Migratory Bird Treaty Act, and its breeding population is state-listed as Endangered. Finally, the northern spring salamander (*Gyrinophilus porphyriticus*), a state-listed species of Special Concern, was noted as potentially occurring within the Project area.[4] Stantec conducted site specific surveys for this species and the results of these surveys are provided in *Rare, Threatened, and Endangered Wildlife Survey Report, Highland Wind Project. Somerset County, Maine* (Refer to Appendix 14-3 of this permit application).
- The MDIFW responded that there are several high or moderate value Inland Waterfowl and Wading Bird Habitats in proximity to the Project area. None of these habitats occur within the Project area. The nearest habitat, which is associated with Stony Brook, occurs north of Witham Mountain.
- MDEP identified no Significant Wildlife Habitat in their review of the Project area but had no information about vernal pools. They recommend that qualified professionals survey the area for vernal pools during the appropriate identification period.
- The MHPC indicated that no surveys have been conducted in the Project area, and therefore they have no records of known archaeological sites or historic architectural resources. They recommend that archaeological surveys be conducted at stream crossings and at crossings of surficial deposits associated with glacial outwash/eskers. Archaeological surveys also were recommended at bedrock exposures that might have been potential raw material sources for

[3] S1 = Critically imperiled in Maine because of extreme rarity (five or fewer occurrence or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State; S2 = Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

[4] The USFWS provided rare species information for several miles beyond the Project area. As a result, their response includes references to species not addressed by MDIFW who confined their response primarily to the Project area.

Native Americans. In addition to archaeological surveys, MHPC recommended surveys be conducted to identify historic architectural resources within the Project area. Results of historical resource surveys conducted in the Project area are provided in Section 15 of this permit application.

4.2. STATE AND FEDERAL WETLAND REGULATIONS

LURC and the Corps regulate the wetlands identified within the Project area. Under the provisions of Section 404 of the Clean Water Act, the Corps regulates activities within waters of the United States, which include navigable waters and all their tributaries, adjacent wetlands, and other waters or wetlands where degradation or destruction could affect interstate or foreign commerce. The Corps has issued a Programmatic General Permit (PGP) for the State of Maine that merges the federal and state permit review process for many projects. In Maine, wetlands and waterbodies, as well as other protected natural resources, in unorganized plantations and townships are regulated under LURC's Land Use Districts and Standards (Chapter 10). The following provides information regarding LURC's zoning subdistricts. The purpose of this system of subdistricts is to protect valuable resources such as waterbodies, wetlands, wildlife habitat and mountain areas above 2,700 feet, and to prevent conflicts between incompatible land uses.

Development and Management Subdistricts
LURC's jurisdiction includes 10 development subdistricts and 3 management subdistricts. This Project area includes the General Management Subdistrict (M-GN). The M-GN subdistrict includes those areas that LURC determined were appropriate for forestry or agricultural management activities, but that did not need the level of protection afforded by the Highly Productive Management Subdistrict (M-HP) or the Natural Character Management Subdistrict (M-NC). The M-GN subdistrict also includes those areas that do not fit within any other subdistrict.

Protection Subdistricts
Within LURC jurisdiction, the level of regulatory review for wetland alterations depends upon the size of the proposed impact and the **Wetland Protection Subdistrict (P-WL)** involved. Generally, projects that alter less than 4,300 square feet of P-WL2 or P-WL3 wetlands are exempt from the Tier permitting process. For all other projects, three categories of review exist: Tier 1, 2 and 3.

- Tier 1 reviews are limited to projects that alter between 4,300 square feet and 14,999 square feet of P-WL2 or P-WL3 wetlands.
- Tier 2 reviews are limited to projects that alter between 15,000 square feet and 43,560 square feet (1 acre) P-WL2 or P-WL3 wetlands provided the wetlands do not contain critically imperiled (S1) or imperiled (S2) natural communities.
- Tier 3 reviews are for projects that alter any area of a P-WL1 wetland; between 15,000 square and 43,559 square feet of P-WL2 or P-WL3 wetlands that contain critically imperiled (S1) or imperiled (S2) natural communities; or 43,560 square feet (1 acre) or more of a P-WL2 or P-WL3 wetlands.

Alterations of P-WL1 wetlands may be eligible for Tier 1 or 2 review if LURC determines that the activity will have no undue adverse impact on the freshwater wetlands or other protected natural resources present. The applicant must specifically request that LURC review the project's eligibility in order to reduce the level of regulatory review.

Based upon the available LURC *Land Use Guidance Map for Highland Plantation,* the *Land Use Guidance Map for Pleasant Ridge Plantation*, and fieldwork conducted by Stantec, the Project area includes P-WL1, P-WL2 and P-WL3 wetlands. Stantec identified 95 *Wetlands of Special Significance* within the Project area. Of these *Wetlands of Special Significance*, 46 wetlands occur solely within the P-WL1 subdistrict and 49 wetlands include the P-WL1 subdistrict in conjunction with one or both of the other wetland subdistricts. In addition, the 175 identified streams would be considered *Wetlands of Special Significance* and occur within the P-WL1 subdistrict. The remaining 317 wetlands identified within the Project area occur within either the P-WL2 or P-WL3 subdistrict or within some combination of these two subdistricts.

LURC jurisdiction also includes 13 other protection subdistricts. The other applicable subdistricts for this Project are the Shoreland Protection Subdistrict and the Flood Prone Area Subdistrict.

The **Shoreland Protection Subdistricts (P-SL)** are intended to protect water quality, habitat for plants, fish and wildlife, and scenic and recreational opportunities. There are two defined shoreland protection subdistricts, P-SL1 and P-SL2; both of which occur within this Project area.

- The P-SL1 is defined as those areas within 250 feet of the normal high water mark, measured as a horizontal distance landward of such high water mark, of (a) tidal waters, and (b) flowing waters downstream from the point where such waters drain 50 square miles or more.
- The P-SL2 is defined as those areas within 75 feet measured as a horizontal distance landward of the normal high water mark of stream channels upstream from the point where such channels drain 50 square miles, the upland edge of those coastal and inland wetlands as defined in LURC Chapter 10, and the normal high water mark of bodies of standing water less than 10 acres in size, excluding bodies of standing water that are less than 3 acres in size and that are not fed or drained by a flowing water.

Depending upon the type of activities, projects located within a P-SL subdistrict may require a permit from LURC. Those uses that require a permit are described in Section 10.23, L of LURC's *Land Use Districts and Standards*. Wind energy development within designated expedited wind energy development areas is an allowed use that requires a permit from LURC.

Within the Project area, only the Kennebec River has an associated 250-foot P-SL1. The wetlands and streams identified within the Project area would have an associated 75-foot P-SL2. This would include 14 of the larger watercourses such as Little Michael River, Stony Brook, Sandy Stream, Churchill Brook, and Houston Brook.

The **Flood Prone Area Protection Subdistrict (P-FP)** is intended to reduce the damage and cost of flooding within flood prone areas and to comply with the National Flood Insurance Program. Those areas identified and mapped by the Federal Emergency Management Agency as areas of special flood hazard (Zones A, AE, A1-30, VE) are those that fall within the P-FP subdistrict. Depending upon the type of activities, projects located within the P-FP subdistrict may require a permit from LURC. Those uses that require a permit are described in Section 10.23, C of LURC's *Land Use Districts and Standards*. Road construction is one allowed use that requires a permit from LURC.

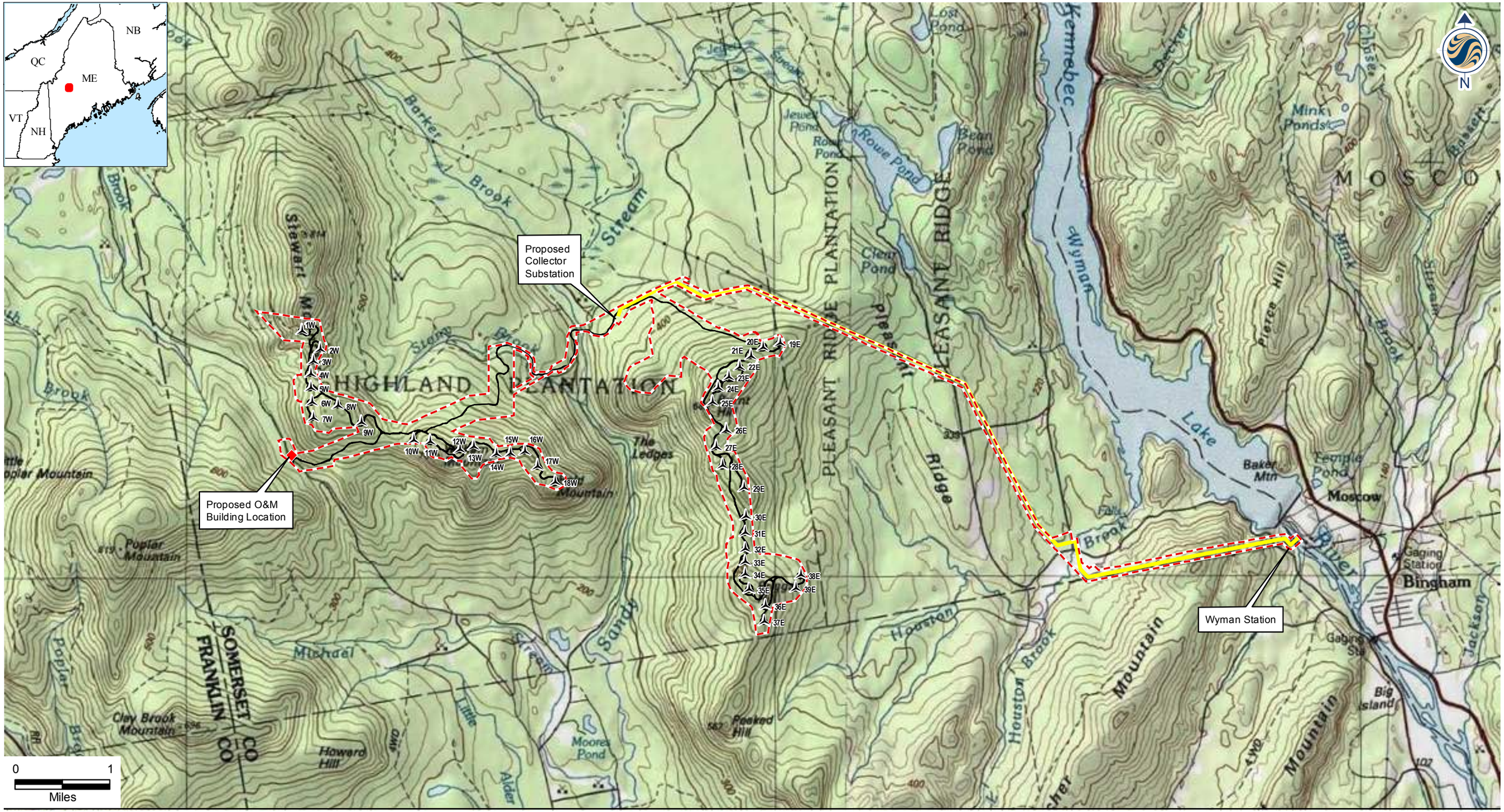
Within the Project area, the P-FP subdistrict is limited to the floodplains along Sandy Stream and Houston Brook. This encompasses 18 delineated wetlands within the generator lead corridor.

Regulatory Summary

The Project area includes one management subdistrict, M-GN, and three protection subdistricts, P-WL, P-SL and P-FP. The M-GN subdistrict encompasses the entire Project area exclusive of those areas within one of the three protection subdistricts. Each of the identified stream and wetland resources occurs within the Wetland Protection Subdistrict, P-WL. In addition, the identified wetlands and streams have an associated 75-foot Shoreland Protection Subdistrict, P-SL2. The Kennebec River is the only resource within the Project area that has an associated P-SL1. Eighteen of the delineated wetlands located near Sandy Stream and Houston Brook occur within the mapped Flood Prone Area Protection Subdistrict, P-FP.

Any proposed development is subject to the provisions and regulatory requirements of these respective subdistricts as outlined in the *Land Use Districts and Standards* (Chapter 10). If the proposed project is a "prohibited use" for the given subdistrict(s), an applicant can petition LURC for a change in subdistrict boundaries or zoning classification to allow for new uses. Such a zoning change can only be approved if it is (1) consistent with LURC's Comprehensive Land Use Plan, (2) satisfies a demonstrated need in the community or area, and (3) would have no undue adverse impacts on resources or uses [12 M.R.S.A. §685-A(8-A)].

Appendix 1
Site Location Map



Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME USA
04086
Phone (207) 729-1199
Fax: (207) 729-2715
www.stantec.com

Legend

- Turbine
- Approximate Project Area
- Proposed Access Road and Turbine Pads
- 115Kv Generator Lead

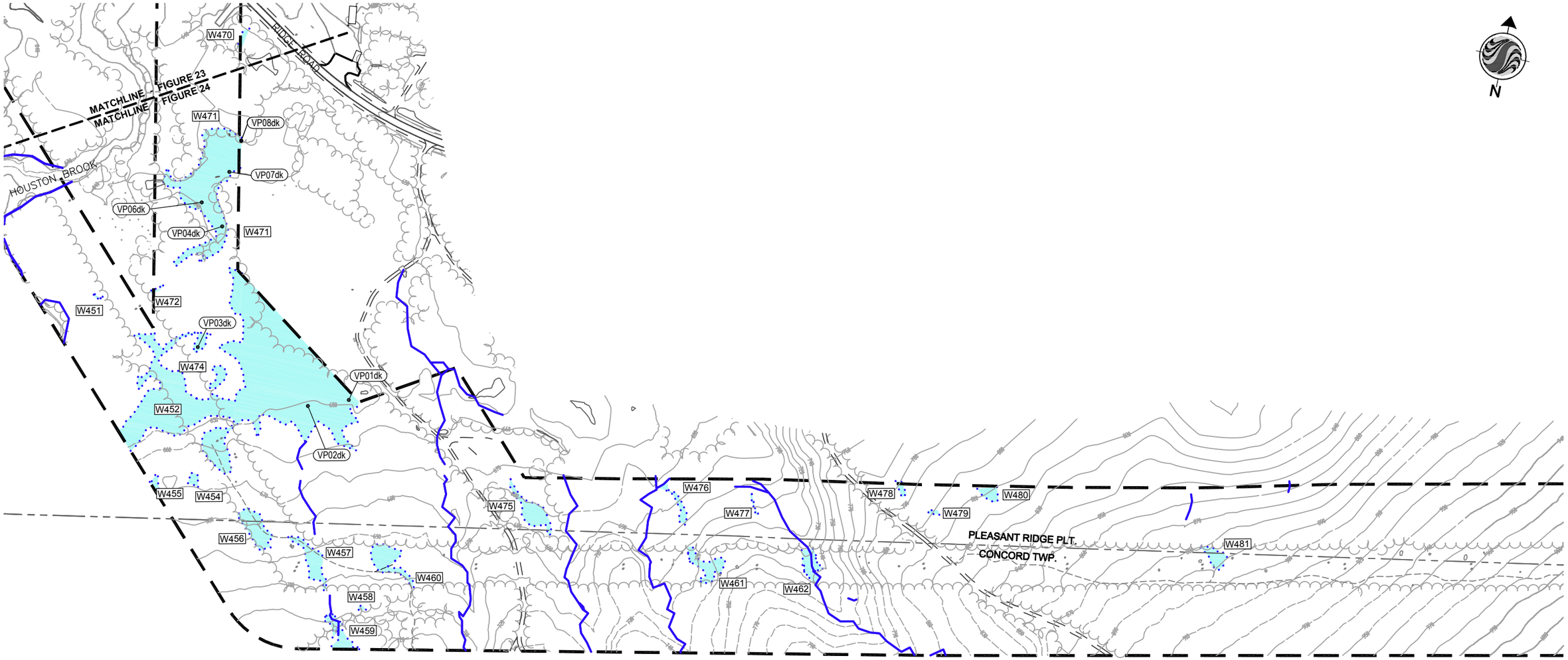
00385-F001-11x17-USGS-Locus-Turbines.mxd

Client/Project
Highland Wind, LLC
Highland Wind Project
Highland Plantation, Maine

195600385

Figure No.
1

Title
Project Location Map
November 12, 2009
Revised October 25, 2010



Stantec Consulting Services Inc.
30 Park Drive
Topsham ME U.S.A.
04086
Tel. 207.729.1199
Fax. 207.729.2715
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Legend

- Wetland identified by Stantec
- Vernal pool identified by Stantec
- MDEP stream identified by Stantec
- Delineation limits
- Trail
- Unpaved road
- W000 Resource identification
- VP01 Vernal pool identification
- SVP01 Significant vernal pool identification

Notes

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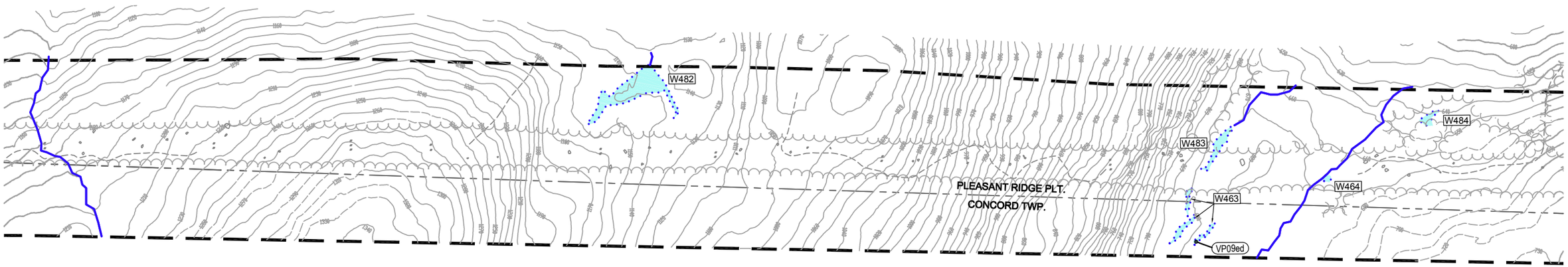
Client/Project 195600385
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
24

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



N

0 300' 600'

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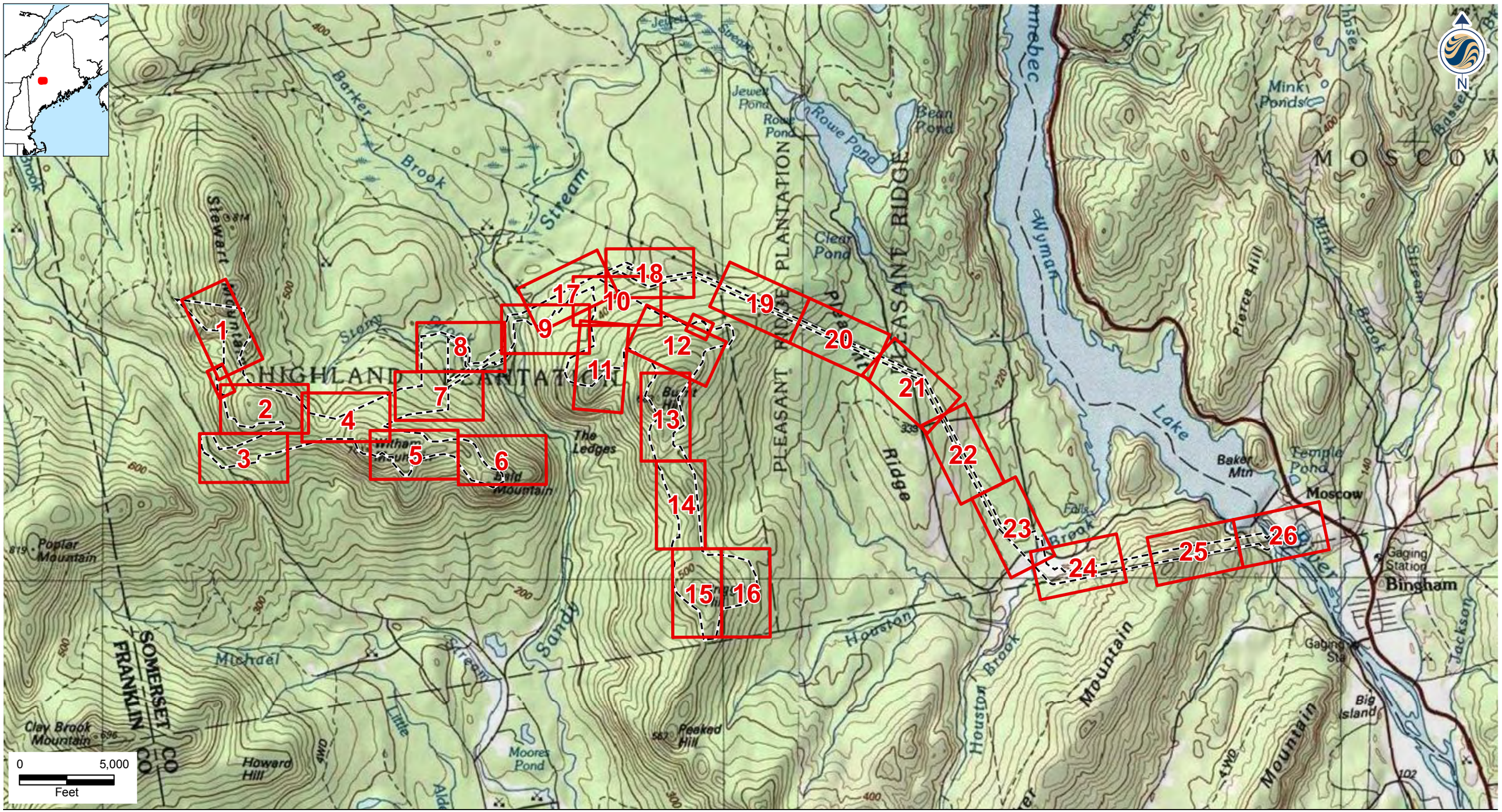
Client/Project 195600385
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
25

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

Appendix 2
Resource Maps



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Legend

- Map Extents
- Project Limits

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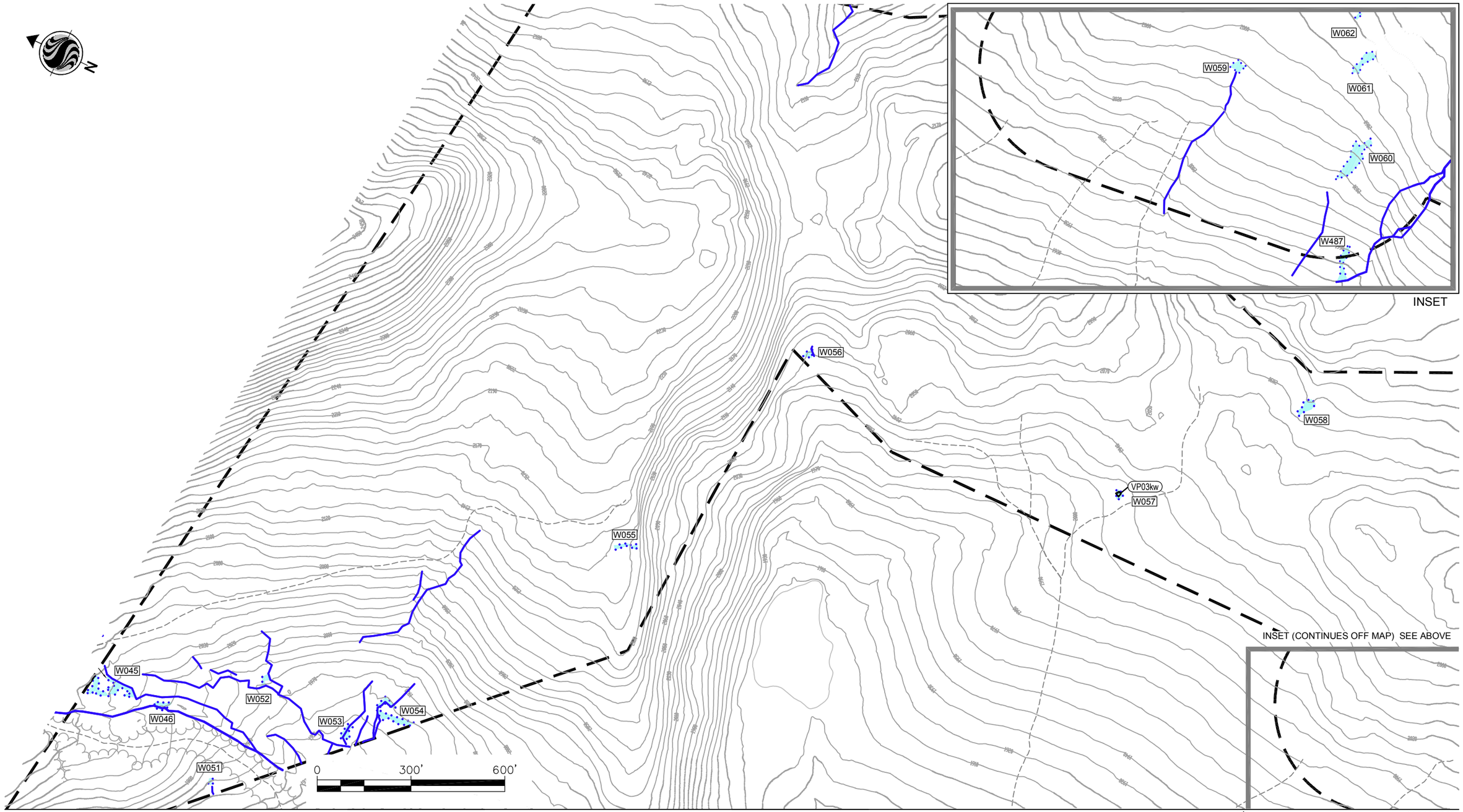
Figure No.
Key

Title
Wetland Delineation Map
December 11, 2009 (rev. Oct. 2010)

00385-dkey-wetmapsFINAL.mxd



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Client/Project
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

195600385

Figure No.
1

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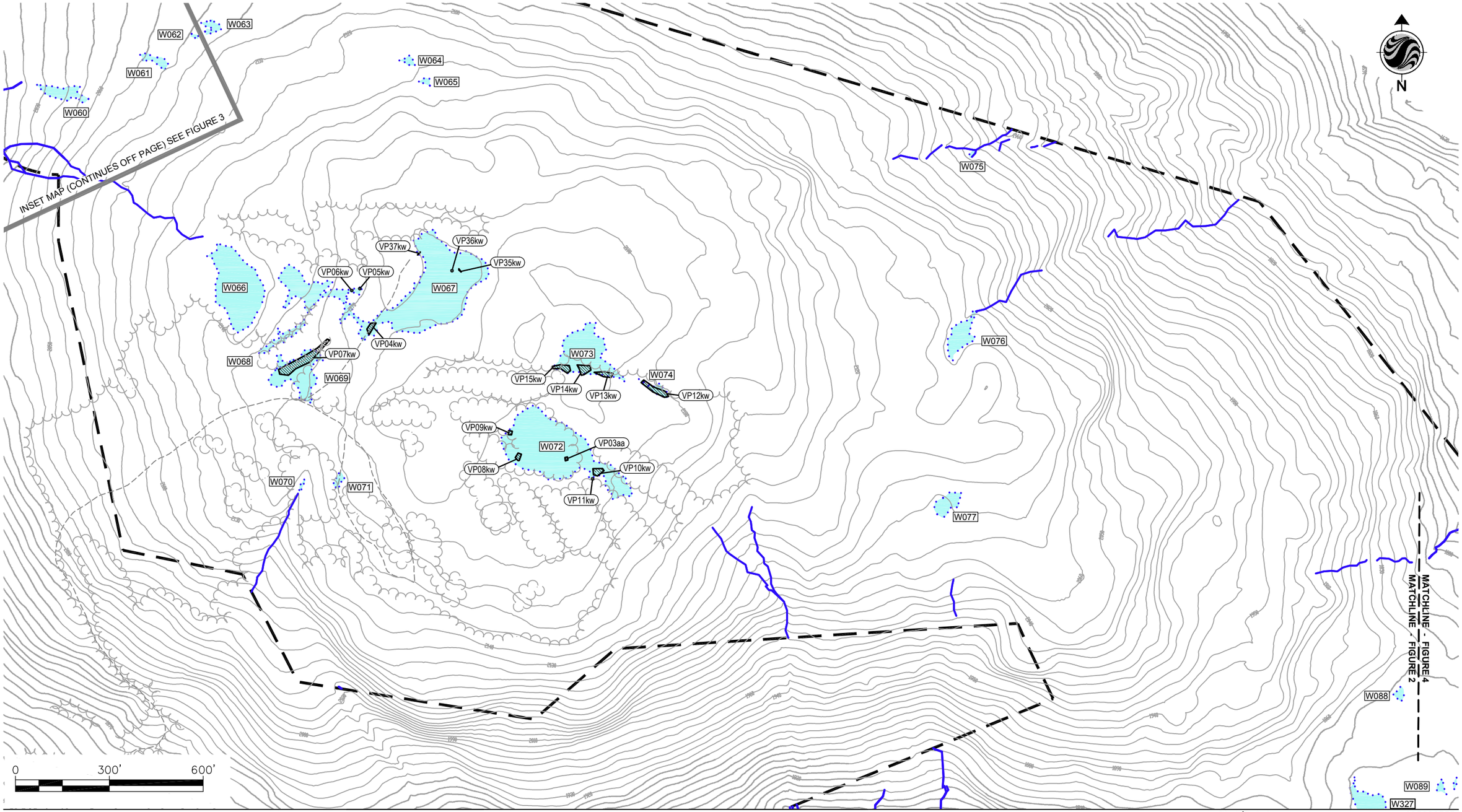
December 11, 2009 (rev. Oct. 2010)



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Client/Project 195600385
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
2

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

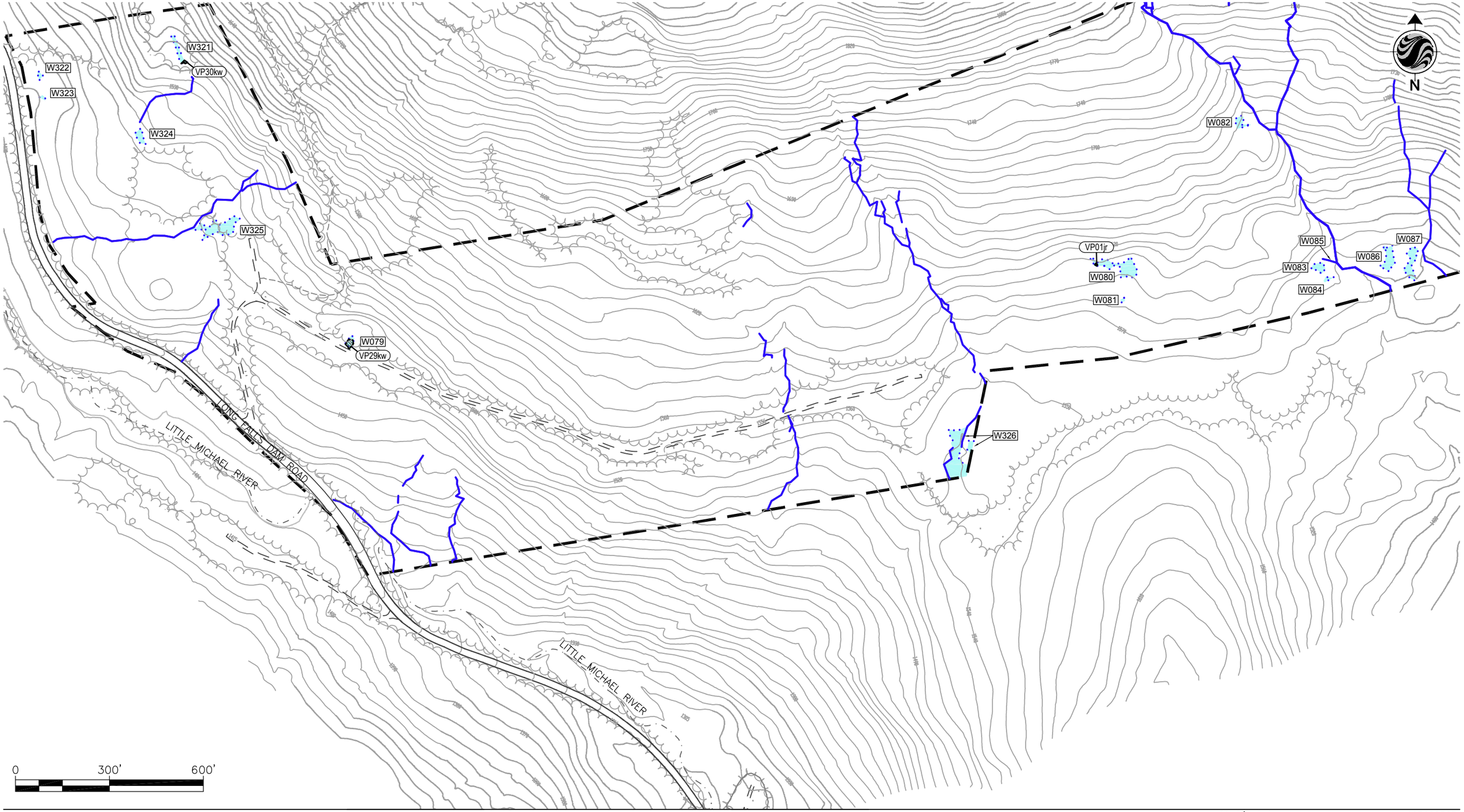

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Figure No.
3

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

N

W092
W093
W091
W088
W094
W089
W090
W327
W096
W097
W095
W098
W108
W107
W106
W105
W104
W103
W099
W102
W100
VP01aa
W101
W111
W112
W109
W110
W113
W114
W115
W117
W116
W118
W120
W119

MATCHLINE - FIGURE 4
MATCHLINE - FIGURE 2

MATCHLINE - FIGURE 4
MATCHLINE - FIGURE 5

WITHAM MOUNTAIN

0 300' 600'

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Highland Wind LLC
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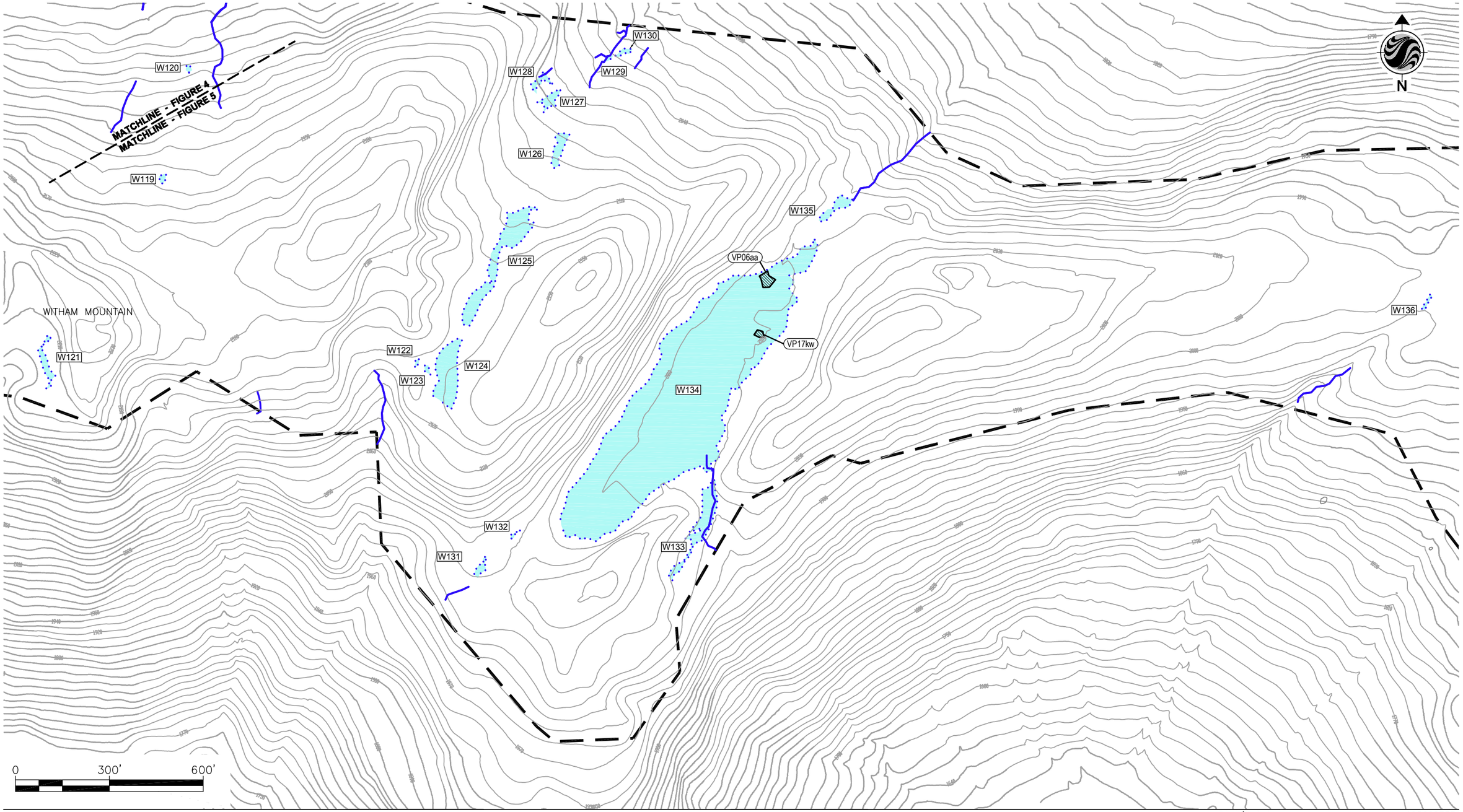
Highland Plantation, Maine

Figure No.
4

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Plantation, Maine

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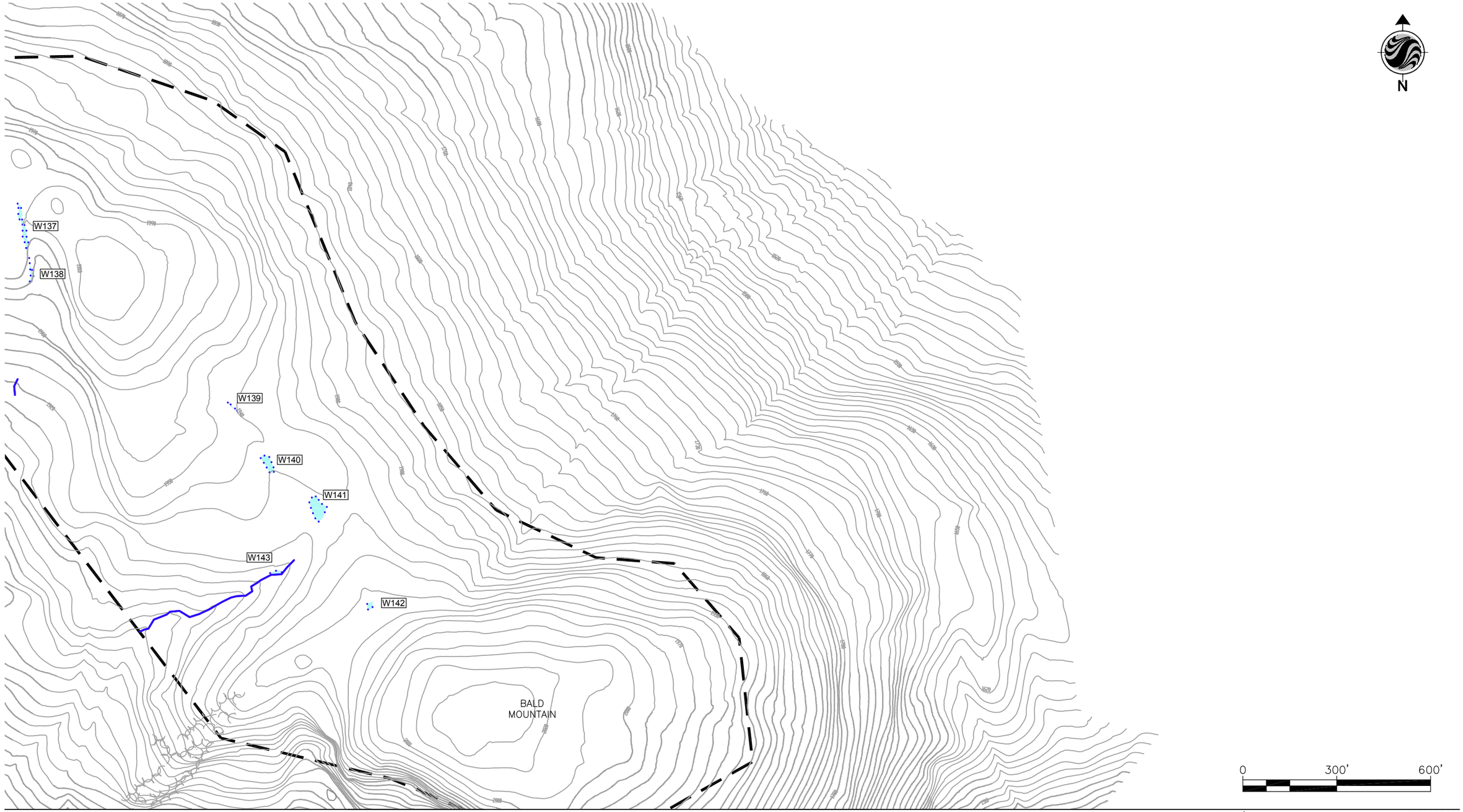
Figure No.
5

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Wind LLC
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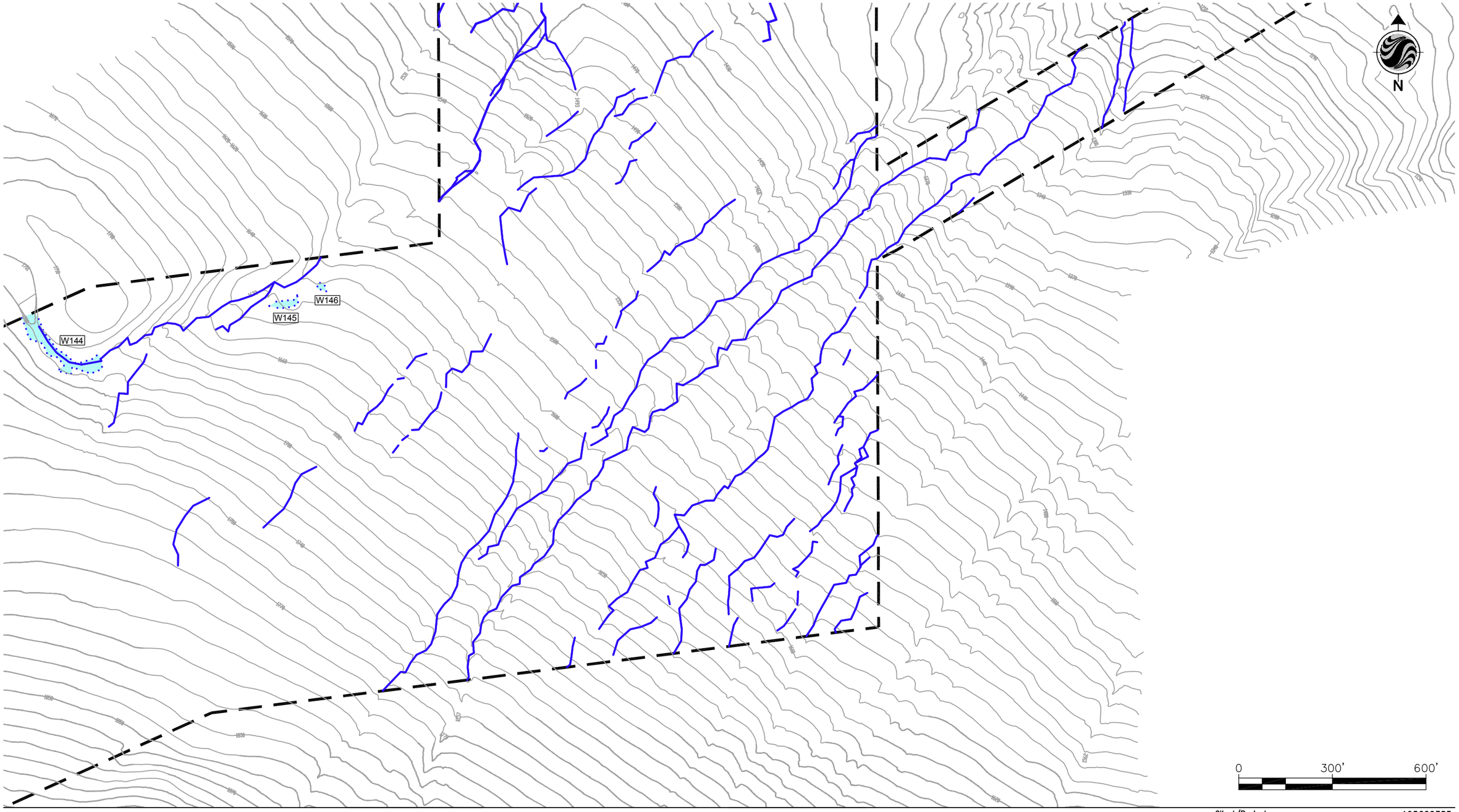
Figure No.
6

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
7

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

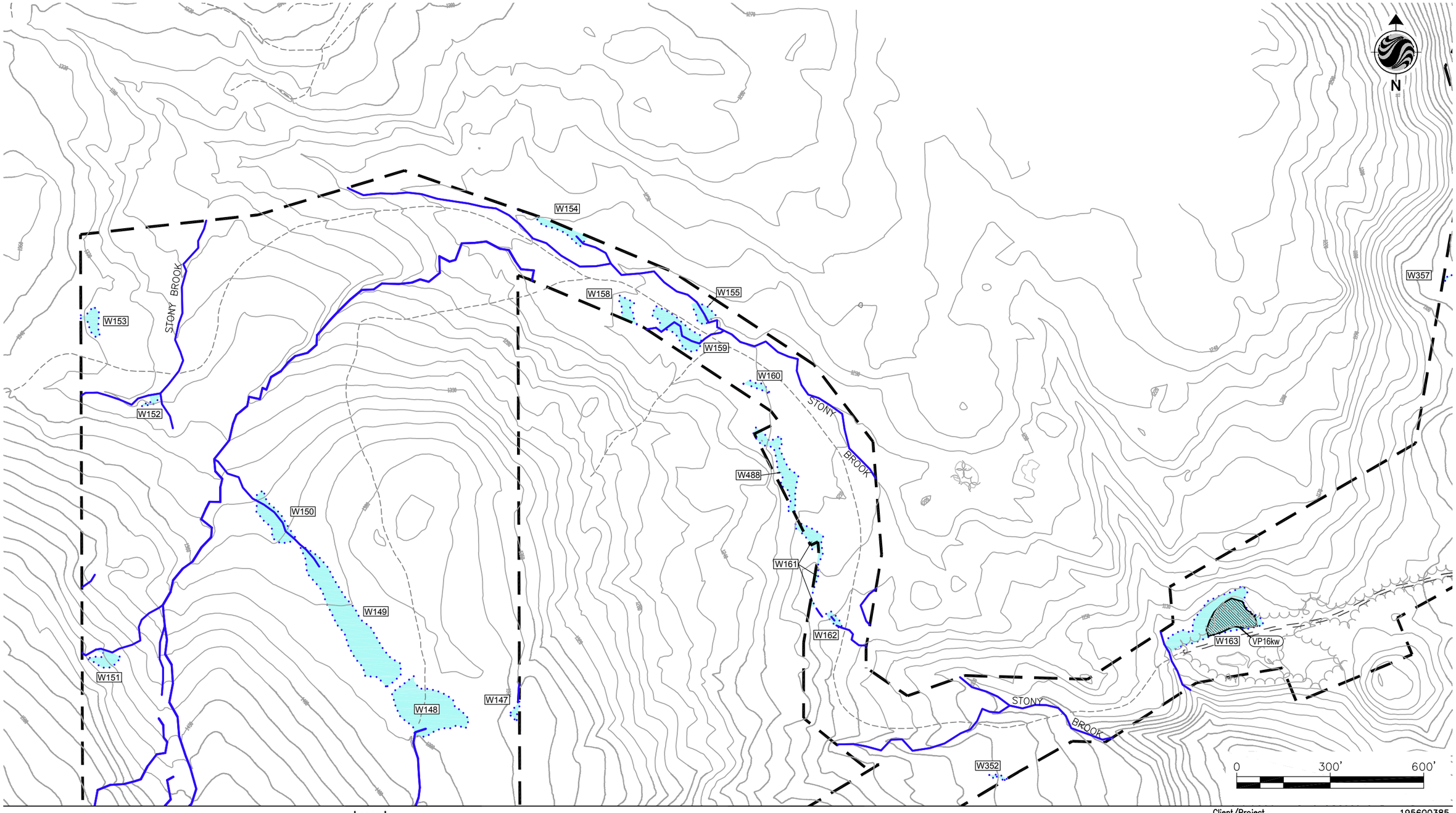

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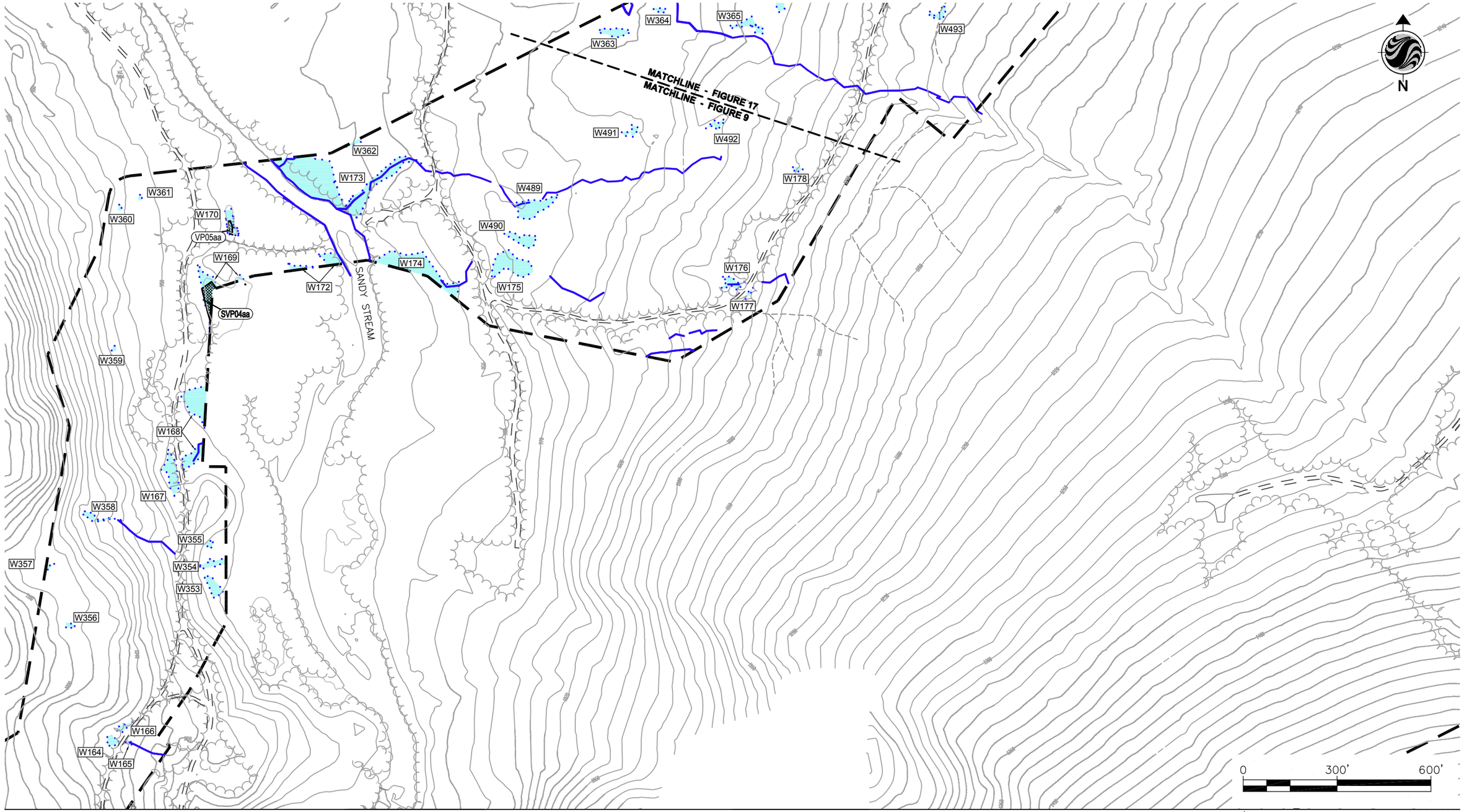
Figure No.
8

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Plantation, Maine

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Figure No.
9

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

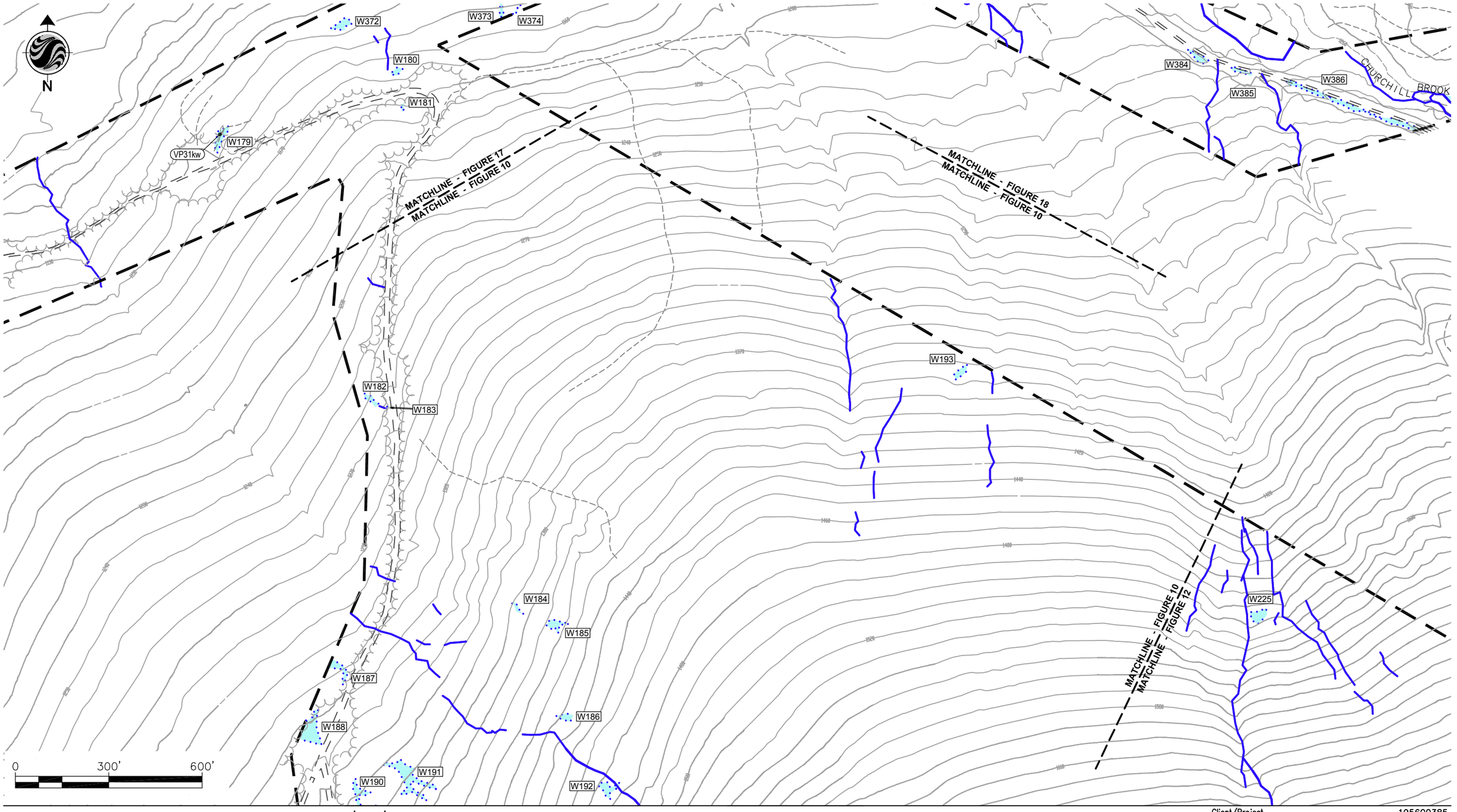

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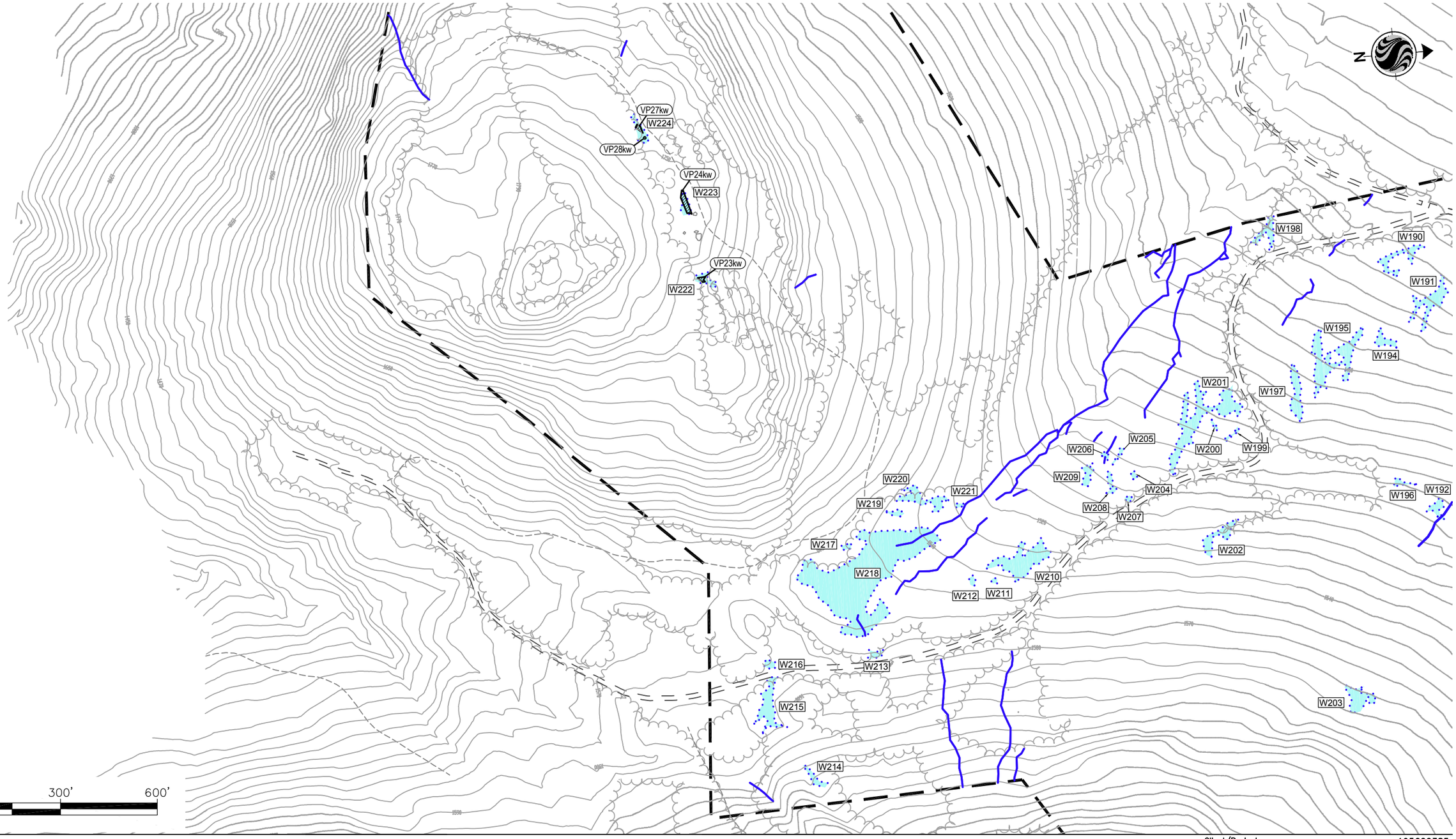
Figure No.
10

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Wind Project
Highland Plantation, Maine

Figure No.
11

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

MATCHLINE - FIGURE 10
MATCHLINE - FIGURE 12

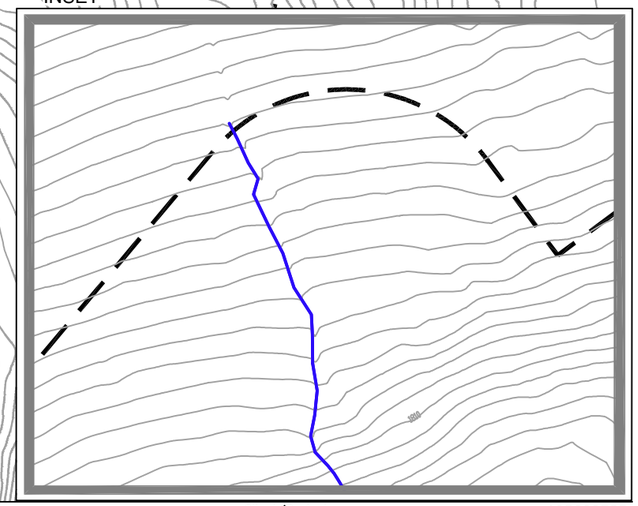
INSET (CONTINUES OFF MAP) SEE BELOW

W225 W227 W228 W229 W230 W231 W232 W233 W234 W235 W236 W237 W238 W239 W240 W241 W242 W243 W244 W245 W246 W247

N

0 300' 600'

INSET



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Client/Project
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Highland Plantation, Maine

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Figure No.
12

Title
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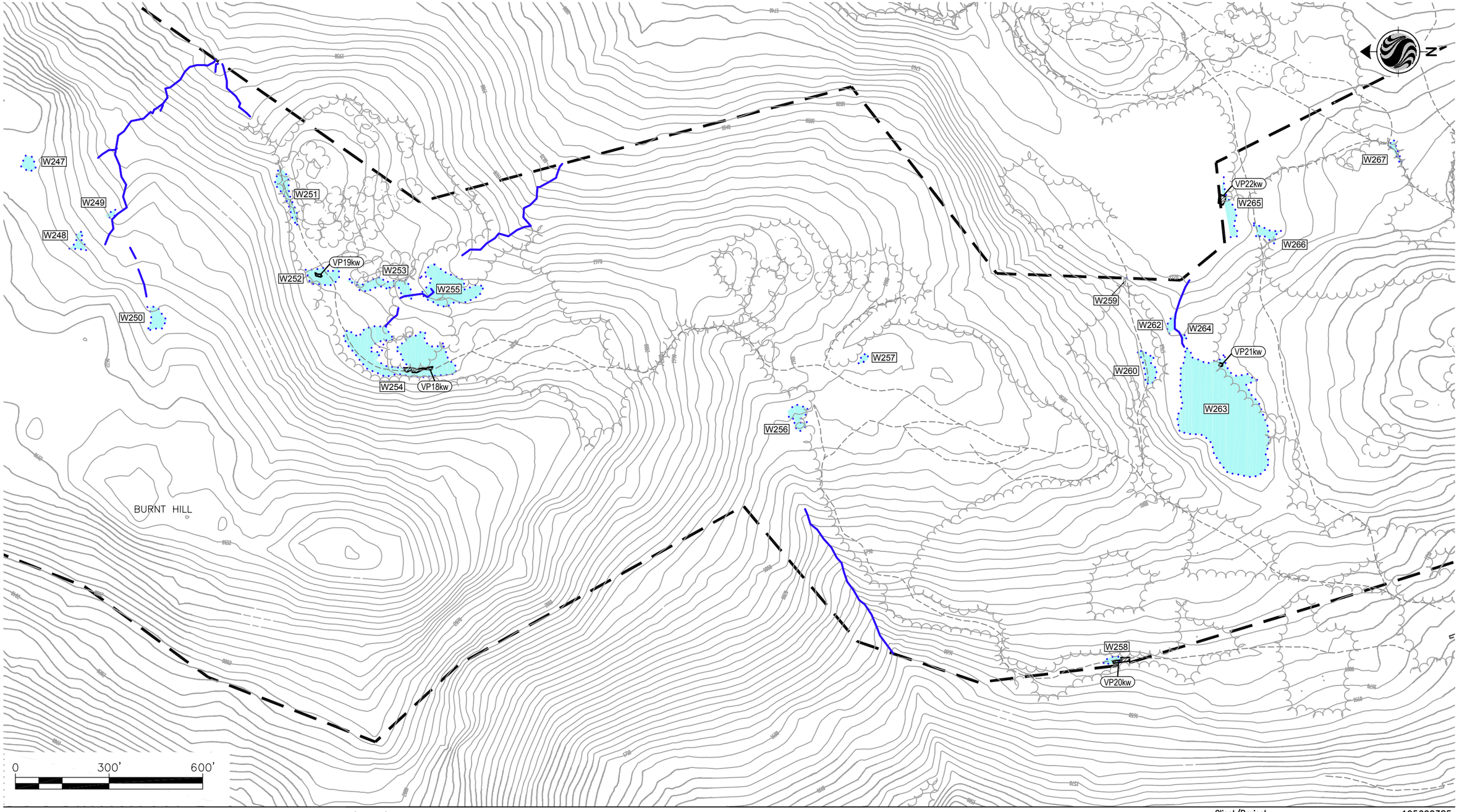
December 11, 2009 (rev. Oct. 2010)



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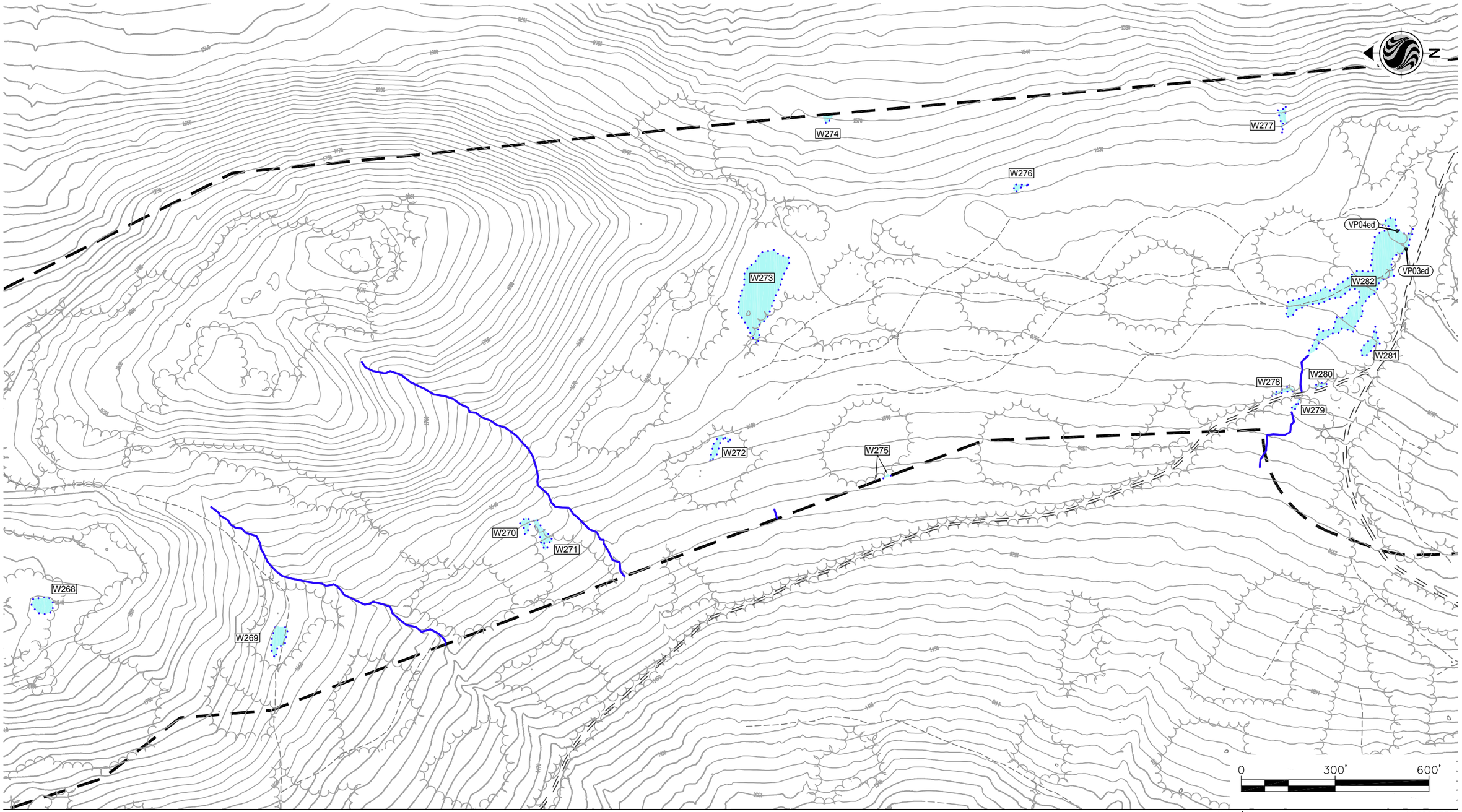
Highland Wind Project
Highland Plantation, Maine

195600385

Figure No.
13

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
14

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

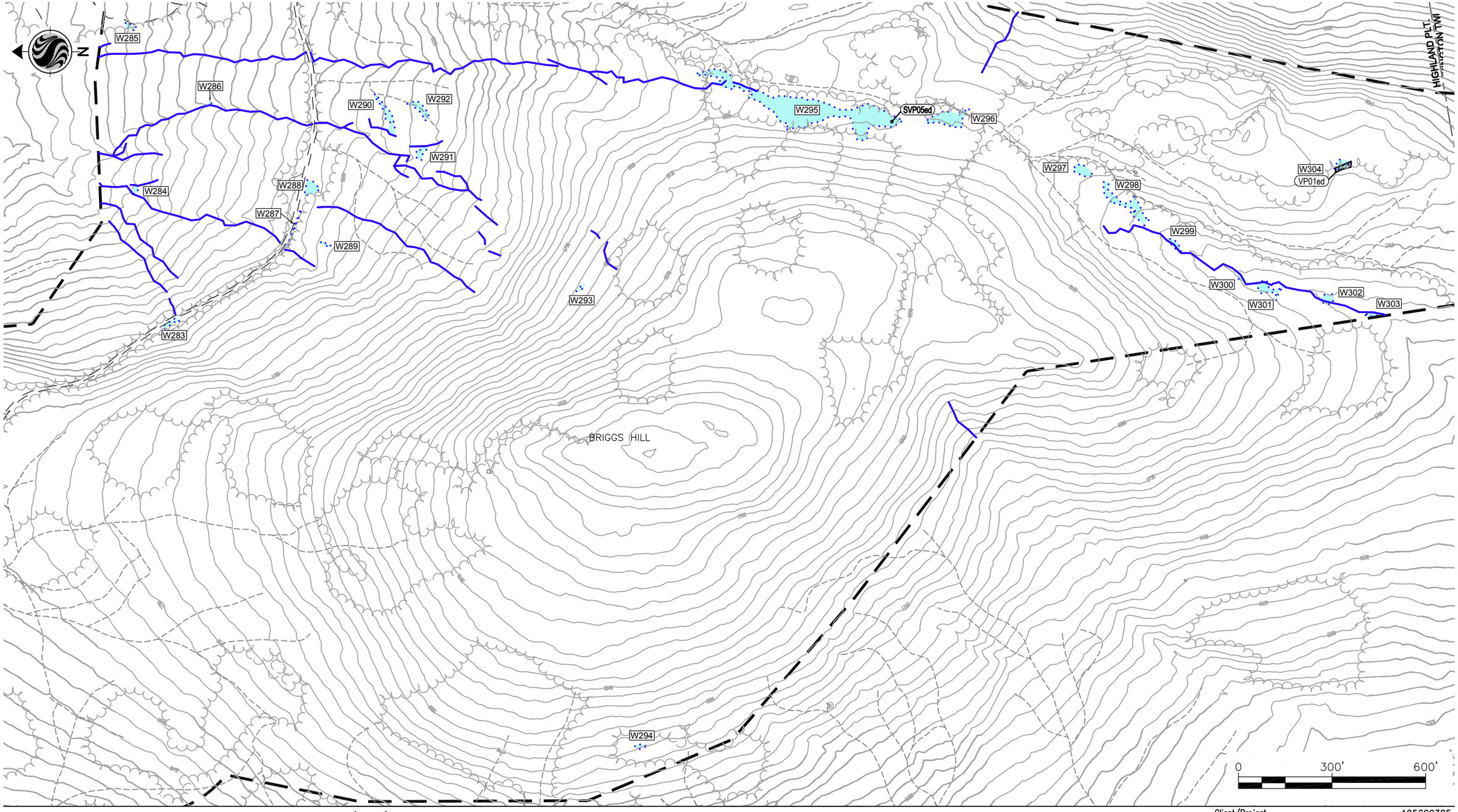

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Figure No.
15

Title
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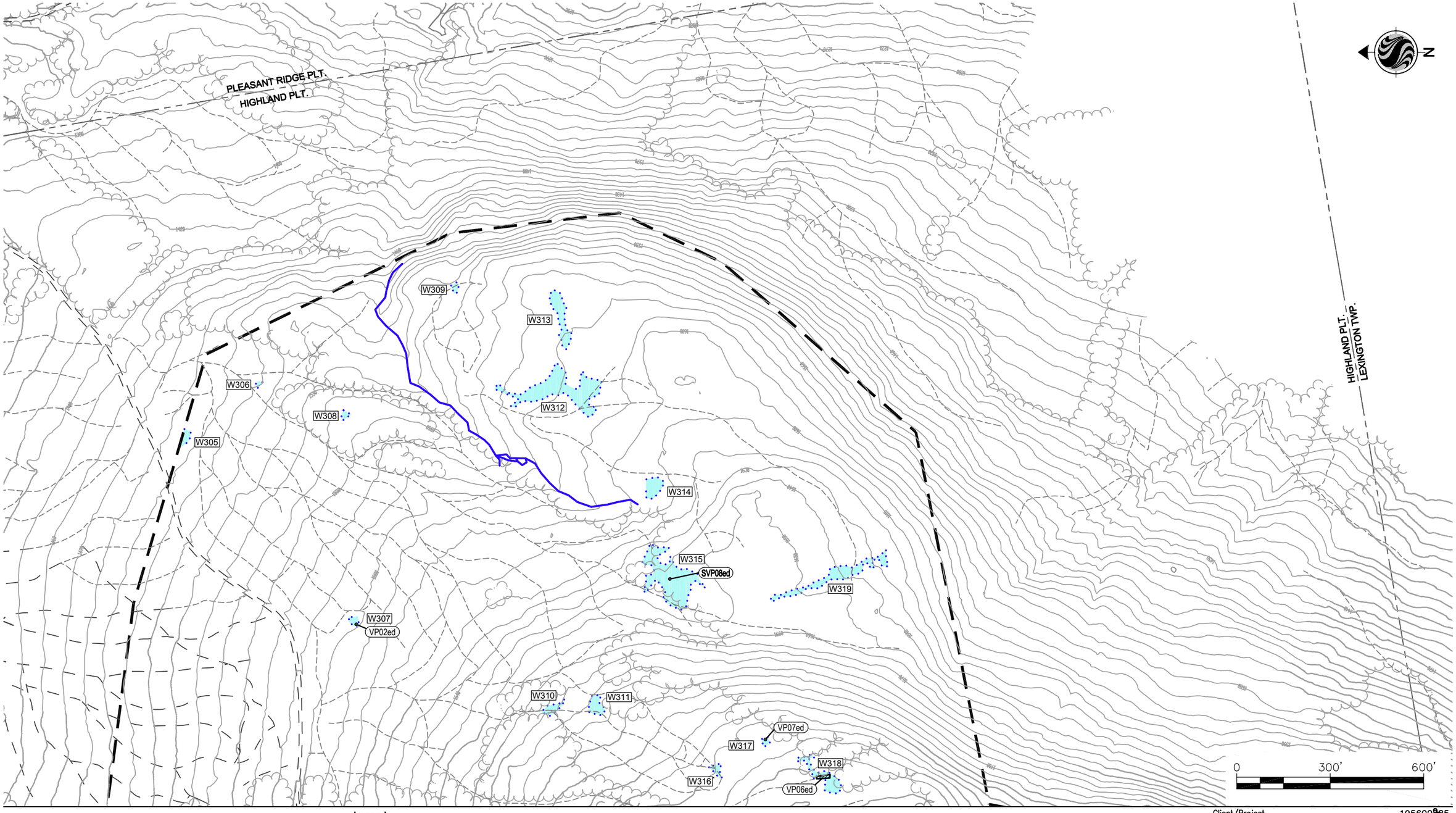
December 11, 2009 (rev. Oct. 2010)



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Legend

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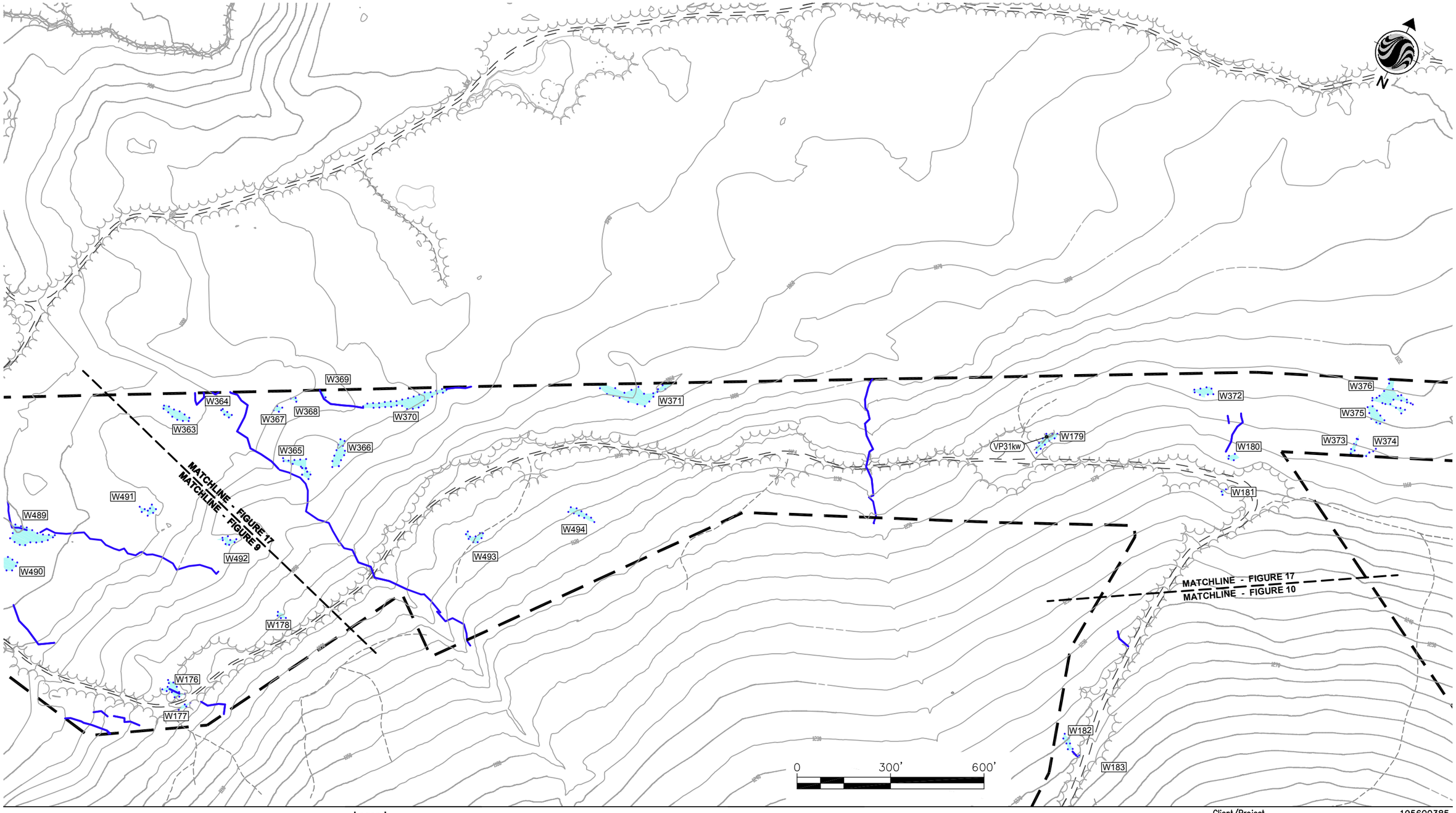
Figure No.
16

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Wind Project
Highland Plantation, Maine

Figure No.
17

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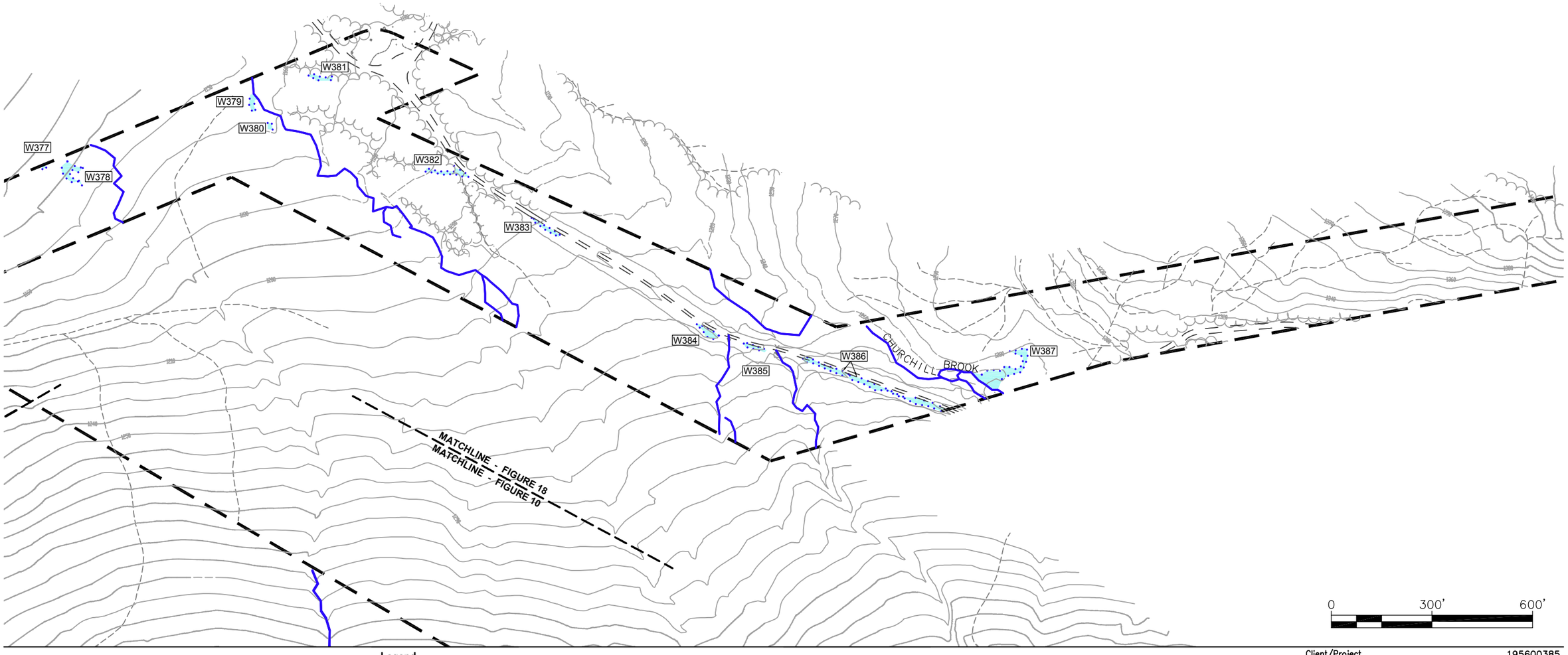
December 11, 2009 (rev. Oct. 2010)



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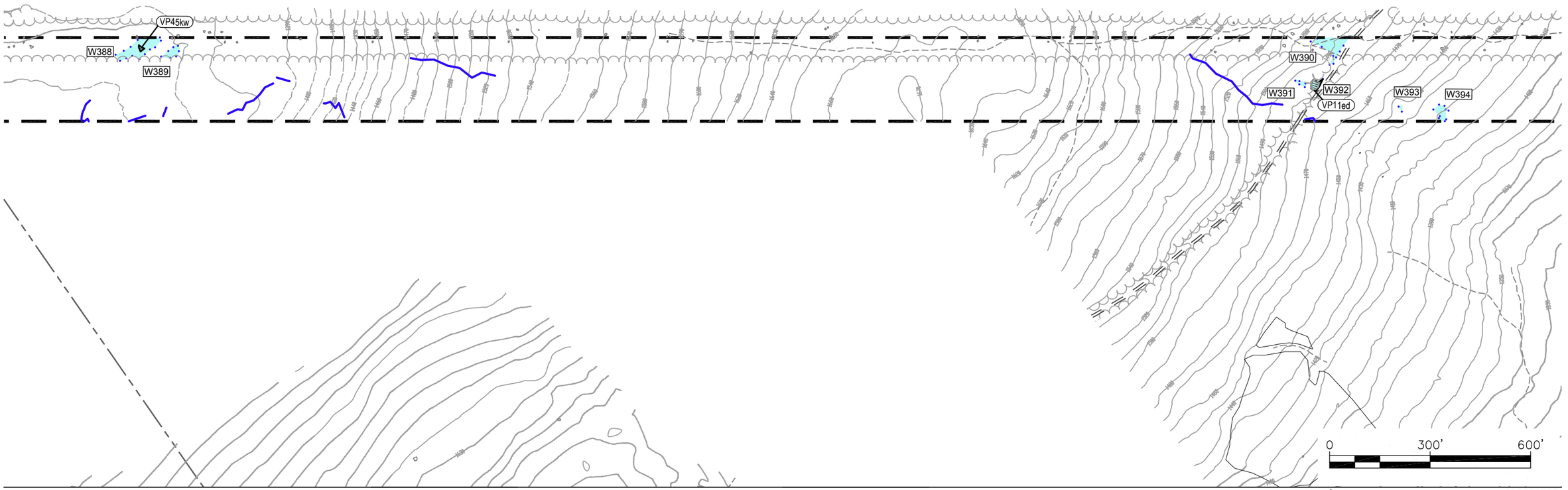
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
18

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Plantation, Maine

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Figure No.
19

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

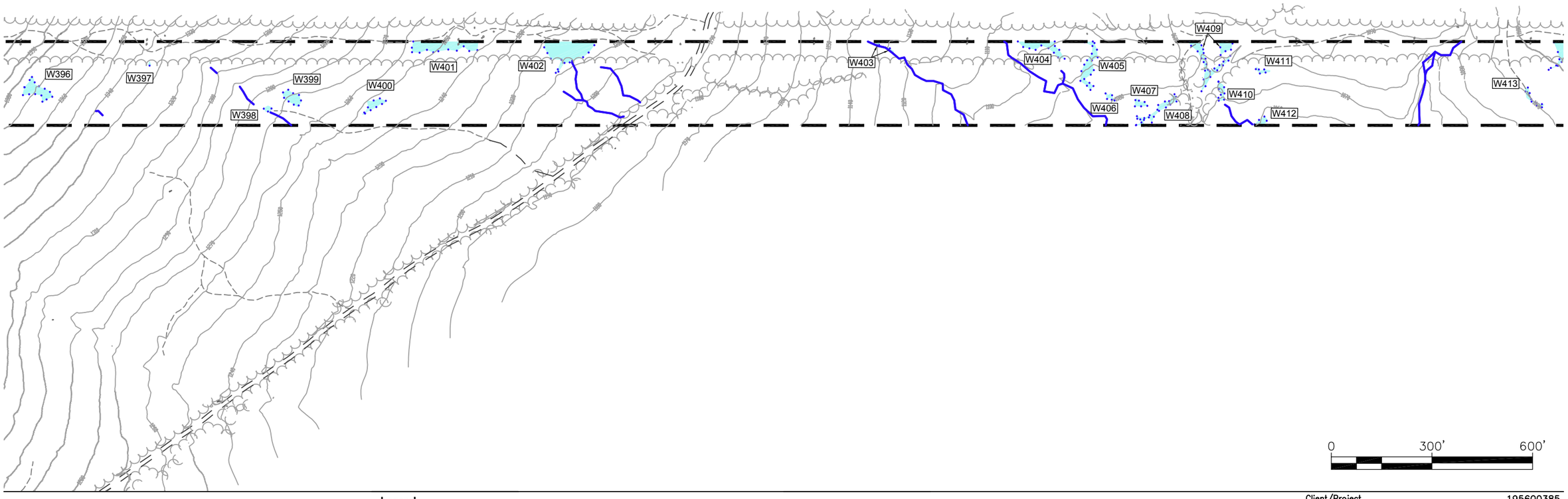

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Figure No.
20

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Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

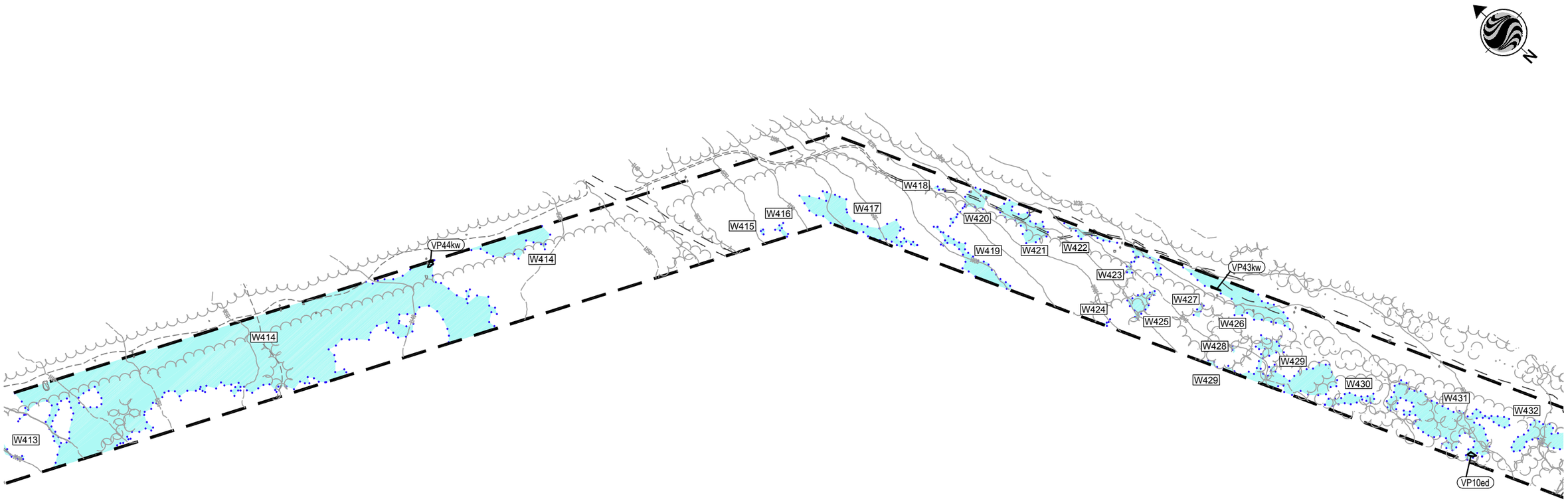

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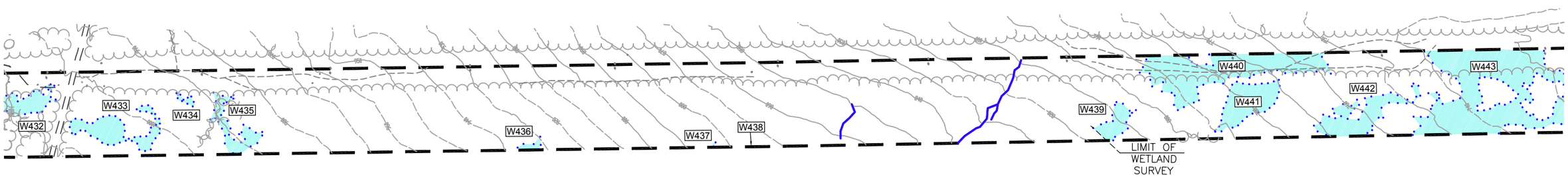
Figure No.
21

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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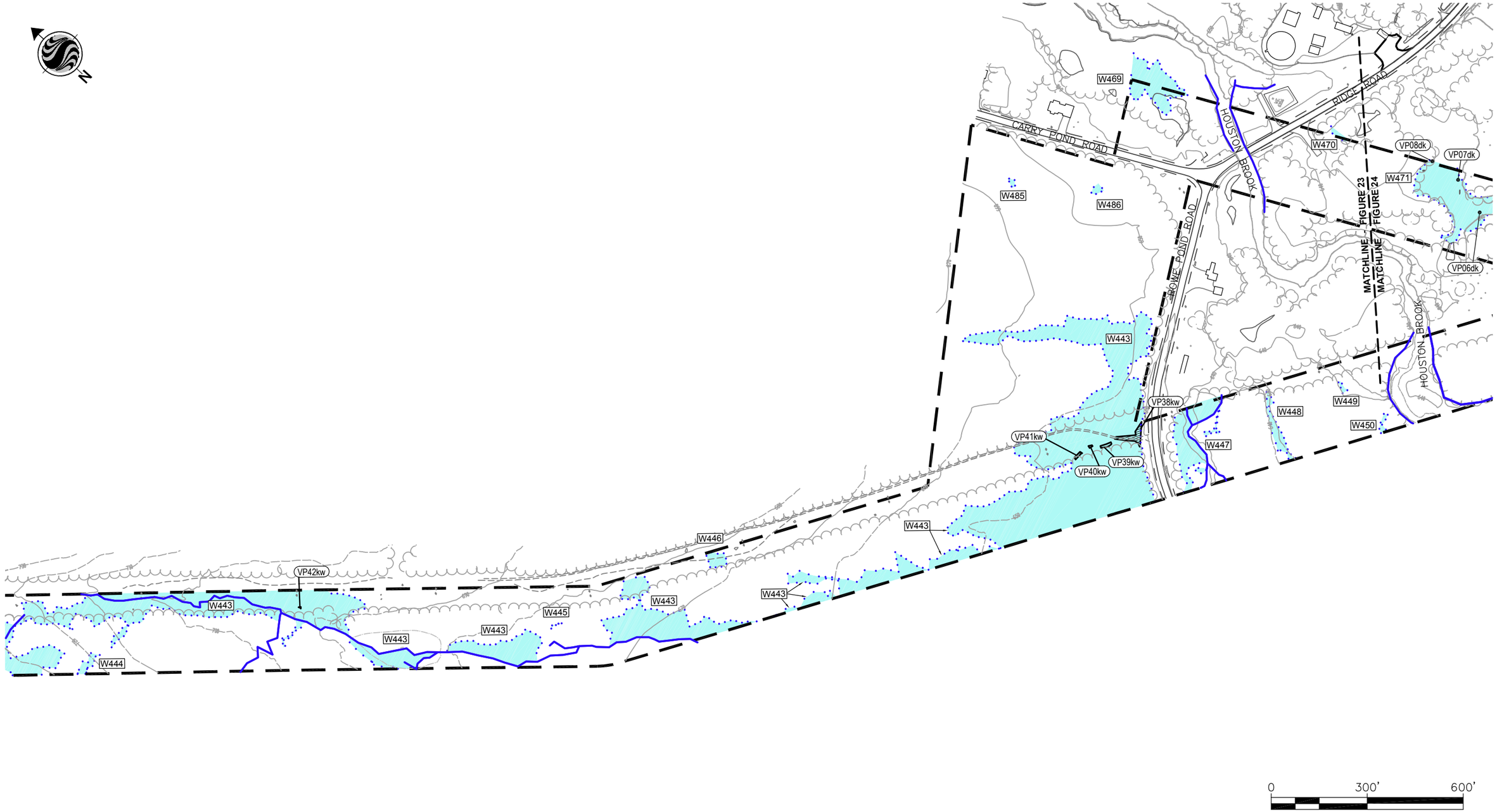
Highland Wind LLC
Highland Wind Project
Highland Plantation, Maine

Figure No.
22

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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23

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

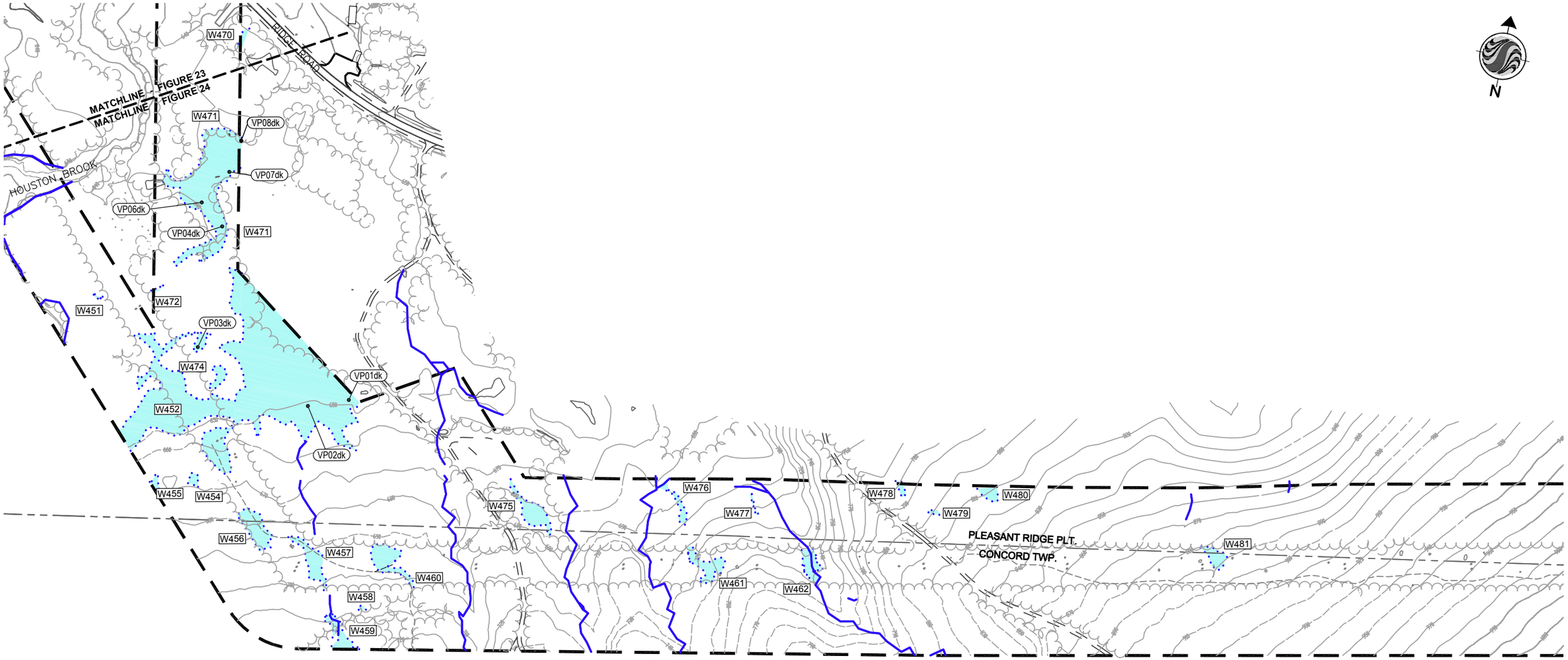

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Figure No.
24

Title
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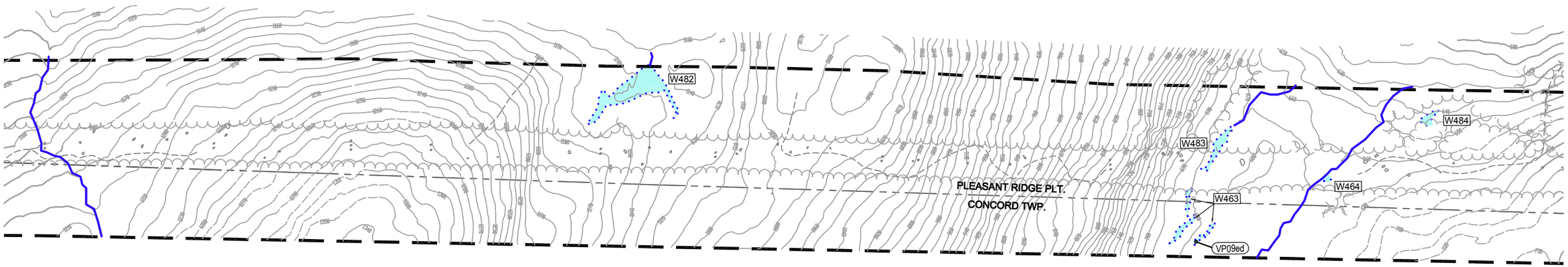

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Figure No.
25

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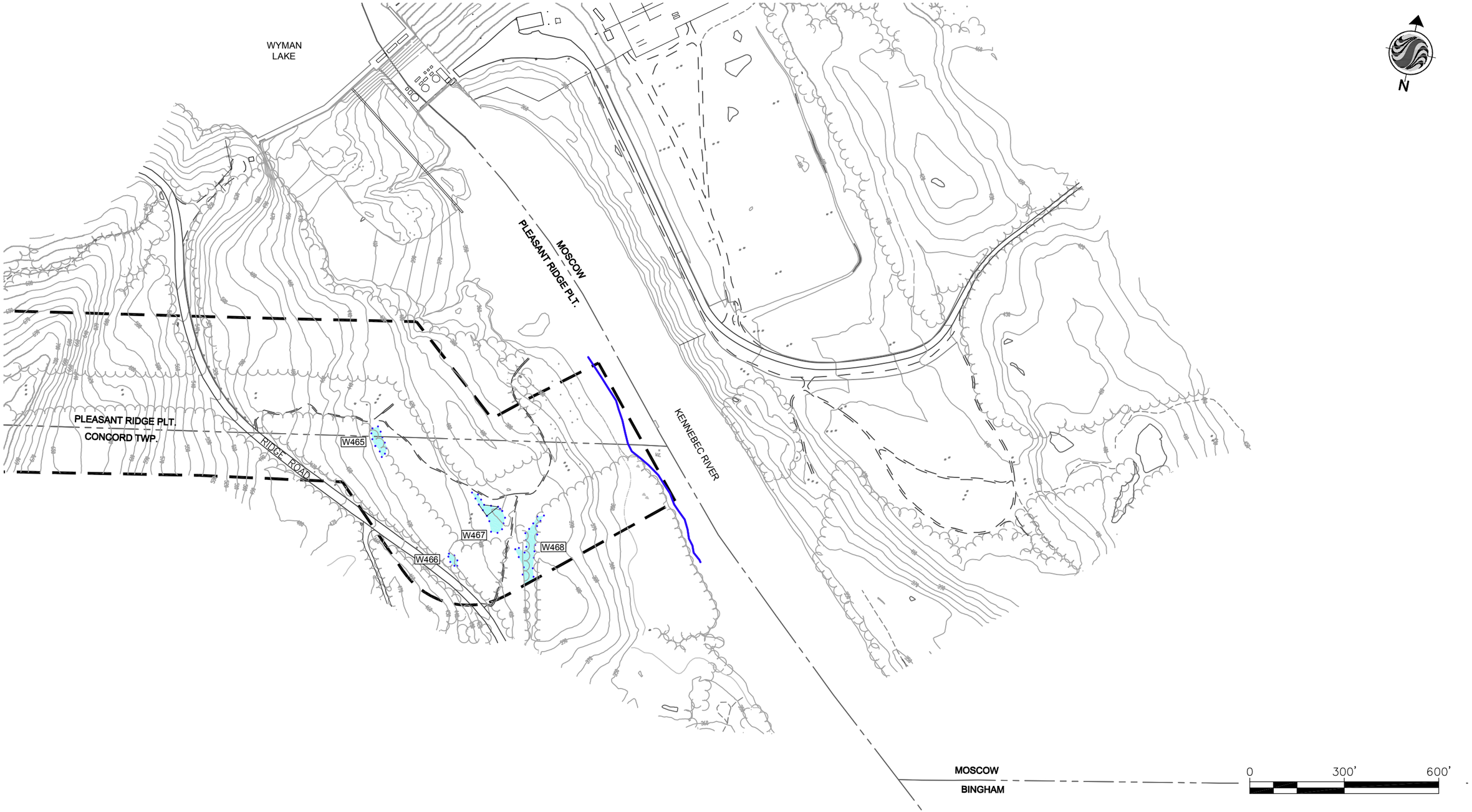
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)



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Highland Plantation, Maine

Figure No.
26

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Wetland Delineation Map

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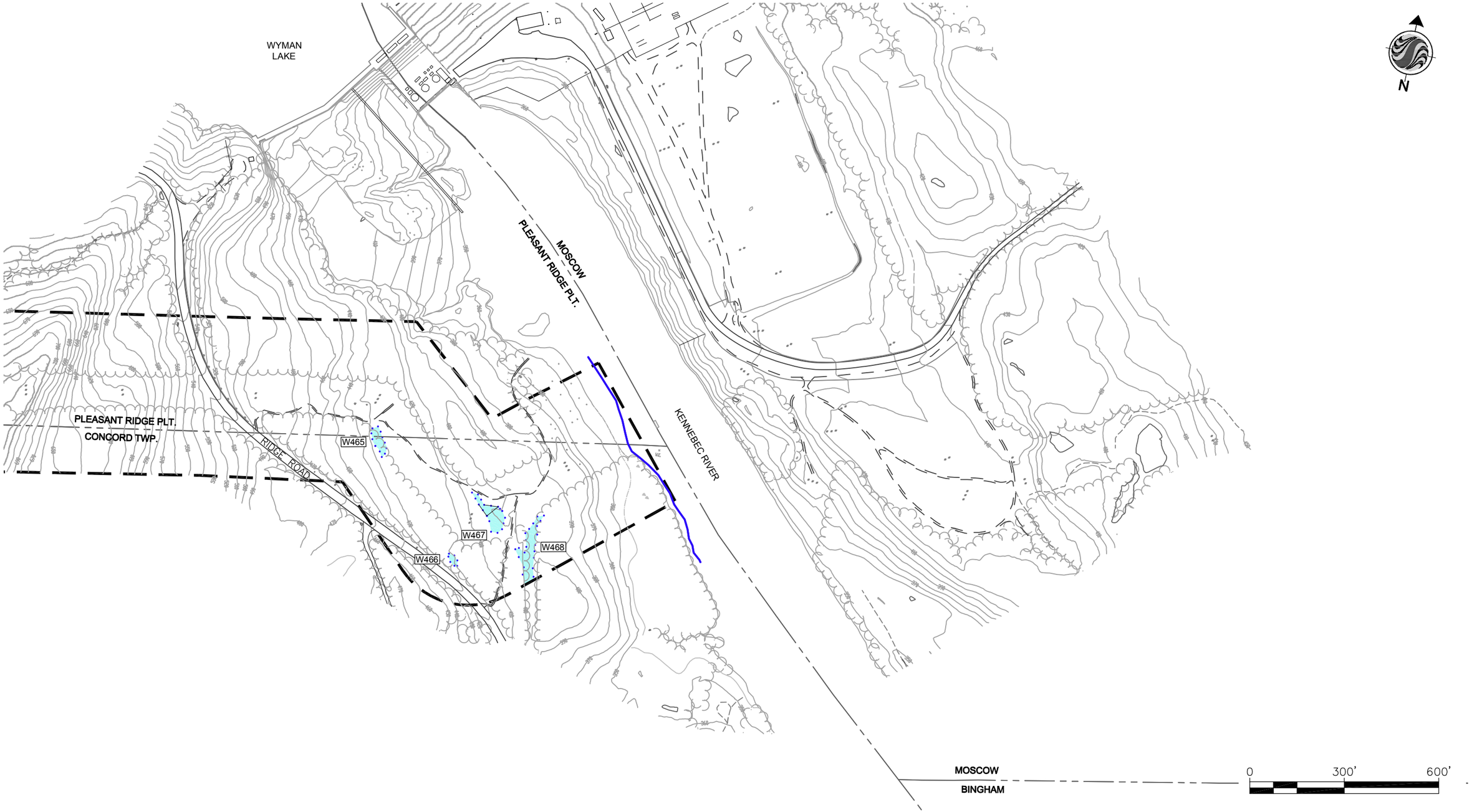

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Figure No.
26

Title
Wetland Delineation Map

December 11, 2009 (rev. Oct. 2010)

Appendix 3
Wetland and Waterbody Resource Descriptions

Table 3-1. Resource Matrix

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4, 5]	Notes[6]
		PFO	PSS	PEM	PUB				
1	W045	D				I		P-WL1c6	
1	W046			D		P		P-WL1c6	
1	W051			D		P		P-WL1c6	
1	W052			D		P		P-WL1c6	
1	W053			D		P		P-WL1c6	
1	W054			D		P		P-WL1c6, P-WL2a	
1	W055			D				P-WL2a	
1	W056			D		I		P-WL1c6	
1	W057			D			1 VP	P-WL2a	man-made VP
1	W058	D						P-WL3	
1	W059			D		I		P-WL1c6	
1 and 2	W060	D						P-WL3	
1 and 2	W061			D				P-WL2a	
1 and 2	W062			D				P-WL2a	
1	W487			D		P		P-WL1c6, P-WL2a	
2	W063			D				P-WL2a	
2	W064	D						P-WL3	
2	W065		D	D				P-WL2a	
2	W066	D	X					P-WL3, P-WL2a	
2	W067	D	D	D			6 VPs	P-WL2a, P-WL3	3 naturally occurring VPs and 3 man-made VPs
2	W068			D				P-WL2a	
2	W069		X	D			1 VP	P-WL2a	man-made VP
2	W070		D					P-WL2a	
2	W071			D				P-WL2a	
2	W072	D	D				5 VPs	P-WL3, P-WL2a	3 naturally occurring VPs and 2 man-made VPs
2	W073	D		X			3 VPs	P-WL2a, P-WL3	man-made VPs
2	W074			D			1 VP	P-WL2a	man-made VP
2	W075			D		P		P-WL1c6	
2	W076	D				I		P-WL1c6, P-WL3	
2	W077	D						P-WL3	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
2 and 4	W327	D						P-WL3	
3	W079			D			1 VP	P-WL2a	man-made VP
3	W080		X	D			1 VP	P-WL2a	man-made VP
3	W081			D				P-WL2a	
3	W082		D	D				P-WL2a	
3	W083		D					P-WL2a	
3	W084			D				P-WL2a	
3	W085		D			I		P-WL1c6	
3	W086	D						P-WL3	
3	W087	D						P-WL3	
3	W321			D			1 VP	P-WL2a	man-made VP
3	W322			D				P-WL2a	
3	W323			D				P-WL2a	
3	W324	D						P-WL3	
3	W325	D				P		P-WL1c6, P-WL3	
3	W326	D				2 I		P-WL1c6, P-WL3	
2 and 4	W088		D					P-WL2a	
2 and 4	W089	D						P-WL3	
4	W090		D					P-WL2a	
4	W091		D					P-WL2a	
4	W092			D		P		P-WL1c6	
4	W093	D						P-WL3	
4	W094	D						P-WL3	
4	W095		D					P-WL2a	
4	W096	D						P-WL3	
4	W097		D					P-WL2a	
4	W098			D				P-WL2a	
4	W099			D				P-WL2a	
4	W100		D					P-WL2a	
4	W101			D			1 VP	P-WL2a	naturally occurring VP
4	W102		D					P-WL2a	
4	W103			D				P-WL2a	
4	W104		D			I		P-WL1c6	
4	W105		D			I		P-WL1c6	
4	W106		D			I		P-WL1c6	
4	W107		D					P-WL2a	
4	W108		D					P-WL2a	
4	W109			D				P-WL2a	
4	W110			D				P-WL2a	
4	W111		D			I		P-WL1c6	
4	W112		D			I		P-WL1c6, P-WL2a	
4	W113		D					P-WL2a	
4	W114			D				P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
4	W115	D						P-WL3	
4	W116	D						P-WL3	
4	W117	D						P-WL3	
4	W118			D		I		P-WL1c6	
4 and 5	W119			D				P-WL2a	
4 and 5	W120		D					P-WL2a	
5	W121	D						P-WL3	
5	W122	D						P-WL3	
5	W123	D						P-WL3	
5	W124	D						P-WL3	
5	W125	D						P-WL3	
5	W126		D					P-WL2a	
5	W127	D						P-WL3	
5	W128		D			I		P-WL1c6, P-WL2a	
5	W129		D			I		P-WL1c6, P-WL2a	
5	W130		D					P-WL2a	
5	W131	D						P-WL3	
5	W132	D						P-WL3	
5	W133	X	D			P		P-WL1c6, P-WL2a, P-WL3	
5	W134	D	D			P	2 VPs	P-WL1c6, P-WL3, P-WL2a	naturally occurring VPs
5	W135		D	X				P-WL2a	
5	W136		D					P-WL2a	
6	W137	D						P-WL3	
6	W138	D						P-WL3	
6	W139		D					P-WL2a	
6	W140	D						P-WL3	
6	W141			D				P-WL2a	
6	W142		D					P-WL2a	
6	W143		D			I		P-WL1c6	
7	W144	D		D		P		P-WL1c6, P-WL2a, P-WL3	
7	W145			D				P-WL2a	
7	W146			D				P-WL2a	
8	W147	D						P-WL3	
8	W148	D				P		P-WL1c6, P-WL3	

(Table 3-1 cont.)

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		PFO	PSS	PEM	PUB				
8	W149	D				I		P-WL1c6, P-WL3	
8	W150	D		D		I		P-WL1c6, P-WL2a, P-WL3	
8	W151	D				I		P-WL1c6, P-WL3	
8	W152			D		P		P-WL1c6	
8	W153	D						P-WL3	
8	W154	D		D		P		P-WL-1c6, P-WL2a, P-WL3	
8	W155		D			P		P-WL1c6, P-WL2a	Stony Brook
8	W158		D	D		P		P-WL1c6, P-WL2a	
8	W159		D			P		P-WL1c6, P-WL2a	
8	W160		D					P-WL2a	
8	W488			D				P-WL2a	
8	W161	D						P-WL3	
8	W162	D				P		P-WL1c6	
8	W163			X	X	I	1 VP	P-WL1c6, P-WL2a	man-made VP
8	W352	D						P-WL3	
8 and 9	W357			D				P-WL2a	
9	W353	D						P-WL3	
9	W354	D						P-WL3	
9	W355	D						P-WL3	
9	W356			D				P-WL2a	
9	W358			D		I		P-WL1c6 P-WL2a	
9	W359			D				P-WL2a	
9	W360			D				P-WL2a	
9	W361			D				P-WL2a	
9	W164			D				P-WL2a	
9	W165			D		I		P-WL1c6	
9	W166		D					P-WL2a	
9	W167		D					P-WL2a	
9	W168		D			I		P-WL1c6, P-WL1c3, P-WL2a	mapped P–FP subdistrict along Sandy Stream
9	W169		D				1 SVP	P-WL1c3 P-WL1c4	naturally occurring VP. mapped P–FP subdistrict along Sandy Stream

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
9	W170			D			1 VP	P-WL1c3	man-made VP. mapped P–FP subdistrict along Sandy Stream
9	W172			D		P		P-WL1c6, P-WL1c3	mapped P–FP subdistrict along Sandy Stream
9	W173		D			1 P 2 I		P-WL1c6, P-WL1c3, P-WL2a	mapped P–FP subdistrict along Sandy Stream
9	W174	D				P		P-WL1c6, P-WL1c3, P-WL3	mapped P–FP subdistrict along Sandy Stream
9	W175	D						P-WL3	
9 and 17	W176		D			I		P-WL1c6	
9 and 17	W177		D					P-WL2a	
9 and 17	W178			D				P-WL2a	
9	W362		D					P-WL2a	
9 and 17	W363	D						P-WL3	
9 and 17	W364			D				P-WL2a	
9 and 17	W365			D				P-WL2a	
9 and 17	W489	D	D			I		P-WL1c6 P-WL2a P-WL3	
9 and 17	W490	D						P-WL3	
9 and 17	W491	D						P-WL3	
9 and 17	W492			D				P-WL2a	
9 and 17	W493			D				P-WL2a	
10 and 17	W179			D			1 VP	P-WL2a	man-made VP
10 and 17	W180			D				P-WL2a	
10 and 17	W181			D				P-WL2a	
10 and 17	W182			D		I		P-WL1c6, P-WL2a	
10 and 17	W183			D		I		P-WL1c6, P-WL2a	
10	W184			D				P-WL2a	
10	W185			D				P-WL2a	
10	W186			D				P-WL2a	
10	W187			D				P-WL2a	
10	W188			D				P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
10 and 11	W190			D				P-WL2a	
10 and 11	W191			D				P-WL2a	
10 and 11	W192			D		I		P-WL1c6, P-WL2a	
10	W193			D				P-WL2a	
10 and 17	W372	D						P-WL3	
10 and 17	W373			D				P-WL2a	
10 and 17	W374			D				P-WL2a	
10 and 18	W384			D			1 VP	P-WL2a	man-made VP
10 and 18	W385		D					P-WL2a	
10 and 18	W386		D					P-WL2a	
11	W194			D				P-WL2a	
11	W195			D				P-WL2a	
11	W196			D				P-WL2a	
11	W197		D					P-WL2a	
11	W198		D					P-WL2a	
11	W199		D					P-WL2a	
11	W200			D				P-WL2a	
11	W201		D					P-WL2a	
11	W202			D				P-WL2a	
11	W203			D				P-WL2a	
11	W204	D						P-WL3	
11	W205			D				P-WL2a	
11	W206			D		I		P-WL1c6	
11	W207		D					P-WL2a	
11	W208			D				P-WL2a	
11	W209			D				P-WL2a	
11	W210			D				P-WL2a	
11	W211		D					P-WL2a	
11	W212		D					P-WL2a	
11	W213			D				P-WL2a	
11	W214			D				P-WL2a	
11	W215			D				P-WL2a	
11	W216			D				P-WL2a	
11	W217			D				P-WL2a	
11	W218	D	X	D		1 I 1 P		P-WL1c6, P-WL2a, P-WL3	
11	W219			D				P-WL2a	
11	W220			D				P-WL2a	
11	W221			D		I		P-WL1c6	
11	W222			D			1 VP	P-WL2a	man-made VP
11	W223			D			1 VP	P-WL2a	man-made VP
11	W224			D			2 VPs	P-WL2a	man-made VPs
10 and 12	W225	D						P-WL3	
12	W226		D					P-WL2a	
12	W227	D						P-WL3	
12	W228			D				P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
12	W229			D		P		P-WL1c6	
12	W230			D		I		P-WL1c6	
12	W231		D			I		P-WL1c6, P-WL2a	
12	W232			D				P-WL2a	
12	W233		D					P-WL2a	
12	W234	D						P-WL3	
12	W235		D					P-WL2a	
12	W236			D				P-WL2a	
12	W237	D						P-WL3	
12	W238	D						P-WL3	
12	W239		D	D				P-WL2a	
12	W240			D				P-WL2a	
12	W241			D		I		P-WL1c6	
12	W242		D					P-WL2a	
12	W243		D					P-WL2a	
12	W244		D					P-WL2a	
12	W245		D					P-WL2a	
12	W246			D				P-WL2a	
12 and 13	W247	D						P-WL3	
13	W248		D					P-WL2a	
13	W249	D						P-WL3	
13	W250			D				P-WL2a	
13	W251			D				P-WL2a	
13	W252			D			1 VP	P-WL2a	man-made VP
13	W253			D		I		P-WL1c6, P-WL2a	
13	W254	D		X			1 VP	P-WL2a, P-WL3	man-made VP
13	W255	D				I		P-WL1c6, P-WL3	
13	W256	D						P-WL3	
13	W257			D				P-WL2a	
13	W258			D			1 VP	P-WL2a	man-made VP
13	W259			D				P-WL2a	
13	W260			D				P-WL2a	
13	W262			D		I		P-WL1c6	
13	W263	D		D			1 VP	P-WL2a, P-WL3	naturally occurring VP
13	W264			D		I		P-WL1c6	
13	W265	D					1 VP	P-WL3	naturally occurring VP
13	W266			D				P-WL2a	
13	W267			D				P-WL2a	
14	W268	D						P-WL3	
14	W269			D				P-WL2a	
14	W270			D				P-WL2a	
14	W271			D				P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
14	W272		D					P-WL2a	
14	W273	D						P-WL3	
14	W274		D					P-WL2a	
14	W275			D				P-WL2a	
14	W276			D				P-WL2a	
14	W277			D				P-WL2a	
14	W278			D				P-WL2a	
14	W279			D				P-WL2a	
14	W280			D				P-WL2a	
14	W281		D					P-WL2a	
14	W282		D	D			2 VPs	P-WL2a	man-made VPs
15	W283		D					P-WL2a	
15	W284		D			I		P-WL1c6	
15	W285			D				P-WL2a	
15	W286			D		P		P-WL1c6	
15	W287			D				P-WL2a	
15	W288			D				P-WL2a	
15	W289			D				P-WL2a	
15	W290	X		D		I		P-WL1c6, P-WL2a, P-WL3	
15	W291	X	D			I		P-WL1c6, P-WL2a, P-WL3	
15	W292			D				P-WL2a	
15	W293		D					P-WL2a	
15	W294		D					P-WL2a	
15	W295	D				I	1 SVP	P-WL1c6, P-WL1c4, P-WL3	naturally occurring VP
15	W296	D						P-WL3	
15	W297	D						P-WL3	
15	W298			D				P-WL2a	
15	W299			D		P		P-WL1c6	
15	W300			D		P		P-WL1c6	
15	W301			D		I		P-WL1c6, P-WL2a	
15	W302			D		P		P-WL1c6	
15	W303			D		P		P-WL1c6	
15	W304		D				1 VP	P-WL2a	man-made VP
16	W305			D				P-WL2a	
16	W306			D				P-WL2a	
16	W307		D				1 VP	P-WL2a	man-made VP
16	W308		D					P-WL2a	
16	W309			D				P-WL2a	
16	W310		D					P-WL2a	
16	W311		D					P-WL2a	
16	W312	D						P-WL3	
16	W313	D						P-WL3	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
16	W314	D						P-WL3	
16	W315	D					1 SVP	P-WL1c4 P-WL3	naturally occurring VP
16	W316		D					P-WL2a	
16	W317			D			1 VP	P-WL2a	naturally occurring VP
16	W318		D				1 VP	P-WL2a	man-made VP
16	W319		D					P-WL2a	
17	W366	D						P-WL3	
17	W367	D						P-WL3	
17	W368	D						P-WL3	
17	W369	D				P		P-WL3 P-WL1c6	
17	W370		D	X		P		P-WL3, P-WL2a, P-WL1c6	
17	W371		D					P-WL2a	
17	W375	D						P-WL3	
17	W376	D						P-WL3	
17	W494			D				P-WL2a	
18	W377			D				P-WL2a	
18	W378	D						P-WL3	
18	W379			D		P		P-WL1c6	
18	W380			D				P-WL2a	
18	W381	D						P-WL3	
18	W382		D					P-WL2a	
18	W383		D					P-WL2a	
18	W387		D			P		P-WL1c6, P-WL2a	Churchill Brook
19	W388			D			1 VP	P-WL2a	man-made VP
19	W389			D				P-WL2a	
19	W390			D				P-WL2a	
19	W391			D				P-WL2a	
19	W392				D		1 VP	P-WL2a	man-made VP
19	W393			D				P-WL2a	
19	W394		D					P-WL2a	
20	W396		X	X				P-WL2a	
20	W397			D				P-WL2a	
20	W398		X	X				P-WL2a	
20	W399			D				P-WL2a	
20	W400		X	X				P-WL2a	
20	W401			D				P-WL2a	
20	W402			D		I		P-WL2a, P-WL1c6	
20	W403			D		I		P-WL1c6	
20	W404			D				P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
20	W405	D		D				P-WL2a, P-WL3	
20	W406	D						P-WL3	
20	W407	D						P-WL3	
20	W408	X	X					P-WL2a, P-WL3	
20	W409			D				P-WL2a	
20	W410		X	X				P-WL2a	
20	W411		D					P-WL2a	
20	W412		X	X				P-WL2a	
20 and 21	W413	D						P-WL3	
21	W414	D		D			1 VP	P-WL2a P-WL3	man-made VP
21	W415	D						P-WL3	
21	W416	D						P-WL3	
21	W417	D						P-WL3	
21	W418			D				P-WL2a	
21	W419	D						P-WL3	
21	W420	D		D				P-WL2a, P-WL3	
21	W421	D		D				P-WL2a, P-WL3	
21	W422			D				P-WL2a	
21	W423			D				P-WL2a	
21	W424	D						P-WL3	
21	W425	D						P-WL3	
21	W426			D			1 VP	P-WL2a	man-made VP
21	W427			D				P-WL2a	
21	W428	D						P-WL3	
21	W429	D						P-WL3	
21	W430	D						P-WL3	
21	W431	D					1 VP	P-WL3	man-made VP
21 and 22	W432	D						P-WL3	
22	W433	D						P-WL3	
22	W434	D						P-WL3	
22	W435	D						P-WL3	
22	W436	D						P-WL3	
22	W437	D						P-WL3	
22	W438	D						P-WL3	
22	W439	D						P-WL3	
22	W440	D		D				P-WL2a, P-WL3	
22	W441	D						P-WL3	
22	W442	D						P-WL3	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
22 and 23	W443	D	X	X		3 P, 2 I	5 VPs	P-WL1c3, P-WL1c6, P-WL2a, P-WL3	man-made VPs. mapped P–FP subdistrict along Houston Brook
23	W444	D						P-WL3	
23	W445	D						P-WL3	
23	W446			D				P-WL2a	
23	W447		D			3 P		P-WL1c3, P-WL1c6	mapped P–FP subdistrict along Houston Brook
23	W448		D					P-WL1c3	mapped P–FP subdistrict along Houston Brook
23	W449		D					P-WL1c3	mapped P–FP subdistrict along Houston Brook
23	W450	D						P-WL1c3	Mapped P–FP subdistrict along Houston Brook
23	W485		D					P-WL2a	
23	W486		D					P-WL1c3 P-WL2a	mapped P–FP subdistrict along Houston Brook
23	W469		D					P-WL1c3	mapped P–FP subdistrict along Houston Brook
23 and 24	W470		D					P-WL2a	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
23 and 24	W471		D	X			4 VPs	P-WL1c3, P-WL2a	man-made VPs. mapped P–FP subdistrict along Houston Brook
24	W451		D					P-WL1c3	mapped P–FP subdistrict along Houston Brook
24	W452	X		X			3 VPs	P-WL1c3, P-WL2a, P-WL3	mapped P–FP subdistrict along Houston Brook. 2 naturally occurring and 1 man-made VP
24	W454			D				P-WL2a	
24	W455		D					P-WL2a	
24	W456			D				P-WL2a	
24	W457		X	D				P-WL2a	
24	W458		D					P-WL2a	
24	W459	D				I		P-WL1c6 P-WL3	
24	W460			D				P-WL2a	
24	W461			D				P-WL2a	
24	W462		D			P		P-WL1c6 P-WL2a	
24	W472			D				P-WL1c3	mapped P–FP subdistrict along Houston Brook
24	W474	D						P-WL1c3	mapped P–FP subdistrict along Houston Brook
24	W475			D				P-WL2a	
24	W476	D				I		P-WL1c6 P-WL3	
24	W477			D				P-WL2a	
24	W478			D				P-WL2a	
24	W479	D						P-WL3	

(Table 3-1 cont.)

Map #	Resource Identification Number	Wetland Type[1,2]				Stream[3]	Vernal Pool	Wetland Protection Subdistrict[4,5]	Notes[6]
		PFO	PSS	PEM	PUB				
24	W480	D						P-WL3	
24	W481			D				P-WL2a	
25	W463		D				1 VP	P-WL2a	man-made VP
25	W464			D		P		P-WL1c6	northern spring salamander
25	W482	D		D		I		P-WL2a, P-WL3 P-WL1c6	
25	W483	D		D				P-WL2a, P-WL3	
25	W484			D				P-WL2a	
26	W465		D					P-WL2a	
26	W466		D					P-WL2a	
26	W467			D				P-WL2a	
26	W468	D						P-WL3	

[1] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

[2] D = Dominant; X = Present

[3] P = Perennial; I = Intermittent

[4] P-WL1: Wetland Protection Subdistrict

a) Areas enclosed by the normal high water mark of flowing waters, stream channels, and bodies of standing water, except for constructed ponds less than 10 acres in size which are not fed or drained by flowing waters;

b) Coastal wetlands, together with areas below the high water mark of tidal waters and extending seaward to the limits of the State's jurisdiction; or

c) Freshwater wetlands, as follows:

i) Within 250' of a coastal wetland or of the normal high water mark of any body of standing water greater than 10 acres;

ii) Containing at least 20,000 square feet in total of the following: aquatic vegetation, emergent marsh vegetation, or open water, unless the wetlands are the result of constructed ponds less than 10 acres in size which are not fed or drained by flowing waters;

iii) That are inundated with floodwater during a 100 year flood event;

iv) Containing significant wildlife habitat;

v) Consisting of, or containing, peatlands, except that LURC may determine that a previously mined, peatland or portion thereof, is not a wetland of special significance; or

vi) Within 25' of a stream channel.

P-WL2: Wetland Protection Subdistrict

a) Scrub shrub and other non-forested freshwater wetlands, excluding those covered under P-WL1;

b) Constructed ponds less than 10 acres in size which are not fed or drained by flowing waters.

P-WL3: Wetland Protection Subdistrict – Forested freshwater wetlands, excluding those covered under P-WL1 and P-WL2.

[5] Wetlands and some streams identified within the Project area have an associated Shoreland Protection Subdistrict, P- SL2. P-SL2 includes: areas within 75 feet, measured as A-horizontal distance landward, of (a) the normal high water mark of stream channels upstream for the point where such channels drain 50 square miles; (b) the upland edge of those coastal and inland wetlands identified in Section 10.23, N, 2, a, (1)(b) and (c) and (2) and (3); and (c) the normal high water mark of bodies of standing water less than 10 acres in size, but excluding bodies of standing water which are less than three acres in size and which are not fed or drained by a flowing water.

[6] P-FP = Flood Prone Area Protection Subdistrict: Those areas identified and mapped by the Federal Emergency Management Agency as areas of special flood hazard (Zones A, AE, A1-30, VE) are those that fall within the P-FP subdistrict.

Table 3-2. Resource Summary

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W045	forested, intermittent stream	PFO	P-WL1c6	yellow birch, sugar maple*, eastern rough sedge, blue marsh violet, fowl mannagrass, golden-saxifrage, fringed sedge, sharp-toothed nodding-aster, selfheal, Pennsylvania bitter-cress, red raspberry	depleted soil with redoximorphic features, layered from deposition	wetland drainage patterns, soil saturated to the surface, trees with morphological adaptations
W046	emergent, perennial stream	PEM	P-WL1c6	eastern rough sedge, blue marsh violet, fowl mannagrass, golden-saxifrage, fringed sedge, sharp-toothed nodding-aster, selfheal, Pennsylvania bitter-cress, red raspberry	depleted soil with redoximorphic features, stratified depositional layers	wetland drainage patterns, soil saturated to the surface
W051	emergent, perennial stream	PEM	P-WL1c6	golden-saxifrage, fowl mannagrass, eastern rough sedge, selfheal, sharp-toothed nodding-aster, lady fern	7" well-decomposed organic soil over 11" dark, mucky A-horizon over 9" gleyed B-horizon with <2% redoximorphic concentrations	wetland drainage patterns, areas inundated, soil saturated, trees with morphological adaptations
W052	emergent, perennial stream	PEM	P-WL1c6	golden-saxifrage, zig-zag goldenrod, smooth white violet, lady fern, sharp-toothed nodding-aster, slender wood-reed, eastern rough sedge	very dark, mucky A-horizon over a depleted matrix with 3% redoximorphic features	soil saturated to the surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W053	emergent, perennial stream	PEM	P-WL1c6	northeastern mannagrass, sharp-toothed nodding-aster, dwarf raspberry, fragrant bedstraw, interrupted fern, zig-zag goldenrod, golden-saxifrage	low chroma sandy soil and loamy sand with 10% redoximorphic features with organic streaking	soil saturated to the surface, wetland drainage patterns
W054	emergent, perennial stream	PEM	P-WL1c6, P-WL2a	northeastern mannagrass, sharp-toothed nodding-aster, dwarf raspberry, fragrant bedstraw, interrupted fern, zig-zag goldenrod, golden-saxifrage	low chroma sandy soil and loamy sand with 10% redoximorphic features with organic streaking	soil saturated to the surface, wetland drainage patterns
W055	emergent	PEM	P-WL2a	northeastern mannagrass, blue marsh violet, fowl mannagrass, fringed willow-herb, common woolsedge, sharp-toothed nodding-aster	4-8" organic soil material over rock, soils have been disturbed by previous timber harvesting	soil saturated to the surface
W056	emergent, intermittent stream	PEM	P-WL1c6	fowl mannagrass, yellow birch, lady fern, red elderberry, mountain wood fern, small enchanter's nightshade, hobblebush	10" organic over 3" A-horizon with redoximorphic features	soil saturated to the surface, free water 1.5" below surface
W057	emergent	PEM	P-WL2a	nodding sedge, cinnamon fern, fowl mannagrass, marsh fern, red raspberry	20" organic soil material over a depleted matrix with 5% redoximorphic concentrations	inundated, water-stained leaves
W058	forested	PFO	P-WL3	red spruce, yellow birch, hobblebush, sharp-toothed nodding-aster, Canada mayflower, starflower	15" organic soil material over a depleted matrix with less than 2% redoximorphic features	soil saturated to the surface, trees with morphological adaptations, standing water in topographic pits
W059	emergent, intermittent stream	PEM	P-WL1c6	nodding sedge, Canada reed grass, rattlesnake mannagrass, wrinkle-leaf goldenrod, sharp-toothed nodding-aster, sensitive fern, lady fern	mucky, dark, coarse sandy soil, disturbed	soil saturated to the surface, wetland drainage patterns, standing water in topographic pits

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W060	forested	PFO	P-WL3	balsam fir, red spruce*, sugar maple*, hobblebush, northeastern mannagrass, fowl mannagrass, golden-saxifrage, spotted touch-me-not, sharp-toothed nodding-aster	10" well-decomposed organic material over a 2" depleted matrix over rock	soil saturated to the surface, water-stained leaves, wetland drainage patterns, areas inundated
W061	emergent	PEM	P-WL2a	eastern rough sedge, spotted joe-pye weed, wrinkle-leaf goldenrod, dwarf raspberry, fringed willow-herb, spotted touch-me-not, lady fern, sensitive fern, cinnamon fern	very dark, mucky A-horizon over a depleted B	soil saturated to the surface, areas inundated
W062	emergent	PEM	P-WL2a	wrinkle-leaf goldenrod, fowl mannagrass, slender wood-reed, sharp-toothed nodding-aster, dwarf raspberry	dark A-horizon over a depleted B-horizon with 3% redoximorphic concentrations	soil saturated to the surface
W063	emergent	PEM	P-WL2a	blue marsh violet, dwarf raspberry, slender wood-reed, golden-saxifrage, cinnamon fern, interrupted fern	very dark, mucky A-horizon over a depleted B	soil saturated to the surface, areas inundated
W064	forested	PFO	P-WL3	yellow birch, red spruce, heart-leaved paper birch, balsam fir, interrupted fern	3" organic material, 8-10" mucky, dark A-horizon over a depleted sandy soil with 2% redoximorphic features	soil saturated within 12 inches of the soil surface, trees with morphological adaptations, water-stained leaves
W065	emergent/scrub-shrub	PEM/PSS	P-WL2a	nodding sedge, Canada dwarf-dogwood, interrupted fern	8" dark A-horizon over a sandy B-horizon with redoximorphic features	soil saturated to the surface, water stained leaves, areas of inundation
W066	forested, scrub-shrub	PFO, PSS	P-WL3, P-WL2a	speckled alder, red spruce, heart-leaved paper birch, three-seeded sedge, balsam fir, showy mountain-ash, mountain holly	12-20" organic soil material over rock	soil saturated to the surface, areas inundated, sulfur odor from soil pit
W067	scrub-shrub/forested/emergent	PSS/PFO/PEM	P-WL2a, P-WL3	red spruce, mountain holly, red maple, three-seeded sedge, short-tailed rush, common woolsedge, black-girdled woolsedge, soft rush, cinnamon fern, rhodora, Labrador tea, creeping snowberry, heart-leaved paper birch	6" organic material over a depleted matrix with more than 2% redoximorphic concentrations, 12+" organic soil material	soil saturated to the surface, some areas inundated, trees with morphological adaptations

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W068	emergent	PEM	P-WL2a	common woolsedge, black-girdled woolsedge, short-tailed rush, three-seeded sedge	Mucky, mixed A/B-horizon soil horizons, dark with 30% redoximorphic concentrations and depletions at 6"	soil saturated to the surface, areas inundated
W069	emergent, scrub-shrub	PEM, PSS	P-WL2a	three-seeded sedge, short-tailed rush, common woolsedge, black-girdled woolsedge, soft rush, cinnamon fern, red spruce, mountain holly, red maple	15" organic soil material over rock, previously disturbed	soil saturated to the surface, areas inundated
W070	scrub-shrub	PSS	P-WL2a	hobblebush, common woolsedge, three-seeded sedge, heart-leaved paper birch	30+" well-decomposed organic soil material, over a mucky A-horizon	free water at 2 inches, soil saturated to the surface, some areas inundated, wetland drainage patterns
W071	emergent	PEM	P-WL2a	common woolsedge, three-seeded sedge, short-tailed rush, sharp-toothed nodding-aster, red raspberry, white meadowsweet, soft rush	6" organic soil material over a depleted matrix with a redoximorphic concentrations	soil saturated to the surface, water-stained leaves
W072	forested/scrub-shrub	PFO/PSS	P-WL3, P-WL2a	red spruce, balsam fir, heart-leaved paper birch, three-seeded sedge, creeping snowberry, cinnamon fern, fringed sedge, red maple, mountain holly	18" organic soil material over rock, some areas with 30+"	soil saturated to the surface, areas inundated, standing water topographic pits
W073	forested, emergent	PFO, PEM	P-WL2a, P-WL3	common woolsedge, three-seeded sedge, red spruce, velvet-leaved blueberry, cinnamon fern, mountain holly	4" dark, mucky A-horizon and organic soil material over a depleted matrix with redoximorphic concentrations	soil saturated to the surface, areas inundated, standing water topographic pits
W074	emergent	PEM	P-WL2a	common woolsedge, three-seeded sedge, short-tailed rush, sharp-toothed nodding-aster, red raspberry, white meadowsweet, soft rush	mixed dark A-horizon and organic material over depleted matrix with redoximorphic features	soil saturated to the surface, water-stained leaves
W075	emergent, perennial stream	PEM, MDEP stream	P-WL1c6	sharp-toothed nodding-aster, dwarf raspberry, fowl manna \grass, lady fern, evergreen wood fern	20" organic soil material	wetland drainage patterns, areas inundated, soil saturated to the surface
W076	forested, intermittent stream	PFO	P-WL1c6, P-WL3	red maple, red spruce, cinnamon fern, hobblebush, Canada dwarf-dogwood, fringed sedge, creeping snowberry	30+" organic soil material	soil saturated to the surface, areas inundated, trees with morphological adaptations

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W077	forested	PFO	P-WL3	balsam fir, red spruce, yellow birch, three-seeded sedge, cinnamon fern, fringed sedge, black-girdled bulrush	5" organic soil material and dark A-horizon; areas of 20" organic soil material	soil saturated to the surface, trees with morphological adaptations, free water at 5 inches below ground surface
W327	forested	PFO	P-WL3	red spruce, red maple, yellow birch, balsam fir, three-seeded sedge, cinnamon fern, , three-leaved goldthread, Canada dwarf-dogwood, peat moss	histosol: 24+" of organic material	soil saturated to surface, areas of shallow inundation
W487	emergent	PEM	P-WL1c6 P-WL2a	cinnamon fern, sedge	depleted B-horizon within 7" of the surface	soil saturated to the surface
W079	emergent	PEM	P-WL2a	lance-leaved American aster, fowl mannagrass, yellow birch, soft rush, dark green bulrush, fringed sedge, common wrinkle-leaved goldenrod	6-10" organic soil material over a depleted matrix with 4% redoximorphic features	soil saturated to the surface, water ponded in ~50 % of the wetland
W080	emergent, scrub-shrub	PEM, PSS	P-WL2a	common woolsedge, reed canary grass, common grass-leaved goldenrod, spotted joe-pye weed, yellow birch, red raspberry, broad-leaved cat-tail, soft rush	5" organic soil material over a depleted matrix and 2% redoximorphic concentrations, soil disturbed	areas inundated, soil saturated to the surface
W081	emergent	PEM	P-WL2a	common woolsedge, common grass-leaved goldenrod, spotted joe-pye weed, yellow birch, red raspberry, reed canary grass, soft rush	5" organic soil material over a depleted matrix and 2% redoximorphic concentrations	areas inundated, soil saturated to the surface
W082	emergent/scrub-shrub	PEM/PSS	P-WL2a	Canada reed grass, reed canary grass, slender wood reed, golden-saxifrage, blue marsh violet, yellow birch	12" mixed organic soil material and muck A-horizon over a depleted matrix, soil disturbed	soil saturated to the surface, areas of standing water
W083	scrub-shrub	PSS	P-WL2a	yellow birch, dwarf raspberry, hobblebush, cinnamon fern, starflower, evergreen wood fern	dark A-horizon with redoximorphic depletions	soil saturated to the surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W084	emergent	PEM	P-WL2a	smooth goldenrod, common woolsedge, field horsetail, grass-leaved goldenrod, hobblebush, American burnweed	15-18" organic soil material over a depleted sandy soil with 5% redoximorphic features	soil saturated to the surface, water stained leaves
W085	scrub-shrub, intermittent stream	PSS	P-WL1c6	yellow birch, dwarf raspberry, hobblebush, cinnamon fern, starflower, evergreen wood fern	16+" organic soil material stratified with sand	wetland drainage patterns, soil saturated to the surface
W086	forested	PFO	P-WL3	yellow birch, cinnamon fern, New York fern, fowl mannagrass, sugar maple, sharp-toothed nodding-aster	9" organic soil material and dark, mucky A-horizon over a depleted sandy soil with redoximorphic concentrations and organic streaking	soil saturated to the surface, wetland drainage patterns
W087	forested	PFO	P-WL3	yellow birch, cinnamon fern, New York fern, fowl mannagrass, sugar maple, sharp-toothed nodding-aster	organic soil material and dark A-horizonover a depleted matrix with redoximorphic concentrations and depletions	soil saturated to the surface, wetland drainage patterns
W321	emergent	PEM	P-WL2a	nodding sedge, soft rush, woolsedge, sensitive fern, marsh fern, wood horsetail, long-beaked willow, red raspberry, yellow birch	depleted fine sandy loam with redoximorphic concentrations	soil saturated to surface, free water at ~6" below surface, wetland drainage patterns
W322	emergent	PEM	P-WL2a	nodding sedge, sensitive fern, common wrinkle-leaved goldenrod, yellow birch, red raspberry	~6" organic soil material	soil saturated to surface, free water to surface
W323	emergent	PEM	P-WL2a	mannagrass	~4" organic soil material over depleted B-horizon with redoximorphic concentrations	soil saturated to surface
W324	forested	PFO	P-WL3	yellow birch, balsam fir, striped maple, mannagrass, red raspberry, tall meadow rue, sharp-toothed nodding aster	16+" organic soil material mixed with sand	soil saturated to surface, free water at ~16" below surface, wetland drainage patterns
W325	forested, perennial stream	PFO	P-WL1c6, P-WL3	red maple, yellow birch, striped maple, long-beaked willow, dwarf raspberry, interrupted fern, greater bladder sedge, spotted touch-me-not, mannagrass	depleted fine sandy loam with redoximorphic concentrations and depletions	soil saturated to surface, free water to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W326	forested, intermittent streams	PFO	P-WL1c6, P-WL3	yellow birch, balsam fir, green ash, speckled alder, hobblebush, dwarf raspberry, cinnamon fern, fringed sedge, smooth white violet, blue marsh violet	20+" organic soil material	soil saturated to surface, free water 4" below surface, wetland drainage patterns
W088	scrub-shrub	PSS	P-WL2a	red spruce, three-seeded sedge, yellow birch, Canada dwarf-dogwood, velvet-leaved blueberry, three-leaved goldthread, sharp-toothed nodding-aster, peat moss	16" organic soil material	soil saturated to the surface
W089	forested	PFO	P-WL3	red spruce, balsam fir, mountain paper birch, red maple, three-seeded sedge, Canada dwarf-dogwood, creeping snowberry, three-leaved goldthread, velvet-leaved blueberry	4" organic soil material over a depleted matrix with oxidized rhizospheres and 2% redoximorphic concentrations	soil saturated to surface, small pockets of inundation
W090	scrub-shrub	PSS	P-WL2a	red maple, balsam fir, red spruce, Canada dwarf-dogwood, three-seeded sedge, rhodora, marsh fern, cinnamon fern	4" organic over 2" dark A-horizon over 3" of depleted matrix	soil saturated to surface
W091	scrub-shrub	PSS	P-WL2a	red spruce, interrupted fern, cinnamon fern, common grass-leaved goldenrod, Canada reed grass, sharp-toothed nodding-aster, fringed sedge, soft rush, sensitive fern	dark, mucky A-horizon with redoximorphic features throughout	soil saturated to surface, free water at surface
W092	emergent, perennial stream	PEM	P-WL1c6	Canada reed grass, grass-leaved goldenrod, fringed sedge, sharp-toothed nodding-aster, northern water-horehound, red raspberry	16" organic soil material	soil saturated to the surface, ~50% of the wetland ponded
W093	forested	PFO	P-WL3	balsam fir, fowl mannagrass, three-leaved goldthread, Canada dwarf-dogwood, hobblebush	2" organic over 4" dark A-horizonover a 2" depleted B-horizonwith 2% redoximorphic concentrations	wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W094	forested	PFO	P-WL3	red spruce, yellow birch, cinnamon fern, red maple, three-seeded sedge, mountain holly, Canada-dwarf dogwood	8-10" very dark A-horizon over a depleted matrix with 5% redoximorphic features	soil saturated to surface
W095	scrub-shrub	PSS	P-WL2a	yellow birch, red spruce, sharp-toothed nodding aster, three-leaved goldthread, interrupted fern, northern wood sorrel	16" organic soil material (with many areas of shallow soil to bedrock)	soil saturated to surface
W096	forested	PFO	P-WL3	red spruce, balsam fir, heart-leaved paper birch, red maple, northern white-cedar, nannyberry, hobblebush, mountain holly, three-seeded sedge, cinnamon fern, creeping snowberry	12" organic soil material over a depleted sandy soil with 2% redoximorphic features	areas inundated, soil saturated to the surface, trees with morphological adaptations
W097	scrub-shrub	PSS	P-WL2a	sharp-toothed nodding-aster, northeastern mannagrass, balsam fir, yellow birch, red spruce, cinnamon fern, common wrinkle-leaved goldenrod, common grass-leaved goldenrod, fringed willow-herb	20"+ organic soil material	soil saturated to surface, wetland drainage patterns
W098	emergent	PEM	P-WL2a	red spruce, Canada reed grass, balsam fir, red raspberry	6" dark A-horizon over a depleted matrix with 10% redoximorphic features	soil saturated from 2 inches below ground surface to surface
W099	emergent	PEM	P-WL2a	Canada reed grass, hobblebush, red spruce, sensitive fern, cinnamon fern, Canada dwarf-dogwood, three-leaved goldthread	disturbed, dark mineral soil for 20" with redoximorphic depletions	soil saturated to the surface, areas inundated
W100	scrub-shrub	PSS	P-WL2a	gray birch, balsam fir, dark-green bulrush, mountain holly, three-seeded sedge, fringed sedge, sharp-toothed nodding-aster, Canada dwarf-dogwood	depleted sandy soil with no redoximorphic features	soil saturated, areas inundated

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W101	emergent	PEM	P-WL2a	dark-green bulrush, mountain holly, three-seeded sedge, fringed sedge, sharp-toothed nodding-aster, Canada dwarf-dogwood, gray birch, balsam fir	depleted sandy soil	soil saturated, areas inundated
W102	scrub-shrub	PSS	P-WL2a	red spruce, yellow birch, hobblebush, balsam fir, fringed sedge, Canada reed grass, three-seeded sedge, yellow birch, common wrinkle-leaved goldenrod, Canada dwarf-dogwood	16" organic soil material; dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, small areas of ponded water
W103	emergent	PEM	P-WL2a	balsam fir, hobblebush, red spruce, Canada reed grass, fringed sedge, Canada dwarf-dogwood, mountain wood fern, smooth white violet	7" dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to within 1.5 inches of surface
W104	emergent, intermittent stream	PEM	P-WL1c6	hobblebush, red spruce, yellow birch, red maple, Canada reed grass, mountain wood fern, sharp-toothed nodding-aster, Canada dwarf-dogwood, three-leaved goldthread	3" very dark A-horizonover depleted matrix with 2% redoximorphic concentrations	soil saturated to within 1 inch of surface, wetland drainage patterns
W105	emergent, intermittent stream	PEM	P-WL1c6	hobblebush, red spruce, yellow birch, red maple, Canada reed grass, mountain wood fern, sharp-toothed nodding-aster, Canada dwarf-dogwood, three-leaved goldthread	3" very dark A-horizonover depleted matrix with 2% redoximorphic concentrations	soil saturated to within 1 inch of surface, wetland drainage patterns
W106	scrub-shrub, intermittent stream	PSS	P-WL1c6	yellow birch, red maple, red spruce, hobblebush, Canada reed grass, Canada dwarf-dogwood, evergreen wood fern	6-8" organic horizon over 1-3" dark A-horizon over depleted B-horizon with 25% redoximorphic features	soil saturated to the surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W107	scrub-shrub	PSS	P-WL2a	red spruce, balsam fir, red maple, hobblebush, Canada reed grass, Canada dwarf-dogwood, interrupted fern, evergreen wood fern, nodding sedge	16+" organic horizon	soil saturated to the surface, 3 inches to free water
W108	scrub-shrub	PSS	P-WL2a	red maple, hobblebush, witherod, Canada reed grass, interrupted fern, Canada dwarf-dogwood, red raspberry	16+" organic horizon	soil saturated to the surface, 3 inches to free water
W109	emergent	PEM	P-WL2a	Canada reed grass, yellow birch, red spruce, balsam fir, gray birch, common wrinkle-leaved goldenrod, evergreen wood fern, red raspberry, mountain wood fern, common grass-leaved goldenrod, sharp-toothed nodding-aster	5" of dark A-horizonover a depleted matrix with 7% redoximorphic concentrations	soil saturated to within 2 inches of soil surface; portions of the wetland ponded
W110	emergent	PEM	P-WL2a	Canada reed grass, yellow birch, red spruce, balsam fir, gray birch, common wrinkle-leaved goldenrod, evergreen wood fern, red raspberry, mountain wood fern, common grass-leaved goldenrod, sharp-toothed nodding-aster, northeastern manna grass, mountain holly	5" of dark A-horizonover a depleted matrix with 7% redoximorphic concentrations	soil saturated to within 2 inches of soil surface; portions of the wetland ponded
W111	scrub-shrub, intermittent stream	PSS	P-WL1c6	balsam fir, red spruce, hobblebush, Canada reed grass, Canada dwarf-dogwood, evergreen wood fern	16+" organic soil material	soil saturated to the surface, 3 inches to free water
W112	scrub-shrub, intermittent stream	PSS	P-WL1c6, P-WL2a	red spruce, black spruce, yellow birch, gray birch, three-seeded sedge, black girdled-woolsedge, crested wood fern, Canada dwarf-dogwood, cinnamon fern, balsam fir, round-leaved sundew, common woolsedge	16" of organic soil material	soil saturated to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W113	scrub-shrub	PSS	P-WL2a	red spruce, balsam fir, yellow birch, Canada reed grass, mountain wood fern	8-10" of very dark A-horizon over a depleted matrix with 2% redoximorphic features	soil saturated to within 1 inch of surface
W114	emergent	PEM	P-WL2a	black-girdled woolsedge, three-leaved goldthread, mountain wood fern	5" of dark A-horizon over a depleted matrix with 10% redoximorphic concentrations	soil saturated to surface, 25 percent of wetland ponded with 4-6 inches of water
W115	forested	PFO	P-WL3	sugar maple, American beech, hobblebush, dwarf raspberry, northeastern manna grass, sensitive fern, evergreen wood fern, narrow lady fern	8-10" of organic soil material over a depleted matrix with 15% redoximorphic concentrations	wetland drainage patterns, soil saturated to surface
W116	forested	PFO	P-WL3	yellow birch, red maple, red spruce, hobblebush, Canada reed grass, evergreen wood fern, northern wood sorrel	15-20" organic soil material over rock	soil saturated to the surface, <1 inch to free water, wetland drainage patterns
W117	forested	PFO	P-WL3	yellow birch, red maple, red spruce, hobblebush, Canada reed grass, evergreen wood fern, northern wood sorrel	15-20" organic soil material over rock	soil saturated to the surface, <1 inch to free water, wetland drainage patterns
W118	emergent, intermittent stream	PEM	P-WL1c6	northeastern mannagrass, narrow lady fern, hobblebush, golden-saxifrage, red raspberry, dwarf raspberry, common grass-leaved goldenrod, fringed willow-herb, mountain wood fern	8-16+" organic soil material	soil saturated to surface, wetland drainage patterns, areas of inundation
W119	emergent	PEM	P-WL2a	three-seeded sedge, three-leaved goldthread, cinnamon fern, yellow birch, Canada dwarf-dogwood, red spruce, creeping snowberry, hobblebush	mucky A-horizon with depletions; mixed with sand layers	soil saturated, areas of inundation
W120	scrub-shrub	PSS	P-WL2a	northeastern mannagrass, fringed willow-herb, cinnamon fern, red maple, yellow birch, creeping snowberry, balsam fir, Canada dwarf-dogwood. mountain wood-sorrel	4" organic soil material over a depleted matrix	soil saturated to surface, areas of inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W121	forested	PFO	P-WL3	red spruce, balsam fir, yellow birch, showy mountain-ash, three-seeded sedge, Canada dwarf-dogwood	6-8" organic horizon over 1" dark A-horizon over depleted sandy B-horizon with 5% redoximorphic features at 10"	soil saturated to the surface, water staining, 1-2 inches to free water
W122	forested	PFO	P-WL3	red spruce, balsam fir, cinnamon fern, three-seeded sedge, creeping snowberry, three-leaved goldthread, velvet-leaf blueberry, witherod, mountain holly	dark mineral soil with depletions	soil saturated to surface
W123	forested	PFO	P-WL3	three-seeded sedge, cinnamon fern, balsam fir, three-leaved goldthread	20" dark mineral soils over a depleted horizon	soil saturated to within 2 inches of soil surface
W124	forested	PFO	P-WL3	red spruce, yellow birch, balsam fir, three-seeded sedge, Canada dwarf-dogwood, three-leaved goldthread, mountain holly, creeping snowberry	16" organic soil material	soil saturated to surface, free water at 3 inches below surface
W125	forested	PFO	P-WL3	red spruce, balsam fir, nodding beggar-ticks, yellow birch, hobblebush, mountain holly, American mountain-ash, three-seeded sedge, cinnamon fern, red maple, northeastern mannagrass	very dark horizon over a depleted matrix with organic streaking	soil saturated to within 1 inch of soil surface
W126	scrub-shrub	PSS	P-WL2a	red spruce, balsam fir, Canada dwarf-dogwood, hobblebush, sensitive fern, yellow birch, drooping wood sedge	dark mineral soil with depletions and organic streaking	soil saturated, wetland drainage patterns
W127	forested	PFO	P-WL3	balsam fir, yellow birch, red spruce, hobblebush, cinnamon fern, fowl mannagrass, bristly blackberry, northern wood sorrel	4-6" organic horizon over 2-4" dark A-horizon over depleted sandy B-horizon with 5% redoximorphic features at 12"	water staining, soil saturated to the surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W128	scrub-shrub, intermittent stream	PSS	P-WL1c6, P-WL2a	red spruce, balsam fir, hobblebush, sharp-toothed nodding-aster, cinnamon fern, northeastern mannagrass	5" organic material over a depleted matrix with 2% redoximorphic depletions and refusal at 10"	soil saturated to the surface, wetland drainage patterns
W129	scrub-shrub, intermittent stream	PSS	P-WL1c6, P-WL2a	red spruce, balsam fir, Canada dwarf-dogwood, hobblebush, sensitive fern, yellow birch, drooping wood sedge	dark mineral soil with depletions and organic streaking	soil saturated, wetland drainage patterns
W130	scrub-shrub	PSS	P-WL2a	yellow birch, red spruce, red maple, bristly black currant, evergreen wood fern, fowl mannagrass, narrow lady fern	20+" organic soil material; 6-8" organic soil material over thick dark A-horizon , over depleted sandy B-horizon with 5% redoximorphic features at 10"	water staining, soil saturated to the surface
W131	forested	PFO	P-WL3	balsam fir, red spruce, mountain holly, red maple, three-seeded sedge, Canada dwarf-dogwood, three-leaved goldthread, cinnamon fern	6-8" organic horizon over 4-6" dark A-horizon over depleted B-horizon with 5% redoximorphic features at 15"	soil saturated to the surface, 2-10 inches standing water
W132	forested	PFO	P-WL3	red spruce, balsam fir, hobblebush, Canada dwarf-dogwood, greater bladder sedge, three-leaved goldthread, velvet-leaf blueberry, creeping snowberry	6" organic over 4" of a depleted horizon with organic streaking, over 2" of a depleted sand with redoximorphic features, over rock	soil saturated to the surface
W133	scrub-shrub, forested, perennial stream	PSS, PFO	P-WL1c6, P-WL2a, P-WL3	speckled alder, balsam fir, red maple, witherod, Canada dwarf-dogwood, Labrador tea, rhodora, creeping snowberry, three-seeded sedge, mountain wood-sorrel, mountain holly, cinnamon fern, drooping sedge	30"+ organic soil material	wetland drainage patterns, trees with morphological adaptations

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W134	forested/scrub-shrub, perennial stream	PFO/PSS	P-WL1c6, P-WL3, P-WL2a	red spruce, balsam fir, yellow birch, northern white-cedar, speckled alder, three-seeded sedge, Canada dwarf-dogwood, cinnamon fern, velvet-leaved blueberry, mountain holly	16" organic soil material	soil saturated to surface, free water 2 inches below soil surface
W135	scrub-shrub, emergent	PSS, PEM	P-WL2a	northeastern mannagrass, red spruce, balsam fir, hobblebush, sharp-toothed nodding-aster, dwarf raspberry, fowl mannagrass, three-leaved goldthread, sensitive fern, northern wood sorrel	12" of organic over layers of loamy sand with redoximorphic features	soil saturated to surface, areas of inundation, wetland drainage patterns
W136	scrub-shrub	PSS	P-WL2a	balsam fir, red spruce, yellow birch, mountain holly, showy mountain-ash, Canada dwarf-dogwood, three-seeded sedge, three-leaved goldthread	16+" organic soil material	soil saturated to the surface, water staining, wetland drainage patterns
W137	forested	PFO	P-WL3	red spruce, American mountain-ash, yellow birch, hobblebush, three-leaved goldthread, red maple, large cranberry, mountain holly	7" of very dark A-horizon over a depleted matrix with 3% redoximorphic concentrations and organic streaking	soil saturated to surface, wetland drainage patterns
W138	forested	PFO	P-WL3	red spruce, American mountain-ash, yellow birch, hobblebush, three-leaved goldthread, red maple, large cranberry, mountain holly	7" of very dark A-horizon over a depleted matrix with 3% redoximorphic concentrations and organic streaking	soil saturated to surface, wetland drainage patterns
W139	scrub-shrub	PSS	P-WL2a	red spruce, hobblebush, balsam fir, red maple, northern wood sorrel, Canada dwarf-dogwood, cinnamon fern, crested wood fern	3-4" organic horizon over thin dark A-horizon over depleted matrix with 5% redoximorphic at 6"	soil saturated to the surface, trees with morphological adaptations

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W140	forested	PFO	P-WL3	red spruce, yellow birch, nodding beggar-ticks, three-seeded sedge, balsam fir, Canada dwarf-dogwood, three-leaved goldthread, velvet-leaved blueberry	16" organic soil material; very dark mineral soil with organic streaking	soil saturated to surface, wetland drainage patterns
W141	emergent	PEM	P-WL2a	red spruce, balsam fir, mountain paper birch, three-seeded sedge, Canada dwarf-dogwood, creeping snowberry, three-leaved goldthread	6" organic soil material over a depleted matrix with redoximorphic features at 8"	soil saturated to surface
W142	scrub-shrub	PSS	P-WL2a	red spruce, balsam fir, velvet-leaved blueberry, red maple, showy mountain-ash, yellow birch, three-leaved goldthread, Canada dwarf-dogwood	3-4" organic horizon over thin dark A-horizon over depleted B-horizon with 5% redoximorphic at 6"	soil saturated in the upper 12 inches
W143	scrub-shrub, intermittent stream	PSS	P-WL1c6	red spruce, hobblebush, balsam fir, red maple, northern wood sorrel, Canada dwarf-dogwood	16+" organic soil material; 8-10" organic horizon over thin dark A-horizon over depleted sandy B-horizon with 2% redoximorphic features	soil saturated to the surface, wetland drainage patterns
W144	forested/emergent, perennial stream	PFO/PEM	P-WL1c6, P-WL2a, P-WL3	northeastern mannagrass, golden-saxifrage, Pennsylvania bitter cress, Canada reed grass, cinnamon fern, yellow birch, red maple, balsam fir, speckled alder, sensitive fern	dark, thick A-horizon over a depleted matrix with redoximorphic concentrations and some stratification	soil saturated to the surface, areas with shallow inundation, wetland drainage patterns
W145	emergent	PEM	P-WL2a	yellow birch, American beech, rattlesnake mannagrass, evergreen wood fern, cinnamon fern	5" dark mucky A-horizon over depleted matrix with 5% redoximorphic concentrations and depletions	wetland drainage patterns, soil saturated to surface
W146	emergent	PEM	P-WL2a	rattlesnake manna grass, evergreen wood fern, cinnamon fern	6" dark mucky A-horizon over depleted matrix with 5% redoximorphic concentrations	shallow inundation 1-3 inches, soil saturated to surface
W147	forested	PFO	P-WL3	yellow birch, green ash, evergreen wood fern	5" dark mucky A-horizonover depleted matrix with 5% redoximorphic concentrations	soil saturated to surface, inundated with 2-4 inches of water

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W148	forested, perennial stream	PFO	P-WL1c6, P-WL3	yellow birch, speckled alder, red spruce, red maple, gray birch, northeastern manna grass, fowl manna grass, Canada reed grass, sensitive fern, crested wood fern	O-horizon over dark A-horizonover a depleted matrix with redoximorphic features	wetland drainage patterns, soil saturated to the surface, areas inundated
W149	forested, intermittent stream	PFO	P-WL1c6, P-WL3	red maple, yellow birch, speckled alder, fowl mannagrass, Canada reed grass, sensitive fern, cinnamon fern, bristly black currant	6-8" dark mucky A-horizonover a depleted matrix with 10% redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface, areas inundated
W150	forested,/emergent, intermittent stream	PFO/PEM	P-WL1c6, P-WL2a, P-WL3	yellow birch, gray birch, red maple, green ash, Eastern hemlock, rattlesnake mannagrass, common wrinkle-leaved goldenrod, cinnamon fern, sensitive fern, skunk currant	6" dark mucky A-horizon over depleted matrix with 5% depletions	wetland drainage patterns, soil saturated to surface
W151	forested, intermittent stream	PFO	P-WL1c6, P-WL3	yellow birch, red maple, fowl mannagrass, marsh fern, golden-saxifrage, Boot's wood fern	2" dark A-horizon over a depleted matrix, over a buried thick dark A-horizon with redoximorphic features; 18" organic soil material over a depleted matrix with redoximorphic features	soil saturated to the surface, areas of inundation
W152	emergent, perennial stream	PEM	P-WL1c6	yellow birch, speckled alder, rattlesnake mannagrass, cinnamon fern, common wrinkle-leaved goldenrod	10" organic soil material over a depleted matrix with some soil stratification	soil saturated to surface, shallow 1-3 inches standing water
W153	forested	PFO	P-WL3	gray birch, quaking aspen, yellow birch, balsam fir, common wrinkle-leaved goldenrod, cinnamon fern, evergreen wood fern, Canada reed grass, three-leaved goldthread	8" organic over depleted matrix with 10% redoximorphic concentrations	soil saturated to surface
W154	forested/emergent, perennial stream	PFO/PEM	P-WL-1c6, P-WL2a, P-WL3	red maple, yellow birch, eastern hemlock, gray birch, red spruce, speckled alder, Canada reed grass, cinnamon fern, sensitive fern, common wrinkle-leaved goldenrod, evergreen wood fern	10-12" dark mucky A-horizon over depleted matrix	wetland drainage patterns, soil saturated to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W155	scrub-shrub, perennial stream	PSS	P-WL1c6, P-WL2a	speckled alder, Canada reed grass	flood plain soil layered sand and mixed organic	wetland drainage patterns, soil saturated to surface
W158	scrub-shrub/emergent, perennial stream	PSS/PEM	P-WL1c6, P-WL2a	speckled alder, yellow birch, red maple, balsam fir, Canada reed grass, cinnamon fern, Pennsylvania bitter cress	low-chroma soil with bands of gravel and sand with redoximorphic concentrations	soil saturated to the surface, wetland drainage patterns, water-stained leaves
W159	scrub-shrub, perennial stream	PSS	P-WL1c6, P-WL2a	speckled alder, balsam fir, yellow birch, Canada reed grass, cinnamon fern, sensitive fern, foam-flower	low-chroma soil with bands of gravel and sand with redoximorphic concentrations	soil saturated to the surface, wetland drainage patterns, water-stained leaves
W160	scrub-shrub	PSS	P-WL2a	northern white-cedar, yellow birch, Canada reed grass, goldenrod	dark A-horizonover a depleted matrix with redoximorphic concentrations	soil saturated to the surface, free water at 3 inches
W488	emergent	PEM	P-WL2a	Canada reed grass, interrupted fern, common wrinkle-leaved goldenrod, sharp-toothed nodding-aster, American twinflower, white meadowsweet, yellow birch, balsam fir, red maple, gray birch, peat moss	~3" organic soil material over depleted B-horizon	soil saturated to the surface, areas of standing water, wetland drainage patterns
W161	forested	PFO	P-WL3	balsam fir, hobblebush, Canada reed grass, sensitive fern, dwarf raspberry, northeastern mannagrass	thick dark A-horizon over a depleted matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface, areas inundated
W162	forested, perennial stream	PFO	P-WL1c6	balsam fir, yellow birch, Canada reed grass, zig-zag goldenrod, northeastern mannagrass	thick dark O-horizon and A-horizonover a depleted matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface, areas inundated
W163	emergent, open water, intermittent stream	PEM, PUB	P-WL1c6, P-WL2a	red maple, yellow birch, red raspberry, Canada reed grass, rattlesnake mannagrass, common woolsedge, eastern rough sedge, white meadowsweet	30" organic soil material	5-10 inches standing water, soil saturated to surface
W352	forested	PFO	P-WL3	paper birch, Canada reed grass, sensitive fern, wood horsetail, common wrinkle-leaved goldenrod, interrupted fern, greater bladder sedge, dwarf raspberry	depleted fine sandy loam with redoximorphic concentrations	soil saturated to surface, free water ~6" below surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W357	emergent	PEM	P-WL2a	spotted touch-me-not, blue marsh violet, eastern rough sedge, interrupted fern, evergreen wood fern, hobblebush	~10" organic soil material over fine sand	soil saturated to surface, free water ~4" below surface, wetland drainage patterns
W353	forested	PFO	P-WL3	black ash, yellow birch, mountain maple, Canada reed grass, mannagrass, eastern rough sedge, spotted touch-me-not, field mint	16"+ organic soil material	soil saturated to surface, wetland drainage patterns
W354	forested	PFO	P-WL3	black ash, yellow birch, mountain maple, Canada reed grass, mannagrass, eastern rough sedge, spotted touch-me-not, field mint	16"+ organic soil material	soil saturated to surface, wetland drainage patterns
W355	forested	PFO	P-WL3	red maple, yellow birch, hobblebush, green ash, cinnamon fern, interrupted fern, slender lady fern, nodding sedge, Canada reed grass	10-12" organic soil material over thin dark A-horizon to depleted B-horizon with 10-25% redoximorphic features	soil saturated to surface, water-stained leaves
W356	emergent	PEM	P-WL2a	nodding sedge, sensitive fern, violet, common wrinkle-leaved goldenrod, interrupted fern, yellow birch, red raspberry, long-beaked willow	depleted fine sandy loam	soil saturated to surface, free water to surface, shallow inundation
W358	emergent, intermittent stream	PEM	P-WL1c6 P-WL2a	eastern rough sedge, spotted touch-me-not, blue marsh violet, fragrant bedstraw, foam-flower, fringed willow-herb	~4-10" organic soil material	soil saturated to surface, free water to surface, wetland drainage patterns
W359	emergent	PEM	P-WL2a	eastern rough sedge, two-leaved toothwort, silvery glade fern	~12" organic soil material	soil saturated to surface, free water at ~12" below surface
W360	emergent	PEM	P-WL2a	mannagrass, northern wood sorrel, starflower, wild sarsaparilla	~9-10" organic soil material over depleted sand	soil saturated to surface
W361	emergent	PEM	P-WL2a	mannagrass, common wrinkle-leaved goldenrod, foam-flower, red maple, hobblebush, speckled alder, balsam fir, yellow birch	depleted fine sand	soil saturated to surface, shallow inundation in ruts

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W164	emergent	PEM	P-WL2a	eastern hemlock, red maple, yellow birch, foam-flower, eastern rough sedge, evergreen wood fern	30" organic soil material	1-3 inches standing water, soil saturated to surface
W165	emergent, intermittent stream	PEM	P-WL1c6	eastern rough sedge, Canada reed grass, fiddlehead fern, sensitive fern	floodplain soil, stratified layers of gravel and an A-horizon	soil saturated to the surface, wetland drainage patterns
W166	scrub-shrub	PSS	P-WL2a	white meadowsweet, Canada reed grass, soft rush, common woolsedge, long-beaked willow	5" dark A-horizon over depleted matrix with 5% redoximorphic concentrations	10 inches standing water, soil saturated to surface
W167	scrub-shrub	PSS	P-WL2a	yellow birch, red maple, speckled alder, balsam fir, white meadowsweet, Canada reed grass, common wrinkle-leaved goldenrod	10" dark mucky A-horizon over depleted matrix	soil saturated to surface, 1-2 inches of inundation
W168	scrub-shrub, intermittent stream	PSS	P-WL1c3, P-WL1c6, P-WL2a	yellow birch, speckled alder, balsam fir, northeastern mannagrass	12" organic soil material over gleyed matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface, areas inundated
W169	scrub-shrub	PSS	P-WL1c3	yellow birch, speckled alder, balsam fir, northeastern mannagrass	12" organic soil material over gleyed matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface, areas inundated
W170	emergent	PEM	P-WL1c3	speckled alder, yellow birch, balsam fir, Canada reed grass, sensitive fern, royal fern	5" dark mucky A-horizon over depleted matrix with 10% redoximorphic concentrations	8 inches standing water, soil saturated to surface
W172	emergent, perennial stream	PEM	P-WL1c6, P-WL1c3	Canada reed grass, golden-saxifrage, fiddlehead fern, zig-zag goldenrod, wood fern	dark, thick, mucky A-horizon over a depleted sandy soil matrix with 10% redoximorphic concentrations	areas inundated, wetland drainage patterns, water-stained leaves
W173	scrub-shrub, perennial stream, intermittent streams	PSS	P-WL1c6, P-WL1c3, P-WL2a	speckled alder, red spruce, yellow birch, Canada reed grass, tussock sedge, fringed sedge, common wrinkle-leaved goldenrod, tall white-aster	16+" organic soil material in places with other areas of 4-8" dark A-horizon over a depleted matrix with 5% redoximorphic concentrations	soil saturated to surface, free water 6" below ground surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W174	forested, perennial stream	PFO	P-WL1c6, P-WL1c3, P-WL3	yellow birch, northern white-cedar, balsam fir, speckled alder, Canada reed grass, interrupted fern, sensitive fern, crested wood fern, cinnamon fern	thick, dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to the surface, wetland drainage patterns, areas inundated
W175	forested	PFO	P-WL3	yellow birch, red maple, balsam fir, cinnamon fern, rattlesnake mannagrass, evergreen wood fern, sensitive fern	6" organic over depleted B-horizon matrix with redoximorphic depletions	wetland drainage patterns, soil saturated to surface
W176	scrub-shrub, intermittent stream	PSS	P-WL1c6	yellow birch, cinnamon fern, common wrinkle-leaved goldenrod, eastern rough sedge	6-10" dark organic A-horizon over depleted matrix	wetland drainage patterns, soil saturated to surface
W177	scrub-shrub	PSS	P-WL2a	yellow birch, common woolsedge, sensitive fern, grass-leaved goldenrod	thick, dark A-horizon with depletions, over a depleted matrix with redoximorphic concentrations at 16"	free water at 1 inch, soil saturated to the surface, ditch associated
W178	emergent	PEM	P-WL2a	yellow birch, hobblebush, cinnamon fern, evergreen wood fern, common wrinkle-leaved goldenrod, lady fern, eastern rough sedge	6" organic soil material mixed with an A-horizon over depleted matrix	wetland drainage patterns, soil saturated to surface
W362	scrub-shrub	PSS	P-WL2a	speckled alder, yellow birch, red maple, Canada reed grass, sensitive fern, evergreen wood fern, starflower, tall white-aster, cinnamon fern, slender lady fern	~3" organic soil material over depleted matrix with redoximorphic features	soil saturated to surface, free water at 9" below surface
W363	forested	PFO	P-WL3	yellow birch, red maple, green ash, New York fern, mannagrass, dwarf raspberry, foam-flower, spotted touch-me-not, fringed sedge	20" dark mineral soil over depleted matrix with 15% organic streaking	soil saturated to surface, free water at 7" below surface, wetland drainage patterns
W364	emergent	PEM	P-WL2a	fringed sedge, foam-flower, common wrinkle-leaved goldenrod, dwarf raspberry, tall meadow rue, spotted touch-me-not, red maple	variable soil with areas of depleted matrix and areas with redoximorphic concentrations and depletions	soil saturated to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W365	emergent	PEM	P-WL2a	dwarf raspberry, interrupted fern, tall meadow rue, sedge, three-leaved goldthread, black ash, red maple, beaked hazelnut	depleted sand with mixed alluvial depositions	soil saturated to surface, free water at 2" below surface, wetland drainage patterns
W489	scrub-shrub/forested, intermittent stream	PSS/PFO	P-WL1c6 P-WL2a P-WL3	balsam fir, red maple, gray birch, yellow birch, speckled alder, withe-rod, quaking poplar, nodding sedge, Canada reed grass, common wrinkle-leaved goldenrod, spotted Joe-pye weed, dwarf raspberry	12" organic soil material over a depleted B-horizon with redoximorphic concentrations	soil saturated to surface
W490	forested	PFO	P-WL3	yellow birch, red maple, balsam fir, black ash, quaking poplar, northeastern mannagrass, nodding sedge, Canada reed grass, spotted Joe-pye weed, spotted touch-me-not, evergreen wood fern	3" organic soil material over a depleted B-horizon with redoximorphic concentrations	soil saturated to surface, areas of standing water
W491	forested	PFO	P-WL3	eastern hemlock, balsam fir, red maple, yellow birch, gray birch, evergreen wood fern, sharp-toothed nodding-aster, American twinflower, common wrinkle-leaved goldenrod, three-leaved goldthread	3" organic soil material over a depleted B-horizon with redoximorphic concentrations	soil saturated to surface
W492	emergent	PEM	P-WL2a	awl-fruited sedge, northeastern mannagrass, sharp-toothed nodding-aster, three-leaved goldthread, evergreen wood fern, sensitive fern, balsam fir, red maple	20"+ organic soil material	soil saturated to surface, wetland drainage patterns
W493	emergent	PEM	P-WL2a	Canada goldenrod, common wrinkle-leaved goldenrod, nodding sedge, sensitive fern, interrupted fern, yellow birch, red maple, gray birch	5" organic soil material over a depleted B-horizon with redoximorphic features	soil saturated to surface, areas of standing water

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W494	emergent	PEM	P-WL2a	common woolsedge, nodding sedge, soft rush, eastern rough sedge, common wrinkle-leaved goldenrod, spotted Joe-pye weed, sensitive fern, evergreen wood fern, wood horsetail	6" organic soil material over a depleted B-horizon with redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W179	emergent	PEM	P-WL2a	red-osier dogwood, yellow birch, Canada reed grass, white meadowsweet, sallow sedge	4-5" dark mucky A-horizon over a depleted matrix with 5-10% redoximorphic concentrations	ruts with standing water, soil saturated to surface
W180	emergent	PEM	P-WL2a	eastern rough sedge, fringed willow-herb, fowl mannagrass, yellow birch	dark A-horizon over a depleted matrix with redoximorphic concentrations	wetland drainage patterns
W181	emergent	PEM	P-WL2a	golden-saxifrage, cinnamon fern, woodland horsetail, sharp-toothed nodding-aster	12" organic soil material over a depleted matrix	soil saturated to the surface
W182	emergent, intermittent stream	PEM	P-WL1c6, P-WL2a	common woolsedge, fringed sedge	sandy A-horizon over a sandy B-horizon over a buried organic soil layer over a depleted matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated
W183	emergent, intermittent stream	PEM	P-WL1c6, P-WL2a	common woolsedge, fringed sedge	depleted sandy soil with redoximorphic concentrations	wetland drainage patterns, soil saturated
W184	emergent	PEM	P-WL2a	northeastern mannagrass, common woolsedge, fringed sedge, sensitive fern, golden-saxifrage	dark A-horizon over a depleted sand	soil saturated to surface, wetland drainage patterns
W185	emergent	PEM	P-WL2a	golden-saxifrage, fowl mannagrass, hobblebush	mixed dark, mucky A/O-horizon over a depleted matrix with redoximorphic concentrations	wetland drainage patterns, soil saturated to the surface
W186	emergent	PEM	P-WL2a	northeastern mannagrass, golden-saxifrage, interrupted fern, yellow birch	8" organic over a depleted matrix with redoximorphic concentrations	soil saturated to the surface, areas of inundation
W187	emergent	PEM	P-WL2a	common woolsedge, evergreen wood fern, common wrinkle-leaved goldenrod, sharp-toothed nodding-aster, green ash, yellow birch, horsetail species	sandy A-horizon over a depleted B-horizon with 2% redoximorphic features over a buried O-horizon	soil saturated to surface, areas of inundation, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W188	emergent	PEM	P-WL2a	red raspberry, bristly blackberry, coltsfoot, Canada reed grass, common wrinkle-leaved goldenrod, common grass-leaved goldenrod, yellow birch	sandy A-horizon over a sandy B-horizon with redoximorphic features	wetland drainage patterns, soil saturated to surface
W190	emergent	PEM	P-WL2a	eastern rough sedge, Canada reed grass, common grass-leaved goldenrod, northeastern mannagrass, common woolsedge, fringed sedge, red raspberry, yellow birch, paper birch, Canada goldenrod	5" O-horizon over a depleted matrix with redoximorphic features	soil saturated 3 inches below soil surface, some areas inundated, wetland drainage patterns
W191	emergent	PEM	P-WL2a	northeastern mannagrass, fringed sedge, yellow birch	dark, thick A-horizon over a depleted matrix with redoximorphic concentrations	free water at surface, soil saturated to the surface, wetland drainage patterns
W192	emergent, intermittent stream	PEM	P-WL1c6, P-WL2a	eastern rough sedge, fringed sedge, evergreen wood fern, sharp-toothed nodding-aster, Canada goldenrod, zig-zag goldenrod, common grass-leaved goldenrod	10" dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, inundated in some areas
W193	emergent	PEM	P-WL2a	three-seeded sedge, common woolsedge, golden-saxifrage, fringed willow-herb, evergreen wood fern, white ash, red raspberry, pointed broom sedge	mucky A-horizon with redoximorphic features over depleted matrix	soil saturated to surface, wetland drainage patterns, some areas of inundation
W372	forested	PFO	P-WL3	yellow birch, red spruce, striped maple, hobblebush, golden-saxifrage, spotted touch-me-not, evergreen wood fern, common grass-leaved goldenrod	3" organic soil material over depleted matrix	soil saturated to surface, free water at 2" below surface, small areas of shallow inundation
W373	emergent	PEM	P-WL2a	dwarf raspberry, spotted touch-me-not, , sharp-toothed nodding-aster, three-seeded sedge, common wrinkle-leaved goldenrod, hobblebush, American honeysuckle	~6" organic soil material over depleted matrix with redoximorphic concentrations	soil saturated to surface, free water to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W374	emergent	PEM	P-WL2a	spotted touch-me-not, New York fern, sharp-toothed nodding-aster, dwarf raspberry, cinnamon fern, yellow birch, hobblebush	depleted B-horizon	soil saturated to surface, free water at 4" below surface, wetland drainage patterns
W384	emergent	PEM	P-WL2a	fringed sedge, field horsetail, sharp-toothed nodding-aster, tall white-aster, yellow birch, long-beaked willow	1" organic soil material over depleted matrix with 5% redoximorphic features	soil saturated to surface, area of shallow inundation
W385	scrub-shrub	PSS	P-WL2a	speckled alder, yellow birch, smooth white violet, sensitive fern, soft rush, common selfheal, tall white-aster, purple-stemmed American-aster	low chroma sand with 25-40% redoximorphic depletions	soil saturated to surface, wetland drainage patterns
W386	scrub-shrub	PSS	P-WL2a	speckled alder, long-beaked willow, balsam poplar, Canada reed grass, field horsetail, common wrinkle-leaved goldenrod, blue marsh violet	depleted sandy loam with redoximorphic concentrations	soil saturated to surface, free water at ~4" below surface, water-stained leaves, wetland drainage patterns
W194	emergent	PEM	P-WL2a	northeastern mannagrass, golden-saxifrage, sensitive fern, fowl mannagrass, Canada reed grass	dark, thick A-horizon over a depleted sandy B-horizon with 10% redoximorphic concentrations	soil saturated to the surface, free water at 3 inches
W195	emergent	PEM	P-WL2a	fowl mannagrass, Canada reed grass, northeastern mannagrass, fringed sedge, common woolsedge, Canada goldenrod, fringed willow-herb, common grass-leaved goldenrod, yellow birch, American beech	thick, dark A-horizon over a depleted sand with 10% redoximorphic concentrations	soil saturated to surface, free water at 3 inches below soil surface, wetland drainage patterns
W196	emergent	PEM	P-WL2a	woolsedge, northeastern mannagrass, eastern rough sedge	dark A-horizon over a depleted matrix with oxidized rhizospheres and redoximorphic concentrations	soil saturated to the surface, areas of inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W197	scrub-shrub	PSS	P-WL2a	red maple, yellow birch, Canada reed grass, common wrinkle-leaved goldenrod, red raspberry, evergreen wood fern, northeastern mannagrass, greater bladder sedge	sandy A-horizon over a sandy B-horizon with 2% redoximorphic features over a buried O horizon	soil saturated 2 inches below soil surface, areas of inundation, wetland drainage patterns
W198	scrub-shrub	PSS	P-WL2a	yellow birch, northeastern mannagrass, evergreen wood fern, fringed sedge, red raspberry, common wrinkle-leaved goldenrod, coltsfoot, sensitive fern	2" O horizon over a depleted sand with redoximorphic features	soil saturated 3" below soil surface, wetland drainage patterns
W199	scrub-shrub	PSS	P-WL2a	yellow birch, red maple, fringed sedge, eastern rough sedge, northeastern mannagrass	dark A-horizon over a depleted matrix with oxidized rhizospheres	areas inundated, soil saturated to the surface, free water at 5 inches below surface
W200	emergent	PEM	P-WL2a	Canada reed grass, golden-saxifrage, fiddlehead fern, zig-zag goldenrod, wood fern species, yellow birch	thick, dark, mucky A/O over a depleted matrix with 10% redoximorphic features. Depleted sandy soil with redoximorphic concentrations and oxidized rhizospheres	areas of inundation, water-stained leaves, wetland drainage patterns, soil saturated to the surface
W201	scrub-shrub	PSS	P-WL2a	red maple, American beech, striped maple, fringed sedge, sharp-toothed nodding-aster, fringed willow-herb, Canada goldenrod, common wrinkle-leaved goldenrod, red raspberry, northeastern mannagrass	10" dark, sandy A-horizon over a depleted matrix over a buried O horizon	inundated, wetland drainage patterns
W202	emergent	PEM	P-WL2a	eastern rough sedge, fringed sedge, common woolsedge, fringed willow-herb, Canada reed grass, evergreen wood fern, sensitive fern, red raspberry	5" very dark A-horizon over a depleted matrix with 10% redoximorphic concentrations	soil saturated to surface, water-stained leaves, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W203	emergent	PEM	P-WL2a	fringed sedge, fowl mannagrass, golden-saxifrage, northeastern mannagrass, sensitive fern, sharp-toothed nodding-aster, red maple, yellow birch	thick, dark A-horizon over a depleted matrix with redoximorphic concentrations and oxidized rhizospheres	soil saturated to surface, areas of inundation, free water at 4 inches below soil surface
W204	forested	PFO	P-WL3	red maple, northeastern mannagrass, yellow birch, cinnamon fern, hobblebush	dark mineral soil with redoximorphic depletions over a depleted matrix with redoximorphic concentrations	soil saturated, areas inundated
W205	emergent	PEM	P-WL2a	northeastern mannagrass, fringed sedge, interrupted fern	dark soil matrix with redoximorphic concentrations	soil saturated to 2 inches, free water at 8 inches
W206	emergent, intermittent stream	PEM	P-WL1c6	evergreen wood fern, cinnamon fern, woolsedge species, mannagrass species, Canada reed grass, yellow birch, green ash	2" O horizon over 2" dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, wetland drainage patterns
W207	scrub-shrub	PSS	P-WL2a	red maple, yellow birch, red spruce, hobblebush, fringed sedge, Canada reed grass, red raspberry	dark mineral soil with redoximorphic depletions	wetland drainage patterns, soil saturated to the surface
W208	emergent	PEM	P-WL2a	eastern rough sedge, common woolsedge, evergreen wood fern, red raspberry	10" O horizon over a depleted matrix with redoximorphic features	soil saturated to surface, inundated
W209	emergent	PEM	P-WL2a	common woolsedge, northeastern mannagrass, fringed sedge, red raspberry, common grass-leaved goldenrod, yellow birch, paper birch	10" dark A-horizon over a depleted matrix with redoximorphic features	inundated, wetland drainage patterns
W210	emergent	PEM	P-WL2a	eastern rough sedge, common woolsedge, common grass-leaved goldenrod, evergreen wood fern, red raspberry, yellow birch	5" O horizon over 2" dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, wetland drainage patterns
W211	scrub-shrub	PSS	P-WL2a	paper birch, American beech, fowl mannagrass, evergreen wood fern, three-leaved goldthread	10" dark A-horizon over a gleyed matrix	soil saturated to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W212	scrub-shrub	PSS	P-WL2a	hobblebush, fowl mannagrass, fringed sedge, American beech, balsam fir, evergreen wood fern, three-leaved goldthread	3" O horizon over 3" A-horizon over a gleyed matrix	soil saturated to surface, wetland drainage patterns
W213	emergent	PEM	P-WL2a	eastern rough sedge, cinnamon fern, fringed willow herb, northeastern mannagrass	6" of organic over depleted matrix with 2 percent redoximorphic features	soil saturated to surface, drainage patterns, some areas of inundation
W214	emergent	PEM	P-WL2a	fringed sedge, fowl mannagrass, sharp-toothed nodding-aster, Canada reed grass, three-petaled bedstraw	thick, dark, mucky A-horizon over a low chroma matrix with redoximorphic features	soil saturated to surface, areas of inundation, wetland drainage patterns
W215	emergent	PEM	P-WL2a	fringed sedge, eastern rough sedge, cinnamon fern, fringed willow herb, northeastern mannagrass	6" of mucky A-horizon over depleted matrix with 10% redoximorphic concentrations	soil saturated to surface, drainage patterns, some areas of inundation
W216	emergent	PEM	P-WL2a	red maple, red spruce, yellow birch, fringed sedge, rattlesnake mannagrass, common woolsedge, fringed willow-herb, sharp-toothed nodding-aster, sensitive fern, short-tail rush	8" of very dark A-horizon over a depleted matrix with 5% redoximorphic concentrations	soil saturated to surface, half of wetland is ponded
W217	emergent	PEM	P-WL2a	common woolsedge, red raspberry, yellow birch	thick, dark A-horizon over a depleted matrix with redoximorphic concentrations and oxidized rhizospheres	areas of inundation and soil saturated to the surface
W218	forested, emergent, scrub-shrub, intermittent stream	PFO, PEM, PSS	P-WL1c6, P-WL2a, P-WL3	yellow birch, red maple, red spruce, balsam fir, speckled alder, fringed sedge, short-tailed rush, eastern rough sedge, common woolsedge, Canada goldenrod, rattlesnake mannagrass, sensitive fern, golden-saxifrage, sharp-toothed nodding-aster	6" very mucky, dark A-horizon over a depleted matrix with 12% redoximorphic concentrations. 8-16" organic soil material occur in small areas throughout the wetland	soil saturated to surface, wetland drainage patterns, areas inundated, water-stained leaves
W219	emergent	PEM	P-WL2a	northeastern mannagrass, golden-saxifrage, yellow birch	24" organic soil material	areas inundated, soil saturated to the surface, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W220	emergent	PEM	P-WL2a	northeastern mannagrass, golden-saxifrage, Canada reed grass, three-seeded sedge, yellow birch	thick, dark A-horizon over a depleted matrix with redoximorphic concentrations	wetland drainage patterns, areas inundated, soil saturated to the surface
W221	emergent, intermittent stream	PEM	P-WL1c6	Canada reed grass, golden-saxifrage, hobblebush, hop-hornbeam	soil disturbed; dark matrix with redoximorphic depletions	wetland drainage patterns, areas inundated
W222	emergent	PEM	P-WL2a	common woolsedge, peat moss	2" O horizon over 2" A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, 8 inches of standing water
W223	emergent	PEM	P-WL2a	common woolsedge, three-seeded sedge, yellow birch	thick, dark A-horizon over a depleted matrix with oxidized rhizospheres	areas inundated, soil saturated at 2 inches below soil surface
W224	emergent	PEM	P-WL2a	common woolsedge, red raspberry, soft rush, balsam fir, yellow birch	7" of dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, inundation
W225	forested	PFO	P-WL3	three-seeded sedge, common woolsedge, golden-saxifrage, fringed willow-herb, yellow birch, marsh fern, red spruce	20" of organic over depleted sandy soil with 20% redoximorphic features	soil saturated to surface, wetland drainage patterns, some areas of inundation
W226	scrub-shrub	PSS	P-WL2a	common woolsedge, three-seeded sedge red spruce, balsam fir	10" organic over dark mineral soil with depletions	soil saturated to surface, areas inundated
W227	forested	PFO	P-WL3	balsam fir, red spruce, heart-leaved paper birch, three-seeded sedge, creeping snowberry, goldthread, Canada dwarf-dogwood	6" organic soil material over a depleted matrix with redoximorphic concentrations at 8"	soil saturated to the surface, standing water in topographic pits
W228	emergent	PEM	P-WL2a	sharp-toothed nodding-aster, sugar maple, rattlesnake mannagrass, evergreen wood fern, northern wood sorrel, dewdrop	mucky A-horizon over a depleted sandy soil with 3% redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W229	emergent, perennial stream	PEM	P-WL1c6	sharp-toothed nodding-aster, sugar maple, rattlesnake mannagrass, evergreen wood fern, northern wood sorrel, dewdrop	4" organic soil material over depleted matrix with 10% redoximorphic concentrations	soil saturated to surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W230	emergent, intermittent stream	PEM,	P-WL1c6	hobblebush, northeastern mannagrass, bristly black currant, dwarf raspberry, northern wood sorrel, mountain wood fern	mixed organic soil and mineral soil over a depleted matrix over a buried A-horizon	soil saturated to surface
W231	scrub-shrub, intermittent stream	PSS	P-WL1c6, P-WL2a	rattlesnake mannagrass, common wrinkle-leaved goldenrod, dwarf raspberry, beaked hazelnut, hobblebush, evergreen wood fern, marsh fern, sharp-toothed nodding-aster	18" organic soil material over rock	wetland drainage patterns, soil saturated to surface, areas of inundation
W232	emergent	PEM	P-WL2a	Canada reed grass, sharp-toothed nodding-aster, spotted touch-me-not	16+" of organic soil material over bedrock	soil saturated to surface, areas of inundation
W233	scrub-shrub	PSS	P-WL2a	three-seeded sedge, evergreen wood fern, red spruce, paper birch, cinnamon fern, balsam fir, Canada dwarf-dogwood	16" dark, mucky A-horizon over a depleted matrix both with redoximorphic concentrations	wetland drainage patterns, soil saturated to surface, free water at 3 inches
W234	forested	PFO	P-WL3	red spruce, balsam fir, cinnamon fern, common lowbush blueberry, sharp-toothed nodding-aster, three-seeded sedge	4-8" of dark A-horizon over a depleted matrix	soil saturated to surface, areas of inundation, trees with morphological adaptations
W235	scrub-shrub	PSS	P-WL2a	red spruce, yellow birch, hobblebush, balsam fir, three-seeded sedge, sharp-toothed nodding-aster, red raspberry, long beech fern	14" of very dark, mucky A-horizon over a depleted matrix with 5% redoximorphic features	soil saturated to surface, free water 1 inch below soil surface
W236	emergent	PEM	P-WL2a	northeastern mannagrass, Canada dwarf-dogwood, hobblebush, dwarf raspberry, cinnamon fern, balsam fir	10" organic soil material over a dark A-horizon with 12% redoximorphic features	soil saturated to the surface, free water at 2 inches below the soil surface
W237	forested	PFO	P-WL3	red spruce, cinnamon fern, Canada dwarf-dogwood, sharp-toothed nodding aster, three-leaved goldthread, three-seeded sedge	16" dark mineral soil with redoximorphic concentrations and depletions over a depleted matrix with redoximorphic concentrations over rock	soil saturated to surface, small areas of inundation, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W238	forested	PFO	P-WL3	red spruce, yellow birch, mountain paper birch, red maple, three-seeded sedge, Canada dwarf-dogwood, cinnamon fern, interrupted fern, three-leaved goldthread	8" of dark A-horizon over a depleted matrix with 4% redoximorphic concentrations	soil saturated to surface, water stained leaved, wetland drainage patterns
W239	scrub-shrub/emergent	PSS/PEM	P-WL2a	yellow birch, red spruce, balsam fir, greater bladder sedge, Canada dwarf-dogwood	dark A-horizon over a depleted matrix with redoximorphic concentrations	soil saturated to within 2 inches of surface, area of inundation, wetland drainage patterns
W240	emergent	PEM	P-WL2a	northeastern mannagrass, Canada reed grass, dwarf raspberry, evergreen wood fern, mountain wood fern, sharp-toothed nodding-aster, northern wood sorrel, smooth white violet, hobblebush, yellow birch, red spruce	7" dark, mucky A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, wetland drainage patterns
W241	emergent, intermittent stream	PEM	P-WL1c6	northeastern mannagrass, sharp-toothed nodding-aster, three-seeded sedge, smooth white violet, dwarf raspberry	16" of dark A-horizon over a depleted matrix with 3% redoximorphic features	soil saturated to surface
W242	scrub-shrub	PSS	P-WL2a	sharp-toothed aster, cinnamon fern, red spruce, three-seeded sedge, paper birch	depleted matrix at 6" with organic mixed throughout	soil saturated to surface
W243	scrub-shrub	PSS	P-WL2a	yellow birch, fringed sedge, evergreen wood fern, mountain wood fern, red raspberry, balsam fir	dark, mucky A-horizon over depleted matrix	soil saturated to surface, areas of inundation
W244	scrub-shrub	PSS	P-WL2a	three-seeded sedge, red spruce, balsam fir, paper birch, yellow birch, common woolsedge, sharp-toothed aster, marsh fern	12" somewhat well decomposed (hemic) O horizon	soil saturated to surface, free water at 3", trees with morphological adaptations
W245	scrub-shrub	PSS	P-WL2a	red spruce, three-seeded sedge, balsam fir, Canada dwarf-dogwood	12" O horizon	soil saturated to surface, free water at 3 inches, trees with morphological adaptations

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W246	emergent	PEM	P-WL2a	common woolsedge, Canada reed grass, greater bladder sedge, red raspberry, balsam fir, red maple, yellow birch	6" of dark A-horizon over a depleted matrix	areas of inundation, soil saturated to surface
W247	forested	PFO	P-WL3	red spruce, yellow birch, balsam fir, hobblebush, three-seeded sedge, greater bladder sedge, Canada dwarf-dogwood, sharp-toothed nodding-aster	20" of very dark A-horizon over a depleted matrix with 4% redoximorphic features	soil saturated to surface, free water 3 inches below soil surface
W248	scrub-shrub	PSS	P-WL2a	red spruce, yellow birch, hobblebush, balsam fir, three-seeded sedge, sharp-toothed nodding-aster, red raspberry, long beech fern	20" + of moderately decomposed peat, histosol	soil saturated to surface, free water 1 inch below soil surface
W249	forested	PFO	P-WL3	red spruce, yellow birch, hobblebush, balsam fir, sharp-toothed nodding-aster, Canada dwarf-dogwood	dark mineral soils with 2% redoximorphic features in underlying horizons	Soil saturated to surface, wetland drainage patterns
W250	emergent	PEM	P-WL2a	northeastern mannagrass, Canada dwarf-dogwood, hobblebush, dwarf raspberry, cinnamon fern, balsam fir	10" organic soil material over a dark A-horizon with 12% redoximorphic features	soil saturated to the surface, free water at 2 inches below the soil surface
W251	emergent	PEM	P-WL2a	red raspberry, nodding sedge, three-leaved goldthread, soft rush, common woolsedge	4-6" of dark A-horizon over a depleted matrix with 15% redoximorphic features	soil saturated to surface, water stained leaves, wetland drainage patterns
W252	emergent	PEM	P-WL2a	red raspberry, nodding sedge, three-leaved goldthread, soft rush, common woolsedge, barber-pole bulrush, yellow-green sedge	4-6" of dark A-horizon over a depleted matrix with 15% redoximorphic features	soil saturated to surface, water stained leaves, wetland drainage patterns
W253	emergent, intermittent stream	PEM	P-WL1c6, P-WL2a	red raspberry, nodding sedge, three-leaved goldthread, soft rush, common woolsedge, barber-pole bulrush, yellow-green sedge	4-6" of dark A-horizon over a depleted matrix with 15% redoximorphic features	soil saturated to surface, water stained leaves, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W254	forested, emergent	PFO, PEM	P-WL2a, P-WL3	red spruce, balsam fir, fowl mannagrass, cinnamon fern, tussock sedge, small white American-aster	4-8" dark A-horizon over depleted matrix with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns, areas of inundation
W255	forested, intermittent stream	PFO	P-WL1c6, P-WL3	red spruce, yellow birch, red maple, common woolsedge, hay-scented fern	dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, areas of inundation, wetland drainage patterns
W256	forested	PFO	P-WL3	red spruce, yellow birch, balsam fir, common woolsedge, fringed sedge, three-seeded sedge, Canada reed grass	depleted B-horizon	soil saturated to surface, pockets of standing water
W257	emergent	PEM	P-WL2a	common woolsedge, Canadian rush, balsam fir, yellow birch	thick organic and dark A-horizon over a low chroma matrix with redoximorphic features	areas of inundation
W258	emergent	PEM	P-WL2a	common woolsedge, yellow birch, black-girdled woolsedge	depleted matrix,	soil saturated to surface, smalls pools of 9 inches of water in areas
W259	emergent	PEM	P-WL2a	northeastern mannagrass, soft rush, red raspberry, fringed sedge	gleyed matrix	wetland drainage patterns, soil saturated to surface
W260	emergent	PEM	P-WL2a	common woolsedge, soft rush, red raspberry, common wrinkle-leaved goldenrod, long-beaked willow	depleted soils with redoximorphic concentrations	soil saturated to surface, free water 4 inches below ground surface
W262	emergent, intermittent stream	PEM	P-WL1c6	Canada reed grass, northeastern mannagrass, eastern rough sedge, golden-saxifrage, fringed willow-herb	gleyed matrix with redoximorphic features	soil saturated to surface, areas of inundation, free water at 1 inch below surface
W263	forested/emergent	PFO/PEM	P-WL2a, P-WL3	red spruce, yellow birch, red maple, speckled alder, hobblebush, cinnamon fern, three-seeded sedge, northeastern mannagrass, sweet white violet, marsh fern	areas of 8-16" organic soil material	areas of inundation, soil saturated to surface, wetland drainage patterns
W264	emergent, intermittent stream	PEM	P-WL1c6	three-seeded sedge, northeastern mannagrass, northern wood sorrel, mountain holly	gleyed matrix with redoximorphic features	soil saturated to surface, areas of inundation, free water at 1 inch below surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W265	forested	PFO	P-WL3	red spruce, balsam fir, Canada dwarf-dogwood, cinnamon fern, speckled alder, three-seeded sedge, wrinkle-leaf goldenrod	16" organic soil material	soil saturated to the surface, areas of standing water, wetland drainage patterns
W266	emergent	PEM	P-WL2a	common woolsedge, fringed sedge, northeastern mannagrass, yellow birch, smooth white violet	depleted soil matrix	soil saturated to surface, wetland drainage patterns
W267	emergent	PEM	P-WL2a	common woolsedge, fringed sedge, eastern rough sedge	dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, water-stained leaves
W268	forested	PFO	P-WL3	balsam fir, red spruce, yellow birch, three-seeded sedge	16" organic soil material	soil saturated to surface, free water to surface, pockets of shallow standing water
W269	emergent	PEM	P-WL2a	common woolsedge, long beaked willow, red raspberry, paper birch, sensitive fern, common grass-leaved goldenrod	16" of organic soil material over a depleted matrix	soil saturated to the surface, areas of standing water, wetland drainage patterns
W270	emergent	PEM	P-WL2a	American beech, evergreen wood fern, common grass-leaved goldenrod, sharp-toothed nodding-aster, fowl mannagrass, New York fern	2" organic soil material over 15" of gleyed matrix	soil saturated to the surface, areas of standing water, wetland drainage patterns
W271	emergent	PEM	P-WL2a	yellow birch, long-beaked willow, common woolsedge, wrinkle-leaved goldenrod, red maple, red raspberry, eastern rough sedge, fowl mannagrass	depleted matrix	soil saturated to surface, free water to surface
W272	scrub-shrub	PSS	P-WL2a	paper birch, yellow birch, soft rush, red raspberry, chaffy sedge, red spruce, cinnamon fern	12" organic soil material over a depleted matrix	soil saturated to the surface, areas of standing water, wetland drainage patterns
W273	forested	PFO	P-WL3	red spruce, yellow birch, speckled alder, paper birch, northeastern mannagrass, mountain wood fern, fringed sedge, sweet white violet, three-seeded sedge, northern water horehound	20+" organic soil material	soil saturated to surface, areas of inundation, free water at 2 inches below surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W274	scrub-shrub	PSS	P-WL2a	nodding sedge, eastern rough sedge, Canada reed grass, common wrinkled-leave goldenrod, sugar maple, striped maple, long-beak willow	10" of dark A-horizon over loamy sand with concentrations	downhill seep, soil saturated to surface
W275	emergent	PEM	P-WL2a	eastern rough sedge, sugar maple, red raspberry, golden-saxifrage, evergreen wood fern, marsh fern, American beech	10" of dark A-horizon over 3" of loamy sand with depletions	soil saturated to surface, areas of standing water, wetland drainage patterns
W276	emergent	PEM	P-WL2a	interrupted fern, Canada reed grass, red raspberry, yellow birch, pointed broom sedge	thick, dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, free water at 2 inches below surface, small areas of inundation
W277	emergent	PEM	P-WL2a	Canada reed grass, golden-saxifrage, fiddlehead fern, zig-zag goldenrod, wood fern species, yellow birch	thick, dark, mucky A/O over a depleted matrix with 10% redoximorphic features	areas of inundation, water-stained leaves, wetland drainage patterns
W278	emergent	PEM	P-WL2a	fringed sedge, common grass-leaved goldenrod, soft rush, common wool sedge, pearly everlasting	15" of dark A-horizon over loamy sand with depletions	soil saturated to the surface, areas of standing water, wetland drainage patterns
W279	emergent	PEM	P-WL2a	sharp-toothed nodding-aster, zig-zag goldenrod, Pennsylvania bitter-cress	dark A-horizon over low chroma matrix with redoximorphic features and oxidized rhizospheres.	soil saturated to surface, wetland drainage patterns
W280	emergent	PEM	P-WL2a	fringed sedge, common grass- leaved goldenrod, soft rush, common wool sedge, pearly everlasting	15" dark A-horizon over loamy sand with redoximorphic depletions	soil saturated to the surface, areas of standing water, wetland drainage patterns
W281	scrub-shrub	PSS	P-WL2a	sharp-toothed nodding-aster, evergreen wood fern, Canada reed grass, common wrinkled-leave goldenrod, Canada goldenrod, sensitive fern	3" dark A-horizon over depleted matrix with 20% redoximorphic features	soil saturated to the surface, areas of standing water, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W282	scrub-shrub/emergent	PSS/PEM	P-WL2a	yellow birch, fringed willow-herb, slender wood-reed, cinnamon fern, eastern rough sedge, woodland horsetail, evergreen wood fern, sensitive fern, rattlesnake mannagrass, Canada reed grass, common wrinkle-leaved goldenrod	3" dark A-horizon over depleted matrix with 20% redoximorphic features	soil saturated to the surface, areas of standing water, wetland drainage patterns
W283	scrub-shrub	PSS	P-WL2a	nodding sedge, eastern rough sedge, Canada reed grass, common wrinkled-leave goldenrod, sugar maple, striped maple, long-beak willow	15" sandy loam with 15% redoximorphic features	inundated, wetland drainage patterns
W284	scrub-shrub, intermittent stream	PSS	P-WL1c6	sharp-toothed nodding-aster, fragrant bedstraw, common woolsedge, greater bladder sedge, cinnamon fern, hobble bush green ash, golden-saxifrage.	20" organic soil material mixed with sand	wetland drainage patterns, water-stained leaves and trees with morphological adaptations
W285	emergent	PEM	P-WL2a	yellow birch, northeastern mannagrass, nodding sedge, sharp-toothed nodding-aster, Canada reed grass, golden-saxifrage	thick, dark A-horizon over a low chroma matrix with redoximorphic features and oxidized rhizospheres	soil saturated to surface, areas of inundation
W286	emergent, perennial stream	PEM	P-WL1c6	cypress-like sedge, sharp-toothed nodding-aster, tussock sedge, eastern hemlock, American beech	20" organic soil material mixed with sand	wetland drainage patterns, water-stained leaves and trees with morphological adaptations
W287	emergent	PEM	P-WL2a	eastern rough sedge, common woolsedge, soft rush, fringed willow-herb	depleted soil	soil saturated to surface, wetland drainage patterns, free water to surface
W288	emergent	PEM	P-WL2a	common woolsedge, eastern rough sedge, soft rush, sallow sedge, long-beaked willow	depleted soil with redoximorphic concentrations	soil saturated to surface, free water within 2 inches of surface
W289	emergent	PEM	P-WL2a	yellow birch, eastern rough sedge	Depleted soil	soil saturated to surface, free water to surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W290	emergent, forested, intermittent stream	PEM, PFO	P-WL1c6, P-WL2a, P-WL3	northeastern mannagrass, evergreen wood fern, interrupted fern, golden saxifrage, red raspberry, paper birch, sharp-toothed nodding-aster	10" of sandy dark A-horizon with 10% redoximorphic features over a sandy B-horizon with redoximorphic	soil saturated to surface, drainage patterns. areas of inundation
W291	scrub-shrub, forested, intermittent stream	PSS, PFO	P-WL1c6, P-WL2a, P-WL3	sugar maple. American beech, yellow birch, northeastern mannagrass, sharp-toothed nodding-aster, sensitive fern, interrupted fern, narrow lady fern, golden-saxifrage, drooping sedge	loamy sand with redoximorphic features	soil saturated to surface, wetland drainage patterns
W292	emergent	PEM	P-WL2a	common woolsedge, long beaked willow, red raspberry, paper birch, sensitive fern, common grass-leaved goldenrod, necklace sedge	4" of mucky dark A-horizon over depleted matrix, with 5-15% redoximorphic features and organic streaking	soil saturated to surface, wetland drainage patterns, some areas inundated. Areas disturbed
W293	scrub-shrub	PSS	P-WL2a	yellow birch, red raspberry, Canadian rush, common grass-leaved goldenrod, soft rush	16" of organic over a depleted matrix with 20% redoximorphic features	soil saturated to surface
W294	scrub-shrub	PSS	P-WL2a	smooth white violet, sharp-toothed nodding-aster, common woolsedge, red raspberry	12" of dark A-horizon over 2" of coarse sand	soil saturated to the surface, wetland drainage patterns
W295	forested , intermittent stream	PFO	P-WL1c6, P-WL3	red spruce, yellow birch, red maple, balsam fir, northeastern mannagrass, Canada reed grass, cinnamon fern, three-leaved goldthread, three-seeded sedge, common woolsedge	16-24" of organic soil material, areas of disturbed/mixed spodosol with redoximorphic concentrations in the E-horizon	soil saturated to surface, areas of inundation, free water at 1 inch below surface, wetland drainage patterns
W296	forested	PFO	P-WL3	red spruce, balsam fir, fowl mannagrass, cinnamon fern, tussock sedge, small white American Aster	20" inches of mucky dark A	soil saturated to surface, drainage patterns, areas of inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W297	forested	PFO	P-WL3	yellow birch, balsam fir, red spruce, northeastern mannagrass, sensitive fern, sharp-toothed nodding-aster, interrupted fern, Canada dwarf-dogwood	thick, dark A-horizon over a depleted matrix with redoximorphic features	soil saturated to surface, areas of inundation, trees with morphological adaptations
W298	emergent	PEM	P-WL2a	northeastern mannagrass, red raspberry, striped maple, evergreen wood fern, red spruce, balsam fir, Canada dwarf-dogwood	16" of organic over a depleted matrix with 20% redoximorphic features	soil saturated to surface
W299	emergent, perennial stream	PEM	P-WL1c6	red elderberry, rattlesnake mannagrass, evergreen wood fern, sharp-toothed nodding-aster, long beech fern, smooth white violet	alluvial deposition mixed with A-horizon, high percentage of organic	soil saturated to surface
W300	emergent, perennial stream	PEM	P-WL1c6	evergreen wood fern, balsam fir, fringed sedge, golden saxifrage, red spruce, sharp-toothed nodding-aster	16" of organic over a depleted matrix with 20% redoximorphic features	soil saturated to surface, wetland drainage patterns; areas of inundation
W301	emergent, intermittent stream	PEM	P-WL1c6, P-WL2a	northeastern mannagrass, sharp-toothed nodding-aster, golden-saxifrage, drooping sedge, evergreen wood fern, red spruce, balsam fir	16" organic soil material	soil saturated to surface, wetland drainage patterns, areas of inundation, trees with morphological adaptations
W302	emergent, perennial stream	PEM	P-WL1c6	hobblebush, northeastern mannagrass, evergreen wood fern, smooth white violet, red elderberry, long beech fern	alluvial deposits mixed with an A-horizon.	soil saturated to surface
W303	emergent, perennial stream	PEM	P-WL1c6	northeastern mannagrass, hobblebush, red spruce, sharp-toothed nodding-aster, interrupted fern	alluvial soils, dark A-horizon over a sand with redoximorphic concentrations	soil saturated to surface, areas of inundation
W304	scrub-shrub	PSS	P-WL2a	yellow birch, red spruce, common wool sedge, three-seeded sedge, soft rush, Canadian rush, common lowbush blueberry	6" of organic soil material over depleted matrix with 10% redoximorphic features	soil saturated to the surface, areas with more than 16 inches standing water

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W305	emergent	PEM	P-WL2a	sharp-toothed nodding-aster, northeastern mannagrass, evergreen wood fern, paper birch, common wrinkle-leaved goldenrod	16" of organic soil material over depleted matrix with 20% redoximorphic features	wetland drainage patterns, water stained leaves and trees with morphological adaptations
W306	emergent	PEM	P-WL2a	common woolsedge, fringed willow-herb, soft rush, sharp-toothed nodding-aster, fringed sedge, long-beaked willow	dark mineral soils	soil saturated to surface, free water 1 inch below soil surface
W307	scrub-shrub	PSS	P-WL2a	northeastern mannagrass, common woolsedge, red raspberry, sharp-toothed nodding-aster, yellow birch	5" dark A-horizon over depleted matrix with 5% redoximorphic concentrations	soil saturated to surface, drainage patterns, some areas of inundated
W308	scrub-shrub	PSS	P-WL2a	fringed sedge, balsam fir, paper birch, soft rush, cinnamon fern, sharp-toothed nodding-aster	4" organic soil material over a depleted matrix with 2% redoximorphic features	soil saturated to surface, drainage patterns.; areas of inundation
W309	emergent	PEM	P-WL2a	yellow birch, balsam fir, red spruce, fringed sedge, common woolsedge	4-7" very dark A-horizon over a depleted matrix with 3% redoximorphic concentrations	soil saturated to surface, ~50% of wetland ponded
W310	scrub-shrub	PSS	P-WL2a	common wool sedge, sharp-toothed nodding-aster, red raspberry, soft rush, narrow lady fern, common grass-leaved goldenrod, yellow birch	5" organic soil material over depleted matrix with 10% redoximorphic features	soil saturated to surface, drainage patterns, areas of inundated
W311	scrub-shrub	PSS	P-WL2a	yellow birch, balsam fir, red spruce, red maple, three-seeded sedge, soft rush, sharp-toothed nodding-aster, red raspberry	1-8" very dark mucky A-horizon over a depleted matrix with 10% redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W312	forested	PFO	P-WL3	red spruce, balsam fir, red maple, yellow birch, hobblebush, three-seeded sedge, common woolsedge, fringed willow-herb, Canada dwarf-dogwood, nodding sedge, marsh fern, three-leaved goldthread, cinnamon fern	6-10" organic soil material over a depleted matrix; very dark A-horizon over a deleted matrix	soil saturated to surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W313	forested	PFO	P-WL3	fringed sedge, balsam fir, paper birch, soft rush, cinnamon fern, sharp-toothed nodding-aster, eastern spicy-wintergreen, common lowbush blueberry	4-6" organic soil material over a dark mineral soil with depletions	soil saturated to surface, wetland drainage patterns, areas of inundation
W314	forested	PFO	P-WL3	red maple, hobblebush, cinnamon fern, three-seeded sedge, red spruce	16" organic soil material	soil saturated to surface, drainage patterns, areas of inundation.
W315	forested	PFO	P-WL3	fringed sedge, northeastern mannagrass, common woolsedge, three-seeded sedge, balsam fir, red spruce,	4-8" organic soil material and mineral soil over depleted matrix with 5% redoximorphic features	soil saturated to surface, drainage patterns, areas inundated
W316	scrub-shrub	PSS	P-WL2a	yellow birch, common woolsedge, soft rush, three-leaved goldthread, three-seeded sedge, red raspberry, sharp-toothed nodding-aster	depleted matrix with 5% redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W317	emergent	PEM	P-WL2a	red maple, red spruce, yellow birch, three-seeded sedge, creeping spicy-winterberry, Canada dwarf-dogwood	2" dark A-horizon over depleted matrix over bedrock	soil saturated to surface, free water 1 inch below soil surface
W318	scrub-shrub	PSS	P-WL2a	common woolsedge, three-seeded sedge, paper birch, red spruce, mountain holly	6" organic over depleted matrix with 10% redoximorphic features	soil saturated to surface, wetland drainage patterns, areas inundated
W319	scrub-shrub	PSS	P-WL2a	red maple, red spruce, yellow birch, common woolsedge, Canada dwarf-dogwood, smooth white violet, three-seeded sedge	5" organic soil material over a depleted matrix with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns, free standing water at 2 inches below soil surface
W366	forested	PFO	P-WL3	balsam fir, red spruce , red maple, dwarf raspberry, cinnamon fern, northern wood sorrel, Canada dwarf-dogwood, tall white-aster, sedge, peat moss	20+" organic soil material	soil saturated to surface, areas of shallow inundation
W367	forested	PFO	P-WL3	balsam fir, red spruce, long-beaked willow, cinnamon fern, interrupted fern, tall white-aster, northern white-cedar, dwarf raspberry, peat moss	2-4" organic soil material over a dark mucky A-horizon to refusal	soil saturated to surface, free water ~6" of surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W368	forested	PFO	P-WL3	balsam fir, red spruce, northern white-cedar, long-beaked willow, shining willow, pussy willow, white meadowsweet, Canada reed grass, dwarf raspberry, Canada dwarf-dogwood, peat moss	20+" organic soil material	soil saturated to surface
W369	forested, perennial stream	PFO	P-WL3 P-WL1c6	balsam fir, northern white-cedar, red maple, yellow birch, speckled alder, tall white-aster, dwarf raspberry, foam flower peat moss	18" organic soil material	soil saturated to surface, wetland drainage patterns
W370	scrub-shrub, emergent, perennial stream	PSS, PEM	P-WL3, P-WL2a, P-WL1c6	speckled alder, yellow birch, balsam fir, red spruce, northern white-cedar, spotted Joe-pye weed, cinnamon fern, tall white-aster, common wrinkle-leaved goldenrod, sensitive fern	variable: 16+" organic soil material in places and other areas of dark mucky A-horizon over depleted B-horizon	soil saturated to surface, free water at 5" below surface, wetland drainage patterns
W371	scrub-shrub	PSS	P-WL2a	speckled alder, black ash, yellow birch, balsam fir, mannagrass, sensitive fern, cinnamon fern, crested wood fern, tall white-aster, dwarf raspberry	12" dark mucky A-horizon over depleted B-horizon	soil saturated to surface, free water at 5" below surface, wetland drainage patterns
W375	forested	PFO	P-WL3	yellow birch, red spruce, striped maple, hobblebush, golden-saxifrage, spotted touch-me-not, evergreen wood fern, common grass-leaved goldenrod	3" organic soil material over depleted matrix	soil saturated to surface, free water at 2" below surface, small areas of shallow inundation
W376	forested	PFO	P-WL3	yellow birch, red spruce, striped maple, hobblebush, golden-saxifrage, spotted touch-me-not, evergreen wood fern, common grass-leaved goldenrod	3" organic soil material over depleted matrix	soil saturated to surface, free water at 2" below surface, small areas of shallow inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W377	emergent	PEM	P-WL2a	fowl mannagrass, cinnamon fern, common wrinkle-leaved goldenrod, dwarf raspberry, foam flower, eastern rough sedge, long beech fern, Jack-in-the-pulpit	3-5" organic soil material over depleted matrix with 18% redoximorphic features	soil saturated to surface, free water at 1" below surface
W378	forested	PFO	P-WL3	yellow birch, green ash, American beech, balsam fir, spotted touch-me-not, fringed sedge, eastern rough sedge, evergreen wood fern, foam flower	2-4" organic soil material over depleted matrix with 20% redoximorphic features	soil saturated to surface, free water at 3" below surface, wetland drainage patterns
W379	emergent, perennial stream	PEM	P-WL1c6	small enchanter's-nightshade, sedge, yellow birch	alluvial deposition: dark A-horizon over sand	soil saturated to surface, free water to surface
W380	emergent	PEM	P-WL2a	mannagrass, sedge, common wrinkle-leaved goldenrod, yellow birch, red spruce, green ash, long-beaked willow	~9" organic soil material over depleted B-horizon	soil saturated to surface, free water at ~9" below surface
W381	forested	PFO	P-WL3	quaking poplar, red maple, yellow birch, northern white-cedar, cinnamon fern, dwarf raspberry, northern wood sorrel, eastern rough sedge, sensitive fern	~4" organic soil material over depleted B-horizon with 20% redoximorphic features	soil saturated to surface, free water at 6" below surface, wetland drainage patterns
W382	scrub-shrub	PSS	P-WL2a	speckled alder, yellow birch, striped maple, fringed sedge, common wrinkle-leaved goldenrod, tall white-aster, red raspberry, dwarf raspberry, spotted touch-me-not	~1" organic soil material over depleted sandy B-horizon with 10% redoximorphic features	soil saturated to surface, free water at 3" below surface, wetland drainage patterns
W383	scrub-shrub	PSS	P-WL2a	pussy willow, long-beaked willow, red maple, common wrinkle-leaved goldenrod, fringed sedge, field horsetail, tall white-aster, sensitive fern, wood horsetail	variable depositional soil: areas with depleted matrix and other areas with large concentrations and depletions	soil saturated to surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W387	scrub-shrub, perennial stream	PSS	P-WL1c6, P-WL2a	speckled alder, yellow birch, balsam fir, mannagrass, common wrinkle-leaved goldenrod, tall meadow rue, red raspberry, Canada reed grass, cinnamon fern, sensitive fern	alluvial soil: ~14" organic soil material over thin layer of sand over buried layer of organic soil material	soil saturate to surface, wetland drainage patterns
W388	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, field horsetail, interrupted fern, common wrinkle-leaved goldenrod, wood horsetail, peat moss	disturbed soil: areas with depleted B-horizon and redoximorphic concentrations	soil saturated to surface, free water to surface, areas with 12+" of inundation, wetland drainage patterns
W389	emergent	PEM	P-WL2a	Canada reed grass, cinnamon fern, barber-pole bulrush, sensitive fern, fringed sedge, common wrinkle-leaved goldenrod, peat moss	16+" organic soil material to refusal	soil saturated to surface, free water to surface, areas with 12+" of inundation
W390	emergent	PEM	P-WL2a	nodding sedge, fowl mannagrass, greater bladder sedge, spotted touch-me-not, soft rush, sensitive fern, red maple	8-12" organic soil material over thin A-horizon to depleted B-horizon with 5-25% redoximorphic features	soil saturated to surface, areas with shallow inundation, wetland drainage patterns
W391	emergent	PEM	P-WL2a	sensitive fern, Canada reed grass, spotted touch-me-not, field horsetail, eastern rough sedge, common wrinkle-leaved goldenrod, evergreen wood fern	depleted B-horizon with redoximorphic concentrations	soil saturated to surface, free water to surface, wetland drainage patterns
W392	open water	PUB	P-WL2a	woolsedge	ponded soil	24” of inundation
W393	emergent	PEM	P-WL2a	spotted touch-me-not, bedstraw, sharp-toothed nodding aster, red wakerobin	~6" organic soil material over a depleted B-horizon	soil saturated to surface, free water to surface
W394	scrub-shrub	PSS	P-WL2a	yellow birch, red maple, long-beaked willow, red raspberry, spotted touch-me-not, sensitive fern, slender lady fern, nodding sedge, fowl mannagrass	variable: some areas with 12-16" organic soil material and other areas with 10-12" organic soil material over depleted B-horizon with 10% redoximorphic features	soil saturated to surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W396	emergent/scrub-shrub	PEM/PSS	P-WL2a	green ash, red maple, long-beaked willow, red raspberry, spotted touch-me-not, sensitive fern, Canada reed grass, Canada goldenrod, fowl mannagrass	variable: areas with >15" organic soil material and other areas with 10-12" organic soil material over depleted B-horizon with 5% redoximorphic features	soil saturated to surface, areas of shallow inundation, wetland drainage patterns
W397	emergent	PEM	P-WL2a	fowl mannagrass, sensitive fern, interrupted fern	depleted B-horizon	soil saturated to surface, free water at ~6" below surface
W398	emergent/scrub-shrub	PEM/PSS	P-WL2a	green ash, red maple, long-beaked willow, red raspberry, spotted touch-me-not, sensitive fern, Canada reed grass, Canada goldenrod, fowl mannagrass	variable: areas with >15" organic soil material and other areas with 10-12" organic soil material over depleted B-horizon with 5% redoximorphic features	soil saturated to surface, areas of shallow inundation, wetland drainage patterns
W399	emergent	PEM	P-WL2a	fowl mannagrass, spotted touch-me-not, zig-zag goldenrod, nodding sedge, common wrinkle-leaved goldenrod, sensitive fern, barber-pole bulrush, green ash	variable: areas with 10-15" organic soil material over rock and areas with 10-12" organic soil material over depleted B-horizon with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns
W400	emergent/scrub-shrub	PEM/PSS	P-WL2a	green ash, red maple, long-beaked willow, red raspberry, spotted touch-me-not, sensitive fern, Canada reed grass, Canada goldenrod, fowl mannagrass	variable: areas with >15" organic soil material and other areas with 10-12" organic soil material over depleted B-horizon with 5% redoximorphic features	soil saturated to surface, areas of shallow inundation, wetland drainage patterns
W401	emergent	PEM	P-WL2a	fringed sedge, pointed broom sedge, sensitive fern, barber-pole bulrush, interrupted fern, Virginia strawberry, awl-fruited sedge	variable: areas with depleted B-horizon, areas of fill material and areas of shallow organic material over rock	soil saturated to surface, free water at ~9" below surface, wetland drainage patterns
W402	emergent, intermittent stream	PEM	P-WL2a, P-WL1c6	fringed sedge, sensitive fern, barber-pole bulrush, swamp yellow-loosestrife, interrupted fern, wood horsetail, tall meadow rue	Variable: areas with ~6" organic soil material to refusal and areas with depleted B-horizon	soil saturated to surface, free water to surface, wetland drainage patterns
W403	emergent, intermittent stream	PEM	P-WL1c6	fringed sedge, star sedge, barber-pole bulrush, sensitive fern, long-beaked willow, pussy willow	4-6" organic soil material to refusal	soil saturated to surface, free water within 4" of surface, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W404	emergent	PEM	P-WL2a	barber-pole bulrush, sensitive fern, fringed sedge, field horsetail, cinnamon fern, marsh fern, Canada reed grass, soft rush	~4-9" organic soil material to refusal	soil saturated to surface, free water to surface, wetland drainage patterns
W405	emergent/forested	PEM/PFO	P-WL2a, P-WL3	fringed sedge, sensitive fern, soft rush, interrupted fern, Virginia strawberry, Canada reed grass, red maple, yellow birch, dwarf raspberry, bedstraw, marsh fern	variable: areas with ~6-9" dark A-horizon to refusal and area with depleted B-horizon	soil saturated to surface, free water to surface, wetland drainage patterns, water-stained leaves
W406	forested	PFO	P-WL3	red maple, black ash, yellow birch, balsam fir, sensitive fern, bristly blackberry, Canada reed grass, cinnamon fern, peat moss	10-12" organic soil material over a dark A-horizon and depleted B-horizon with 10-15% redoximorphic features	soil saturated to surface, areas of shallow inundation, wetland drainage patterns
W407	forested	PFO	P-WL3	red maple, black ash, yellow birch, balsam fir, sensitive fern, bristly blackberry, Canada reed grass, cinnamon fern, peat moss	10-12" organic soil material over a dark A-horizon and depleted B-horizon with 10-15% redoximorphic features	soil saturated to surface, areas of shallow inundation, wetland drainage patterns
W408	scrub-shrub/forested	PSS/PFO	P-WL2a, P-WL3	red maple, yellow birch, balsam fir, black ash, green ash, hobblebush, witch-hazel, fowl mannagrass, sensitive fern, cinnamon fern, spotted touch-me-not, fringed sedge, Canada reed grass, peat moss	variable: areas with 13-15" organic soil material over rock and areas with 8-10" organic soil material over dark A-horizon and depleted B-horizon with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns
W409	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, red raspberry, crested wood fern, fringed sedge, barber-pole bulrush, star sedge, rosy meadowsweet, long-beaked willow, yellow birch	variable: areas with up to 6" organic soil material to refusal and areas with 6-8" organic soil material over depleted B-horizon with 5-10% redoximorphic features	soil saturated to surface, free water to surface, areas with ~9" of inundation, wetland drainage patterns
W410	emergent/scrub-shrub	PEM/PSS	P-WL2a	red maple, yellow birch, northern white-cedar, barber-pole bulrush, Canada reed, nodding sedge, sensitive fern, royal fern, slender lady fern	12-16" organic soil material over rock with depleted B-horizon between rocks	soil saturated to surface, areas of shallow inundation, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W411	scrub-shrub	PSS	P-WL2a	red maple, green ash, red spruce, yellow birch, eastern hemlock, hobblebush, Canada reed grass, cinnamon fern, dwarf raspberry, wild sarsaparilla	~12" organic soil material to refusal	soil saturated to surface, free water to surface
W412	emergent/scrub-shrub	PEM/PSS	P-WL2a	red maple, yellow birch, green ash, nodding sedge, fowl mannagrass, Canada reed grass, sensitive fern	15-18" organic soil material over rock	soil saturate to surface, wetland drainage patterns
W413	forested	PFO	P-WL3	yellow birch, red maple, black ash, green ash, witch-hazel, balsam fir, sensitive fern, bristly blackberry, three-seeded sedge, Canada reed grass, cinnamon fern	8" organic soil material over a shallow dark A-horizon and depleted B-horizon with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves
W414	forested/emergent	PFO/PEM	P-WL2a P-WL3	yellow birch, northern white-cedar, balsam fir, black ash, cinnamon fern, fowl mannagrass, Canada reed grass, wood horsetail, fringed sedge, barber-pole bulrush, red raspberry, peat moss	shallow layer of organic soil material over rock	soil saturated to surface, free water to surface, areas of shallow inundation, water-stained leaves
W415	forested	PFO	P-WL3	red maple, yellow birch, sensitive fern, fringed sedge, three-seeded sedge, wood horsetail, peat moss	8-10" organic soil material over depleted B-horizon with 25% redoximorphic features	soil saturated to surface, water-stained leaves
W416	forested	PFO	P-WL3	red maple, yellow birch, northern white-cedar, sensitive fern, fringed sedge, three-seeded sedge, wood horsetail, peat moss	8-10" organic soil material over depleted B-horizon with 25% redoximorphic features	soil saturated to surface, water-stained leaves
W417	forested	PFO	P-WL3	northern white-cedar, red maple, yellow birch, red spruce, paper birch, green ahs, beaked hazelnut, sensitive fern, currant, fringed sedge, wood horsetail, dwarf raspberry	variable: areas with 6-8"organic soil material over depleted B-horizon with 10-15% redoximorphic features and areas with 8-12" organic soil material over rock	soil saturated to surface, free water to surface and areas of shallow inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W418	emergent	PEM	P-WL2a	spikesedge, soft rush, sedge, barber-pole bulrush, narrow-leaved speedwell, old-field cinquefoil	depleted B-horizon	soil saturated to surface, free water to surface, wetland drainage patterns
W419	forested	PFO	P-WL3	red maple, black ash, yellow birch, green ash, witch-hazel, northern white-cedar, sensitive fern, narrow lady fern, three-seeded sedge, peat moss	variable: areas with up to 20" organic soil material and areas with 8-10" organic soil material over depleted B-horizon with 5-10% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves
W420	emergent/forested	PEM/PFO	P-WL2a, P-WL3	barber-pole bulrush, fringed rush, sensitive fern, Canada reed grass, wood horsetail, yellow birch, red maple, three-seeded sedge, dwarf raspberry	depleted B-horizon	soil saturated to surface, free water to surface, wetland drainage patterns
W421	emergent/forested	PEM/PFO	P-WL2a, P-WL3	barber-pole bulrush, sensitive fern, fringed sedge, interrupted fern, blue iris, cinnamon fern, awl-fruited sedge, arrow-leaved tearthumb, yellow birch, striped maple	variable: areas with 12-18" organic soil material to refusal, areas with ~2" organic soil material to refusal and areas with 12+" organic soil material over depleted B-horizon with 25-30% redoximorphic features	soil saturated to surface, free water to surface, wetland drainage patterns
W422	emergent	PEM	P-WL2a	Canada reed grass, interrupted fern, barber-pole bulrush, red raspberry, spikesedge, sensitive fern, fringed sedge, awl-fruited sedge	4-6" organic soil material over shallow depleted B-horizon	soil saturated to surface, free water to surface, areas of shallow inundation
W423	emergent	PEM	P-WL2a	sensitive fern, star sedge, soft rush, Canada reed grass, barber-pole bulrush, Virginia strawberry, northern white-cedar	organic soil maternal over shallow depleted B-horizon	soil saturated to surface, free water to surface, wetland drainage patterns
W424	forested	PFO	P-WL3	northern white-cedar, balsam fir, red maple, nodding sedge, spotted touch-me-not, peat moss	6-8" organic soil material over depleted B-horizon with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W425	forested	PFO	P-WL3	black ash, northern white-cedar, sugar maple, interrupted fern, wood horsetail, nodding sedge, awl-fruited sedge, greater bladder sedge, red raspberry	~9" thick A-horizon with redoximorphic depletion to refusal	soil saturated to surface, free water to surface, wetland drainage patterns
W426	emergent	PEM	P-WL2a	Canada reed grass, cinnamon fern, interrupted fern, field horsetail, soft rush, barber-pole bulrush, broad-leaved cat-tail, fringed sedge, pussy willow, white meadowsweet	~6-9" organic soil material over shallow depleted B-horizon	soil saturated to surface, free water to surface, areas of shallow inundation, wetland drainage patterns
W427	emergent	PEM	P-WL2a	awl-fruited sedge, fowl manna grass, soft rush, nodding sedge, common woolsedge, interrupted fern green ash, red raspberry	8-10 " organic soil material over depleted B-horizon with 10-20% redoximorphic features	soil saturated to surface, areas of shallow inundation, water-stained leaves
W428	forested	PFO	P-WL3	balsam fir, black ash, beaked hazelnut, green ash, fowl manna grass, red raspberry, dwarf raspberry	~18 " organic soil material over shallow depleted B-horizon with redoximorphic concentrations	soil saturated to surface, free water to surface
W429	forested	PFO	P-WL3	green ash, balsam fir, yellow birch, black ash, fowl mannagrass, sensitive fern, water avens, interrupted fern, greater bladder sedge, awl-fruited sedge, dwarf raspberry	variable: some places up to 18 " organic soil material to refusal and other areas organic soil material overlies depleted B-horizon	soil saturated to surface, free water to surface
W430	forested	PFO	P-WL3	balsam fir, green ash, eastern hemlock, witch hazel, red maple, fowl mannagrass, soft rush, awl-fruited sedge, nodding sedge, sensitive fern	variable: some areas of 8-12 " organic soil material over rock and some areas 8-12 " organic soil material over depleted B-horizon with 15% redoximorphic features	soil saturated to surface, water-stained leaves
W431	forested	PFO	P-WL3	balsam fir, red maple, northern white-cedar, yellow birch, green ash, balsam poplar, quaking poplar, fowl mannagrass, three-seeded sedge, nodding sedge, sensitive fern, royal fern, soft rush, bristly blackberry	variable: areas with 12-18 " organic soil material over rock and areas with 8-14 " organic soil material over depleted B-horizon with 5-10% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W432	forested	PFO	P-WL3	northern white-cedar, yellow birch, balsam fir, red maple, balsam poplar, green ash, sensitive fern, fowl mannagrass, three-seeded sedge, royal fern, cinnamon fern	variable: areas with 12-18 " organic soil material over rock and areas with 8-14 " organic soil material over depleted B-horizon with 5-10% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves
W433	forested	PFO	P-WL3	balsam fir, northern white-cedar, green ash, black ash, red maple, long-beaked willow, yellow birch, sensitive fern, cinnamon fern, royal fern, greater bladder sedge	6-10" organic soil material over shallow dark A-horizon and depleted B-horizon with 15% redoximorphic features	soil saturated to surface, free water within 4" of surface, wetland drainage patterns, water-stained leaves
W434	forested	PFO	P-WL3	green ash, black ash, paper birch, speckled alder, balsam fir, northern white-cedar, sensitive fern, dwarf raspberry, barber-pole bulrush, interrupted fern	~4" organic soil material to refusal	soil saturated to surface, free water to surface
W435	forested	PFO	P-WL3	northern white-cedar, balsam fir, red maple, quaking poplar, green ash, black ash, long-beaked willow, sensitive fern, fowl mannagrass, Canada reed grass, cinnamon fern, royal fern	variable: areas with 8-10" organic soil material over rock and areas with 6-8" organic soil material over dark A-horizon and depleted B-horizon with 1015% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves
W436	forested	PFO	P-WL3	northern white-cedar, balsam fir, yellow birch, green ash, witch-hazel, interrupted fern, cinnamon fern, sensitive fern, three-seeded sedge, peat moss	variable: areas of 12-15" organic soil material over dark A-horizon to refusal and areas with a depleted B-horizon with 5% redoximorphic features	soil saturated to surface, wetland drainage patterns
W437	forested	PFO	P-WL3	balsam fir, cinnamon fern, marsh fern, bristly blackberry, northern wood sorrel	10-12" organic soil material over depleted B-horizon with 25% redoximorphic features	soil saturated to surface, water-stained leaves
W438	forested	PFO	P-WL3	balsam fir, cinnamon fern, marsh fern, bristly blackberry, northern wood sorrel	10-12" organic soil material over depleted B-horizon with 25% redoximorphic features	soil saturated to surface, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W439	forested	PFO	P-WL3	red maple, green ash, yellow birch, American elm, balsam fir, witch-hazel, sensitive fern, Canada reed grass, three-seeded sedge, bristly blackberry, cinnamon fern	8-10" organic soil material over dark A-horizon to a depleted B-horizon with 10% redoximorphic features	soil saturated to surface, wetland drainage patterns, water-stained leaves
W440	forested/emergent	PFO/PEM	P-WL2a, P-WL3	balsam fir, paper birch, red maple, yellow birch, white meadowsweet, long-beaked willow, cinnamon fern, barber-pole bulrush, Canada reed grass, sensitive fern, star sedge, water avens	variable: areas of 8-10" organic soil material over rock and areas of 8-10" organic soil material over depleted B-horizon with 5-10% redoximorphic features	soil saturated to surface, sediment deposition, wetland drainage patterns
W441	forested	PFO	P-WL3	green ash, red maple, black ash, yellow birch, paper birch, balsam fir, speckled alder, long-beaked willow, greater bladder sedge, fowl mannagrass, sensitive fern, starflower, bristly blackberry	8-10" organic soil material over depleted B-horizon with 15% redoximorphic concentrations	soil saturated to surface, free water at ~6" below surface, wetland drainage patterns
W442	forested	PFO	P-WL3	black ash, green ash, yellow birch, red maple, balsam fir, northern white-cedar, speckled alder, witch-hazel, cinnamon fern, slender lady fern, currant, dwarf raspberry, fowl mannagrass, sensitive fern, awl-fruited sedge, marsh fern	6-8" organic soil material over depleted B-horizon with 15-20% redoximorphic concentrations	soil saturated to surface, free water to surface, wetland drainage patterns
W443	forested, emergent, scrub-shrub, perennial streams, intermittent streams	PFO, PEM, PSS	P-WL1c3, P-WL1c6 P-WL2a, P-WL3	black ash, yellow birch, green ash, balsam fir, northern white-cedar, red maple, beaked hazelnut, cinnamon fern, sensitive fern, fowl mannagrass, eastern rough sedge, foam flower, speckled alder, white meadowsweet, rosy meadowsweet, Canada reed grass, barber-pole bulrush, mosquito bulrush, awl-fruited sedge	variable: areas with ~9" organic soil material to refusal, areas with ~9" organic soil material over depleted B-horizon and areas with 18+" organic soil material	soil saturated to surface, free water at 9" below ground surface, areas of shallow inundation, wetland drainage patterns

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W444	forested	PFO	P-WL3	yellow birch, red maple, black ash, green ash, marsh fern, slender lady fern, sensitive fern, cinnamon fern, nodding sedge	8" organic soil material over a thin dark A-horizon to a depleted B-horizon with 10-15% redoximorphic features	soil saturated to surface, wetland drainage patterns
W445	forested	PFO	P-WL3	northern white-cedar, balsam fir, red maple, sensitive fern, dwarf raspberry	depleted B-horizon	soil saturated to surface, free water to surface
W446	emergent	PEM	P-WL2a	star sedge, common wrinkle-leaved goldenrod, sensitive fern, fowl manna grass, cinnamon fern, Canada reed grass, awl-fruited sedge, white meadowsweet, long-beaked willow, speckled alder	~16" organic soil material to refusal	soil saturated to surface, free water to surface
W447	scrub-shrub, perennial streams	PSS	P-WL1c3, P-WL1c6	speckled alder, balsam fir, northern white-cedar, choke cherry, sensitive fern, tall meadow rue, fowl mannagrass, crested wood fern	alluvial soils closest to streams; depleted B-horizon with redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W448	scrub-shrub	PSS	P-WL1c3	speckled alder, common winterberry, with-rod, fowl mannagrass, fringed sedge, sallow sedge, tussock sedge	depleted B-horizon with redoximorphic concentrations	areas with ~6" of inundation, soil saturated to surface
W449	scrub-shrub	PSS	P-WL1c3	speckled alder, sensitive fern, fowl mannagrass, fiddlehead fern, tall meadow rue, bristly blackberry	alluvial soil: 2% redoximorphic features within 4" of surface	soil saturated in upper 12", water-stained leaves
W450	forested	PFO	P-WL1c3	yellow birch, sugar maple, green ash, sensitive fern, fiddlehead fern, tall meadow rue, fowl mannagrass, Canada reed grass	alluvial soil: 2% redoximorphic features within 4" of surface	areas with shallow inundation, soil saturated to surface, water-stained leaves
W485	scrub-shrub	PSS	P-WL2a	common winterberry, cinnamon fern	4" organic soil material over depleted B-horizon	soil saturated to surface, wetland drainage patterns
W486	scrub-shrub	PSS	P-WL2a	balsam fir, cinnamon fern, northern wood sorrel , sedge	disturbed soil	shallow inundation

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W469	scrub-shrub	PSS	P-WL1c3	speckled alder, sensitive fern, tall meadow rue, large-leaved avens, calico American-aster, purple-stemmed American-aster	some areas of alluvial deposition; depleted B-horizon with 3% redoximorphic features	soil saturated to surface, water-stained leaves, water-marks
W470	scrub-shrub	PSS	P-WL2a	speckled alder, sensitive fern, large-leaved avens, tussock sedge	dark A-horizon over depleted B-horizon with 7% redoximorphic features	soil saturated to within 1" of surface
W471	scrub-shrub, emergent	PSS, PEM	P-WL1c3, P-WL2a	speckled alder, white meadowsweet, fowl mannagrass, fringed sedge, fringed willow-herb, sensitive fern, swamp yellow-loosestrife	dark A-horizon over depleted B-horizon with redoximorphic concentrations	soil saturated to surface, water-stained leaves, wetland drainage patterns
W451	scrub-shrub	PSS	P-WL1c3	speckled alder, sensitive fern, bedstraw, pointed broom sedge, common yellow wood sorrel	alluvial soil: stratified sands with redoximorphic concentrations	shallow inundation, soil saturated to surface
W452	forested/emergent	PFO/PEM	P-WL1c3, P-WL2a, P-WL3	northern white-cedar, yellow birch, eastern hemlock, red maple, speckled alder, barber-pole bulrush, mosquito bulrush, Canada reed grass, common woolsedge, sensitive fern, pointed broom sedge, nodding sedge, common grass-leaved-goldenrod	variable: histosol predominate in areas of lower topography; other areas shallow organic material over rock	areas of shallow inundation, soil saturated to surface, free water to surface, water-stained leaves
W454	emergent	PEM	P-WL2a	Canada reed grass, interrupted fern, common wrinkle-leaved goldenrod, dwarf raspberry, nodding sedge, red maple, white meadowsweet, speckled alder	depleted B-horizon	soil saturated to surface, free water to surface
W455	scrub-shrub	PSS	P-WL2a	red maple, speckled alder yellow birch, pussy willow, common woolsedge, nodding sedge, sensitive fern, soft rush, bristly blackberry, peat moss	6-8" organic soil material over dark A-horizon to a depleted B-horizon with 5% redoximorphic features	water-stained leaves, soil saturated to surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W456	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, soft rush, awl-fruited sedge, barber-pole bulrush, pointed broom sedge, white meadowsweet, rosy meadowsweet	shallow soil over rock; areas with depleted B-horizon	shallow inundation in ruts, soil saturated to surface, free water to surface
W457	emergent, scrub-shrub	PEM, PSS	P-WL2a	Canada reed grass, sensitive fern, water avens, common woolsedge, common wrinkle-leaved goldenrod, white meadowsweet, red raspberry	dark A-horizon over depleted B-horizon	soil saturated to surface, wetland drainage patterns
W458	scrub-shrub	PSS	P-WL2a	red maple, white meadowsweet, witch-hazel, nodding sedge, sensitive fern, cinnamon fern, red raspberry, bristly blackberry, peat moss	8-10" organic soil material over dark A-horizon to a depleted B-horizon with 5% redoximorphic features	areas of shallow inundation, soil saturated to surface, water-stained leaves
W459	forested, intermittent stream	PFO	P-WL1c6 P-WL3	northern white-cedar, balsam fir, red maple, eastern hemlock, green ash, nodding sedge, sensitive fern, fowl manna grass	18-20" organic soil material over a depleted B-horizon with 5% redoximorphic features	soil saturated in upper 12"
W460	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, mosquito bulrush, common wrinkle-leaved goldenrod, soft rush, awl-fruited sedge, white meadowsweet	variable: generally shallow soils with dark A-horizon over rock or dark A-horizon over depleted B-horizon	shallow inundation in ruts, soil saturated to surface, free water at ~4" below ground surface
W461	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, cinnamon fern, nodding sedge, marsh fern, white meadowsweet	depleted B-horizon with redoximorphic concentrations	soil saturated to surface, wetland drainage patterns
W462	scrub-shrub, perennial stream	PSS	P-WL1c6 P-WL2a	speckled alder, sensitive fern, dwarf raspberry, red raspberry, tall meadow rue, Canada reed grass, fiddlehead fern	dark A-horizon over depleted B-horizon	soil saturated to surface, wetland drainage patterns
W472	emergent	PEM	P-WL1c3	sensitive fern, common wrinkle-leaved goldenrod, tall white-aster, purple-stemmed American-aster	dark A-horizon over depleted B-horizon with 5% redoximorphic features	soil saturated within 3" of ground surface

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W474	forested	PFO	P-WL1c3	northern white-cedar, red maple, red spruce, black ash, evergreen wood fern, greater bladder sedge, sensitive fern, hoary sedge	dark A-horizon over depleted B-horizon with 10% redoximorphic features	soil saturated within 1" of ground surface
W475	emergent	PEM	P-WL2a	sallow sedge, common woolsedge, common wrinkle-leaved goldenrod, red raspberry, stalked woolsedge, pussy willow	dark A-horizon over depleted B-horizon with redoximorphic features	soil saturated to surface, wetland drainage patterns
W476	forested, intermittent stream	PFO	P-WL1c6 P-WL3	green ash, balsam fir, red maple, speckled alder, greater bladder sedge, dwarf raspberry, tall meadow rue, evergreen wood fern, sensitive fern	dark A-horizon over depleted B-horizon with redoximorphic concentrations	soil saturated to surface, water-stained leaves, wetland drainage patterns
W477	emergent	PEM	P-WL2a	sensitive fern, evergreen wood fern	dark A-horizon over depleted B-horizon	soil saturated to surface, water-stained leaves, wetland drainage patterns
W478	emergent	PEM	P-WL2a	eastern rough sedge, crested wood fern, narrow lady fern	depleted B-horizon with 3-15% redoximorphic features	soil saturated in upper 12"
W479	forested	PFO	P-WL3	red maple, speckled alder, American elm, sensitive fern, greater bladder sedge, evergreen wood fern, dwarf raspberry	dark A-horizon over depleted B-horizon	soil saturated to surface, water-stained leaves
W480	forested	PFO	P-WL3	yellow birch, red maple, balsam fir, sensitive fern, cinnamon fern, evergreen wood fern, dwarf raspberry	dark, mucky A-horizon over depleted B-horizon with 10% redoximorphic features	soil saturated within 1" of ground surface, wetland drainage patterns
W481	emergent	PEM	P-WL2a	fringed sedge, Canada reed grass, wood horsetail, sensitive fern, Canadian rush, common wrinkle-leaved goldenrod, sallow sedge	dark A-horizon over depleted B-horizon with redoximorphic features	soil saturated to surface, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W463	scrub-shrub	PSS	P-WL2a	green ash, red maple, yellow birch, witch-hazel, hobblebush, sensitive fern, nodding sedge, Canada reed grass, soft rush, common woolsedge, common wrinkle-leaved goldenrod	4-8 " organic soil material over dark A-horizon to a depleted B-horizon with 5- 10% redoximorphic features	areas of shallow inundation, soil saturated to surface, water-stained leaves
W464	emergent, perennial stream	PEM	P-WL1c6	sensitive fern, wood horsetail, nodding sedge	B-horizon with redoximorphic concentrations	soil saturated to surface, free water to surface
W482	emergent/forested, intermittent stream	PEM/PFO	P-WL2a, P-WL3 P-WL1c6	yellow birch, red spruce, red maple, Canada reed grass, cinnamon fern, spotted touch-me-not, red raspberry, eastern rough sedge, northern water-horehound	variable: 10-14" dark, mucky A-horizon over bedrock; some areas with depleted B-horizon under the A-horizon	soil saturated within 2" of ground surface
W483	emergent/forested	PEM/PFO	P-WL2a, P-WL3	yellow birch, red maple, fringed sedge, dwarf raspberry, evergreen wood fern, spotted touch-me-not, fowl manna grass	8 " organic soil material over rock	soil saturated to surface, water-stained leaves
W484	emergent	PEM	P-WL2a	common wrinkle-leaved goldenrod, nodding sedge, red raspberry, sensitive fern, fringed willow-herb, long-beaked willow, pussy willow, yellow birch	6-8 " organic soil material over bedrock	soil saturated to surface, wetland drainage patterns
W465	scrub-shrub	PSS	P-WL2a	speckled alder, green ash, red maple, fowl mannagrass, common wrinkle-leaved goldenrod, bristly blackberry, three-seeded sedge	4-5 " organic soil material over a dark A-horizon to a depleted B-horizon with 25% redoximorphic features	shallow inundation, soil saturated to surface, water-stained leaves
W466	scrub-shrub	PSS	P-WL2a	speckled alder, green ash, red maple, white meadowsweet, fowl mannagrass, sensitive fern, wood horsetail, marsh fern, spotted touch-me-not	5-6 " organic soil material over a dark A-horizon to a depleted B-horizon with 25-30% redoximorphic features	soil saturated to surface, water-stained leaves

(Table 3-2 cont.)

Resource Identification Number	General Wetland Type	Cowardin Classification of Wetlands[1]	Wetland Protection Subdistrict[2, 3]	Dominant Vegetation	Hydric Soil Indicators	Evidence of Hydrology
W467	emergent	PEM	P-WL2a	Canada reed grass, sensitive fern, mosquito bulrush, swamp yellow-loosestrife, soft rush, star sedge, smooth goldenrod, white meadowsweet, red-osier dogwood	variable: apparent gravel fill in places; limited areas with redoximorphic concentrations	shallow inundation, soil saturated to surface, free water to surface
W468	forested	PFO	P-WL3	green ash, red maple, yellow birch, black ash, speckled alder, white meadowsweet, fowl mannagrass, sensitive fern, three-seeded sedge, Canada reed grass, northeastern mannagrass	3-4 " organic soil material over a dark A-horizon to a depleted B-horizon with 15% redoximorphic features	shallow inundation, soil saturated to surface, water-stained leaves, wetland drainage patterns

[1]Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U. S. Fish & Wildlife Service Publication Number FWS/OBS-79/31.

[2] P-WL1: *Wetland Protection Subdistrict*

a) Areas enclosed by the normal high water mark of flowing waters, stream channels, and bodies of standing water, except for constructed ponds less than 10 acres in size which are not fed or drained by flowing waters;

b) Coastal wetlands, together with areas below the high water mark of tidal waters and extending seaward to the limits of the State's jurisdiction; or

c) Freshwater wetlands, as follows:

I. Within 250' of a coastal wetland or of the normal high water mark of any body of standing water greater than 10 acres;

II. Containing at least 20,000 square feet in total of the following: aquatic vegetation, emergent marsh vegetation, or open water, unless the wetlands are the result of constructed ponds less than 10 acres in size which are not fed or drained by flowing waters;

III. That are inundated with floodwater during a 100 year flood event;

IV. Containing significant wildlife habitat;

V. Consisting of, or containing, peatlands, except that LURC may determine that a previously mined, peatland or portion thereof, is not a wetland of special significance; or

VI. Within 25' of a stream channel.

P-WL2:

a) Scrub shrub and other non-forested freshwater wetlands, excluding those covered under P-WL1;

b) Constructed ponds less than 10 acres in size which are not fed or drained by flowing waters.

P-WL3: Forested freshwater wetlands, excluding those covered under P-WL1 and P-WL2.

P- SL2 : Areas within 75 feet, measured as A-horizontal distance landward, of (a) the normal high water mark of stream channels upstream for the point where such channels drain 50 square miles; (b) the upland edge of those coastal and inland wetlands identified in Section 10.23, N, 2, a, (1)(b) and (c) and (2) and (3); and (c) the normal high water mark of bodies of standing water less than 10 acres in size, but excluding bodies of standing water which are less than three acres in size and which are not fed or drained by a flowing water.

[3] Wetlands and some streams identified within the Project area have an associated Shoreland Protection Subdistrict, P- SL2. P-SL2 includes: areas within 75 feet, measured as A-horizontal distance landward, of (a) the normal high water mark of stream channels upstream for the point where such channels drain 50 square miles; (b) the upland edge of those coastal and inland wetlands identified in Section 10.23, N, 2, a, (1)(b) and (c) and (2) and (3); and (c) the normal high water mark of bodies of standing water less than 10 acres in size, but excluding bodies of standing water which are less than three acres in size and which are not fed or drained by a flowing water.

Appendix 4
Vernal Pool Summary Table

Highland Wind Vernal Pool Summary Table

Map[2] #	Wetland ID	Vernal Pool #	MDIFW		Corps Regulated Vernal Pool	Number of Egg Masses[1]						Comments
			Vernal Pool	Significant Vernal Pool		Wood Frog		Spotted Salamander		Blue-spotted salamander		
1	W057	03KW	N	N	Y	5	—	0	—	0	—	Pool within a skidder trail.
2	W067	04KW	N	N	Y	2	—	0	—	0	—	Pool within a skidder trail.
2	W067	05KW	N	N	Y	2	—	1	—	0	—	Pool within a skidder trail.
2	W067	06KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder trail.
2	W067	35KW	Y	N	Y	0	4	0	0	0	0	Egg masses deposited in very shallow depression in peat moss mat.
2	W067	36KW	Y	N	Y	0	1	0	0	0	0	Egg masses deposited in very shallow depression in peat moss mat.
2	W067	37KW	Y	N	Y	0	2	0	2	0	0	Egg masses deposited in very shallow depression in peat moss mat.
2	W069	07KW	N	N	Y	66	—	0	—	0	—	Pool within a skidder trail.
2	W072	03AA	Y	N	Y	2	0	2	0	0	0	Naturally occurring pool at the base of a wind thrown tree in a forested wetland.
2	W072	08KW	Y	N	Y	12	12	0	0	0	0	Pool in a naturally occurring depression in a forested wetland.
2	W072	09KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder rut at edge of a forested wetland.
2	W072	10KW	N	N	Y	5	—	0	—	0	—	Pool within a skidder trail.
2	W072	11KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder trail.
2	W073	13KW	N	N	Y	9	—	0	—	0	—	Pool within a skidder trail.
2	W073	14KW	N	N	Y	8	—	0	—	0	—	Pool within a skidder trail.
2	W073	15KW	N	N	Y	18	—	0	—	0	—	Pool within a skidder trail.
2	W074	12KW	N	N	Y	11	—	0	—	0	—	Pool within a skidder trail.
3	W321	30KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder trail.
3	W079	29KW	N	N	Y	14	—	0	—	0	—	Man-made pool in wetland adjacent to access road. Occurs at the culvert inlet.
3	W080	01JR	N	N	Y	5	11	2	0	0	0	Pool within a skidder rut.
4	W101	01AA	Y	N	Y	1	0	0	0	0	0	Natural pool within a forested wetland.
5	W134	06AA	Y	N	Y	1	0	0	0	0	0	Natural depression in peat moss mat. Dry on second visit.
5	W134	17KW	Y	N	Y	3	4	0	0	0	0	Natural depression in peat moss mat. Almost dry on second visit.
8	W163	16KW	N	N	Y	50+	—	105	—	0	—	Deep, man-made pool adjacent to access road within a log yard.
9	W169	04AA	Y	Y	Y	65	65	5	5	0	0	Natural pool in scrub-shrub wetland.
9	W170	05AA	N	N	Y	2	—	0	—	0	—	Man-made pool adjacent to access road.
10 & 17	W179	31KW	N	N	Y	2	—	0	—	0	—	Pool within a skidder trail.

Map[2] #	Wetland ID	Vernal Pool #	MDIFW		Corps Regulated Vernal Pool	Number of Egg Masses[1]						Comments
			Vernal Pool	Significant Vernal Pool		Wood Frog		Spotted Salamander		Blue-spotted salamander		
11	W222	23KW	N	N	Y	9	—	0	—	0	—	Pool within a skidder trail.
11	W223	24KW	N	N	Y	4	—	0	—	0	—	Pool within a skidder trail.
11	W224	27KW	N	N	Y	2	—	0	—	0	—	Pool within a skidder trail.
11	W224	28KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder trail.
13	W252	19KW	N	N	Y	3	—	0	—	0	—	Pool within a skidder trail.
13	W254	18KW	N	N	Y	3	—	0	—	0	—	Pool within a skidder trail.
13	W258	20KW	N	N	Y	1	—	0	—	0	—	Pool within a skidder trail.
13	W263	21KW	Y	N	Y	1	1	0	0	0	0	Naturally occurring pool at the base of a wind thrown tree within a forested wetland.
13	W265	22KW	Y	N	Y	24	24	0	0	0	0	Naturally occurring depression within a forested wetland.
14	W282	03ED	N	N	Y	10	—	0	—	0	—	Pool within a skidder trail.
14	W282	04ED	N	N	Y	9	—	0	—	0	—	Pool within a skidder trail.
15	W295	05ED	Y	Y	Y	47	47	0	0	0	0	Natural pool in forested wetland.
16	W304	01ED	N	N	Y	4	—	0	—	0	—	Pool within a skidder trail.
16	W307	02ED	N	N	Y	3	—	0	—	0	—	Pool within a skidder trail.
16	W315	08ED	Y	Y	Y	54	54	0	0	0	0	Natural pool in the footprint of wind-thrown trees.
16	W317	07ED	Y	N	Y	4	0	0	0	0	0	Natural pool in small isolated wetland.
16	W318	06ED	N	N	Y	47	—	0	—	0	—	Man-made pool in area of timber harvesting.
10 & 18	W384	20ED	N	N	Y	0	—	4	—	0	—	Man-made pool in roadside ditch.
19	W388	45KW	N	N	Y	~1	—	6	—	0	—	Man-made pool within existing transmission line. Wood frog egg masses had hatched prior to first site visit.
19	W392	11ED	N	N	Y	0	—	6	—	0	—	Man-made pool within wetland adjacent to gravel access road.
21	W414	44KW	N	N	Y	4	—	1	—	0	—	Small excavation adjacent to utility pole within existing transmission line.
21	W426	43KW	N	N	Y	~1	—	0	—	0	—	Rut within the existing transmission line. Wood frog egg masses had hatched prior to first site visit.
21	W431	10ED	N	N	Y	28	—	0	—	0	—	Man-made excavation in a forested wetland.
23	W443	42KW	N	N	Y	1	—	2	—	0	—	Small excavation within existing transmission line.
23	W443	38KW	N	N	Y	~6	—	11	—	0	—	Rut within the existing transmission line. Wood frog egg masses had hatched prior to first site visit.
23	W443	39KW	N	N	Y	~1	—	0	—	0	—	Rut within the existing transmission line. Wood frog egg masses had hatched prior to first site visit.

Map[2] #	Wetland ID	Vernal Pool #	MDIFW		Corps Regulated Vernal Pool	Number of Egg Masses[1]						Comments
			Vernal Pool	Significant Vernal Pool		Wood Frog		Spotted Salamander		Blue-spotted salamander		
23	W443	40KW	N	N	Y	~1	—	1	—	0	—	Rut within the existing transmission line. Wood frog egg masses had hatched prior to first site visit.
23	W443	41KW	N	N	Y	~1	—	2	—	0	—	Rut within the existing transmission line. Wood frog egg masses had hatched prior to first site visit.
24	W452	01DK	Y	N	Y	28	28	9	18	0	0	Naturally occurring pool located east of existing power line ROW.
24	W452	02DK	Y	N	Y	5	5	1	1	0	0	Naturally occurring pool located east of existing power line ROW.
24	W452	03DK	N	N	Y	3	3	0	1	0	0	Pool within skidder trail.
24	W471	04DK	N	N	Y	1	1	7	8	0	0	Pool modified by timber harvesting activity.
24	W471	06DK	N	N	Y	26	0	1	1	0	0	Pool and surrounding area modified by timber harvesting activity. Wood frog egg mass location had no water on second visit.
24	W471	07DK	N	N	Y	0	0	2	21	0	0	Pool within ATV trail ruts.
24	W471	08DK	N	N	Y	14	0	0	0	0	0	No egg masses found in 2-3 inches of water remaining at second visit.
25	W463	09ED	N	N	Y	1	—	0	—	0	—	Rut within a skidder trail.

[1]Number of egg masses represented with "—" indicates that the pool was not surveyed on the second site visit.
[2] Map number corresponds to maps provided in Appendix 2 of this report. Vernal pools below bold line are located within the generator lead corridor.

Appendix 5
U.S. Army Corps of Engineers Wetland Delineation Data Forms

Project Title: Highland Wind **Transect Number:** W041 **Plot Number:** Upland

Delineators: ETD, DMD **Date:** 9/10/08

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees: None		—	—	—
Poles: None		—	—	—
Shrubs:				
sugar maple (*Acer saccharum*)		3/73	4	—
striped maple (*Acer pensylvanicum*)		12/73	16	—
hobblebush (*Viburnum lantanoides*)		10/73	14	—
yellow birch (*Betula alleghaniensis*)		40/73	55	FAC
long-beaked willow (*Salix bebbiana*)		8/73	11	—
Herbs:				
red raspberry (*Rubus idaeus*)		80/146	55	FAC-
common flat-topped goldenrod (*Euthamia graminifolia*)		8/146	5	—
whorled aster (*Oclemena acuminata*)		10/146	7	—
common horsetail (*Equisetum arvense*)		10/146	7	—
yellow birch (*Betula alleghaniensis*)		20/146	14	—
sugar maple (*Acer saccharum*)		5/146	3	—
evergreen wood fern (*Dryopteris intermedia*)		3/146	2	—
red-berried elder (*Sambucus racemosa*)		1/146	1	—
wild sarsaparilla (*Aralia nudicaulis*)		1/146	1	—
wild-oats (*Uvularia sessilifolia*)		5/146	3	—
wool-grass (*Scirpus cyperinus*)		1/146	1	—
spotted joe-pye weed (*Eupatorium maculatum*)		1/146	1	—
woodland horsetail (*Equisetum sylvaticum*)		1/146	1	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

__0__	_0___	__1__	___0__	__1___	___0___	__0___
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: __1__ Non-hydrophytes Subtotal: __1__

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = _____50_____ = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

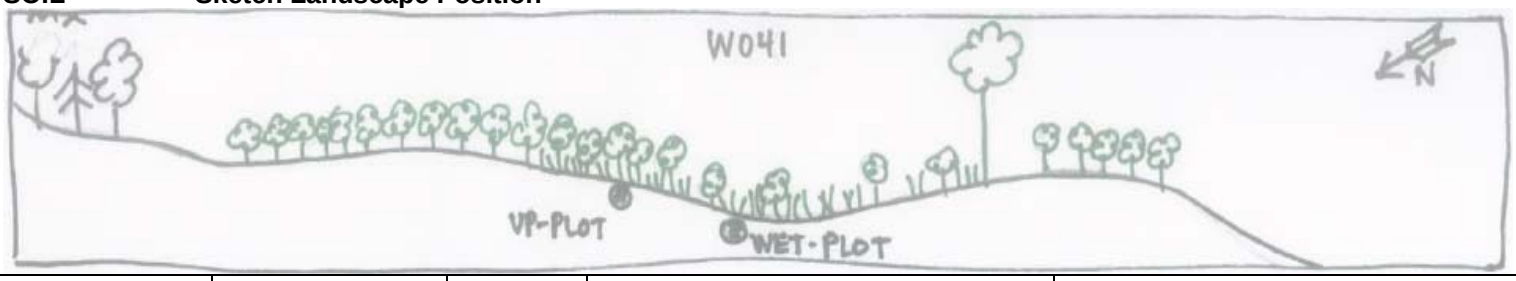
❑ NO RECORDED DATA

❑ OBSERVATIONS:
Depth to Free Water: _____>20"_____
Depth to Saturation (including capillary fringe): _____upper 12" (rain previous day)_____
Altered Hydrology (explain): _____none observed_____

□ Inundated ☑ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
2”-0”	Oi	—	—	Fibric
0”-13”	B	7.5YR3/3	—	Sandy loam
				Refusal @ 13”

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☑
Hydric Soils Criterion Met?	☐	☑
Wetland Hydrology Met?	☐	☑

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☑

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W041 PLOT: Upland

Stantec

Project Title: Highland Wind **Transect Number:** W051 **Plot Number:** Upland

Delineators: DMD **Date:** 9/18/08

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
sugar maple (*Acer saccharum*)		13/18	72	FACU-
American beech (*Fagus grandifolia*)		5/18	28	FACU
Poles:				
American beech (*Fagus grandifolia*)		7/7	100	FACU
Shrubs:				
American beech (*Fagus grandifolia*)		40/42	95	FACU
alternate-leaved dogwood (*Cornus alternifolia*)		1/42	2	—
yellow birch (*Betula alleghaniensis*)		1/42	2	—
Herbs:				
whorled aster (*Oclemena acuminata*)		3/40	8	—
American beech (*Fagus grandifolia*)		15/40	38	FACU
sugar maple (*Acer saccharum*)		15/40	38	FACU-
alternate-leaved dogwood (*Cornus alternifolia*)		5/40	13	—
mountain maple (*Acer spicatum*)		1/40	3	—
red spruce (*Picea rubens*)		1/40	3	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL
0	0	0	0	0	6	0

Hydrophytes Subtotal: 0 Non-hydrophytes Subtotal: 6

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = \frac{0}{} = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: None observed.

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

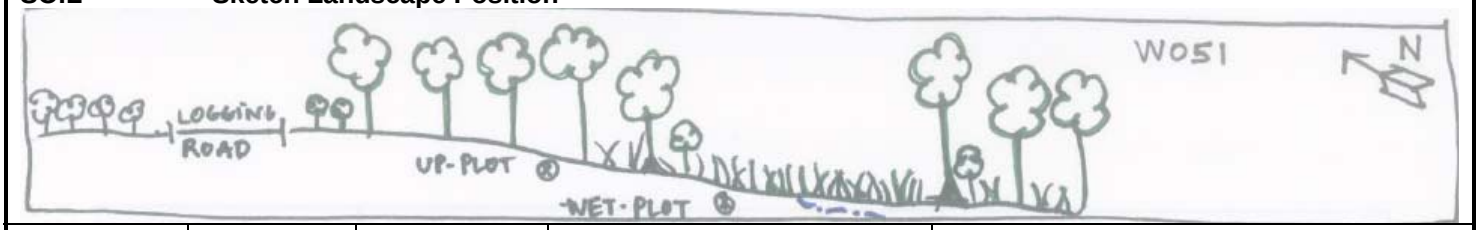
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: >20"
Depth to Saturation (including capillary fringe): >20"
Altered Hydrology (explain): none observed

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
1”	Duff			
0”-2”	A	10YR 2/1	—	Granular structure
2”-8”	B1	7.5YR 2.5/2	—	Granular structure, roots to 10”
8”-20”	B2	7.5YR 3/3	—	Granular structure, some small coarse fragments

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☑
Hydric Soils Criterion Met?	☐	☑
Wetland Hydrology Met?	☐	☑

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☑

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W051 PLOT: Upland

Stantec

Project Title: Highland Wind **Transect Number: W066** **Plot Number: Upland**

Delineators: MPA, DMD **Date: 9/22/08**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
mountain paper birch (*Betula cordifolia*)		1/2	50	FACU
red spruce (*Picea rubens*)		1/2	50	FACU
Poles:				
red spruce (*Picea rubens*)		80/80	100	FACU
Shrubs:				
red spruce (*Picea rubens*)		10/23	43	FACU
hobblebush (*Viburnum lantanoides*)		5/23	22	FAC
balsam fir (*Abies balsamea*)		3/23	13	—
showy mountain-ash (*Sorbus decora*)		3/23	13	—
mountain holly (*Nemopanthus mucronatus*)		1/23	4	—
striped maple (*Acer pensylvanicum*)		1/23	4	—
Herbs:				
showy mountain-ash (*Sorbus decora*)		1/1	100	FAC

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	0	2	0	0	4	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 2 Non-hydrophytes Subtotal: 4

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = 33 = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

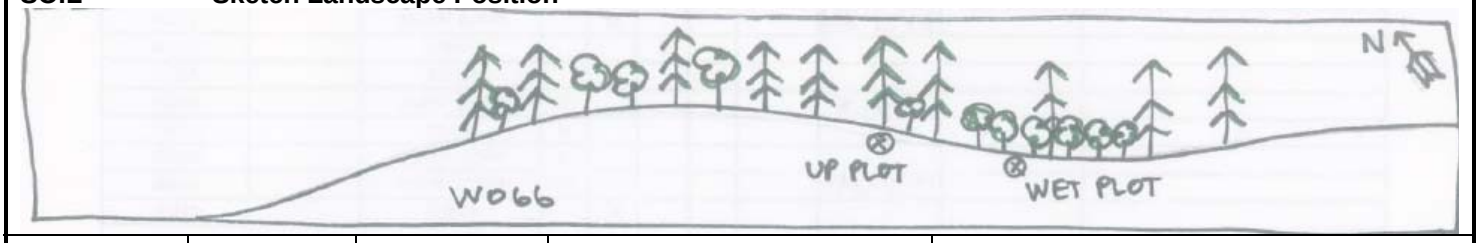
1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____
❑ NO RECORDED DATA
☑ OBSERVATIONS:
Depth to Free Water: >20"
Depth to Saturation (including capillary fringe): >20"
Altered Hydrology (explain): none observed

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
3”-O”	O	—	—	—
0”-2”	A	10YR 2/1	—	Fine sandy loam, loose blocky structure
2”-4”	E	2.5Y 5/1	—	Fine sandy loam, loose blocky structure
4”-7”	Bs	7.5YR 2.5/2	—	Fine sandy loam, loose blocky structure
7”-13”	B2	7.5YR 3/4	—	Fine sandy loam, loose blocky structure
13”-20”	B3	10YR 3/6	—	Fine sandy loam, loose blocky structure

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☑
Hydric Soils Criterion Met?	☐	☑
Wetland Hydrology Met?	☐	☑

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☑

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W066 PLOT: Upland

Stantec

Project Title: Highland Wind **Transect Number:** W087 **Plot Number:** Upland

Delineators: DMD, ETD **Date:** 9/30/08

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
yellow birch (*Betula alleghaniensis*)		3/9	33	FAC
American beech (*Fagus grandifolia*)		5/9	56	FACU
sugar maple (*Acer saccharum*)		1/9	11	—
Poles:				
American beech (*Fagus grandifolia*)		30/30	100	FACU
Shrubs:				
American beech (*Fagus grandifolia*)		35/43	81	FACU
sugar maple (*Acer saccharum*)		5/43	12	—
red spruce (*Picea rubens*)		1/43	2	—
striped maple (*Acer pensylvanicum*)		2/43	5	—
Herbs:				
American beech (*Fagus grandifolia*)		7/33	21	FACU
sugar maple (*Acer saccharum*)		7/33	21	FACU-
patridgeberry (*Mitchella repens*)		3/33	9	FACU
wild-oats (*Uvularia sessilifolia*)		2/33	6	—
evergreen wood fern (*Dryopteris intermedia*)		4/33	12	FACU
northern beech fern (*Phegopteris connectilis*)		3/33	9	FACU
wild sarsaparilla (*Aralia nudicaulis*)		2/33	6	—
Indian pipe (*Monotropa uniflora*)		1/33	3	—
beechdrops (*Epifagus virginiana*)		1/33	3	—
shining clubmoss (*Huperzia lucidula*)		3/33	9	FACW

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL
0	1	1	0	0	9	0

Hydrophytes Subtotal: 2 Non-hydrophytes Subtotal: 9

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 18.2 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

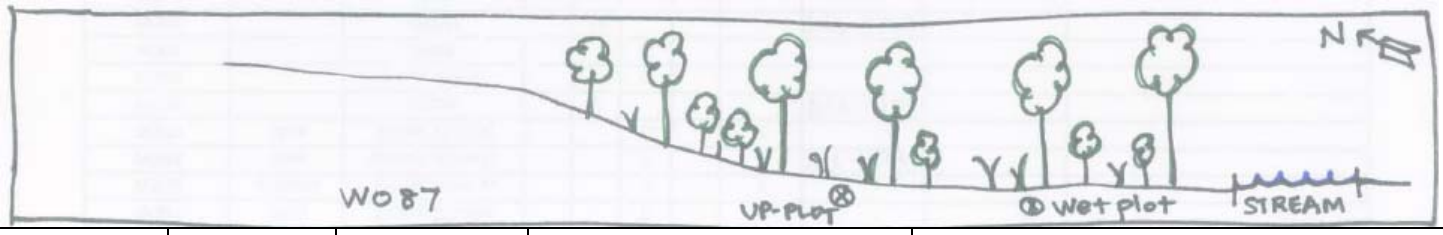
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: >20"
Depth to Saturation (including capillary fringe): >20"
Altered Hydrology (explain): none observed

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
1”	Duff			
4”-0”	O		—	—
0”-2”	A	10YR 2/1	—	Loam, granular structure
2”-12”	B1	10YR 3/2	—	Fine sandy loam, sub-angular blocky structure, roots to 12”
12”-16”	B2	2.5Y 4/2	—	

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☑
Hydric Soils Criterion Met?	☐	☑
Wetland Hydrology Met?	☐	☑

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☑

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W087 PLOT: Upland

Stantec

Project Title: Highland Wind **Transect Number: W172** **Plot Number: Upland**

Delineators: CWF, ALS **Date: 11/14/2008**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
balsam fir (*Abies balsamea*)		1/9	11	—
black cherry (*Prunus serotina*)		2/9	22	FACU
paper birch (*Betula papyrifera*)		2/9	22	FACU
red maple (*Acer rubrum*)		2/9	22	FAC
quaking aspen (*Populus tremuloides*)		1/9	11	—
red spruce (*Picea rubra*)		1/9	11	—
Poles:				
red maple (*Acer rubrum*)		25/50	50	FAC
balsam fir (*Abies balsamea*)		10/50	20	FAC
black cherry (*Prunus serotina*)		15/50	30	FACU
Shrubs:				
balsam fir (*Abies balsamea*)		20/55	36	FAC
red maple (*Acer rubrum*)		15/55	27	FAC
yellow birch (*Betula alleghaniensis*)		5/55	9	—
beaked hazelnut (*Corylus cornuta*)		10/55	18	—
speckled alder (*Alnus incana*)		5/55	9	—
Herbs:				
Canada reed grass (*Calamagrostis canadensis*)		2/8	25	FACW+
evergreen wood fern (*Dryopteris intermidia*)		5/8	63	FACU
prickly tree clubmoss (*Lycopodium dendroideum*)		1/8	13	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	1	5	0	0	4	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 6 Non-hydrophytes Subtotal: 4

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes + Subtotal Non-Hydrophytes}} = 60 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: Evidence of timber harvesting

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

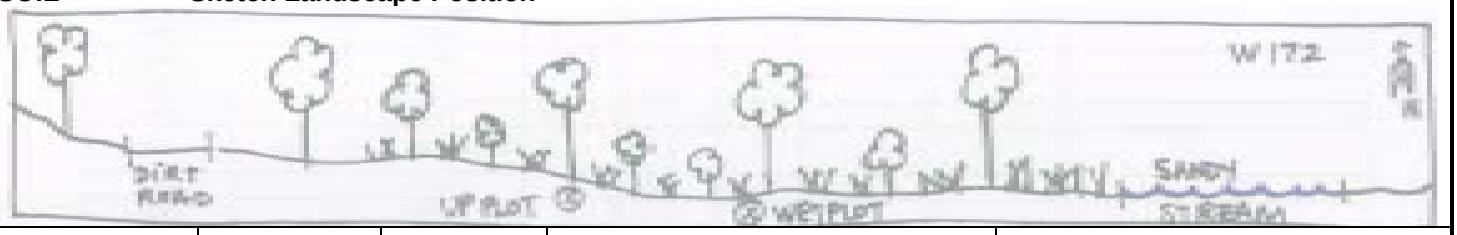
❑ NO RECORDED DATA

☑ OBSERVATIONS: none
Depth to Free Water: >20"
Depth to Saturation (including capillary fringe): >20"
Altered Hydrology (explain): none observed

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
3-0”	O	—	—	—
0-5”	A/E	7.5YR 4/4	—	Fine silt loam
5-7”	B_1	10YR 3/4	—	Fine silt loam
7-13”+	B_2	10YR 4/4	—	Fine silt loam

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☐	☑
Wetland Hydrology Met?	☐	☑

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☑

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W172 PLOT: Upland

Stantec

Project Title: Highland Wind **Transect Number: W041 Plot Number: Wetland**

Delineators: DMD, ETD **Date: 9/10/08**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
red maple (*Acer rubrum*)		1/2	50	FAC
yellow birch (*Betula alleghaniensis*)		1/2	50	FAC
Poles:				
red maple (*Acer rubrum*)		15/15	100	FAC
Shrubs:				
red maple (*Acer rubrum*)		3/7	43	FAC
black ash (*Fraxinus nigra*)		1/7	14	—
balsam fir (*Abies balsamea*)		2/7	29	FAC
striped maple (*Acer pensylvanicum*)		1/7	14	—
Herbs:				
rough sedge (*Carex scabrata*)		80/87	92	OBL
common flat-topped goldenrod (*Euthamia graminifolia*)		2/87	2	—
wool-grass (*Scirpus cyperinus*)		5/87	6	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	0	5	0	0	0	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 6 Non-hydrophytes Subtotal: 0

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes + Subtotal Non-Hydrophytes}} = \frac{100}{} = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

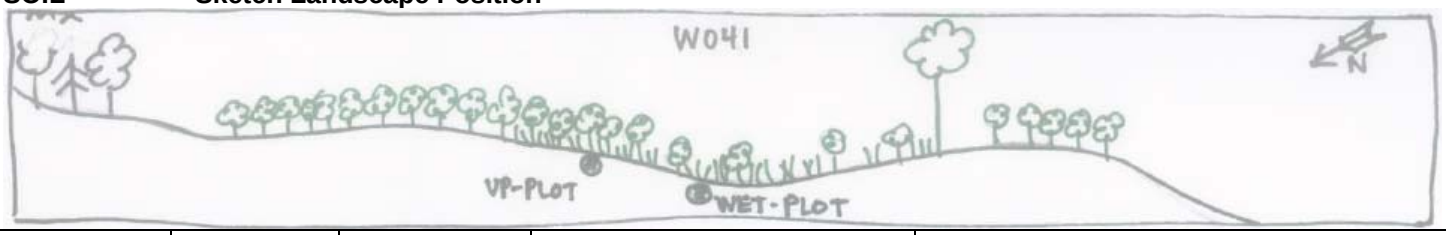
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: surface
Depth to Saturation (including capillary fringe): surface
Altered Hydrology (explain): none observed

☑ Inundated ☑ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland ☑ OTHER (explain): elevated roots

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
4”-0”	Oe	—	—	—
0”-3”	A	10YR 3/2	—	Loam, mucky, sub-angular blocky structure
3”-20”	B	2.5Y 4/2	5%, few, distinct	Fine sandy loam, sub-angular blocky structure

HYDRIC SOIL INDICATOR(S): VI. Depleted or Gleyed Matrix

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☑	☐
Wetland Hydrology Met?	☑	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☑	☐

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W041 PLOT: Wetland

Stantec

Project Title: Highland Wind **Transect Number:** W051 **Plot Number:** Wetland

Delineators: DMD **Date:** 9/18/08

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
American beech (*Fagus grandifolia*)*		2/6	25	FACU
sugar maple (*Acer saccharum*)*		4/6	75	FACU-
Poles:				
yellow birch (*Betula alleghaniensis*)		5/7	71	FAC
sugar maple (*Acer saccharum*)		2/7	29	FACU-
Shrubs: none				
Herbs:				
water carpet (*Chrysosplenium americanum*)		20/65	31	OBL
lake bank sedge (*Carex lacustris*)		25/65	38	OBL
fowl mannagrass (*Glyceria striata*)		3/65	5	—
heal-all (*Prunella vulgaris*)		5/65	8	—
whorled aster (*Oclemena acuminata*)		5/65	8	—
evergreen wood fern (*Dryopteris intermedia*)		1/65	2	—
lady fern (*Athyrium filix-femina*)		3/65	5	—
common wood-sorrel (*Oxalis montana*)		2/65	3	—
zigzag goldenrod (*Solidago flexicaulis*)		1/65	2	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL
2	0	1	2	0	1	0

Hydrophytes Subtotal: 5 Non-hydrophytes Subtotal: 1

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = 83 = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

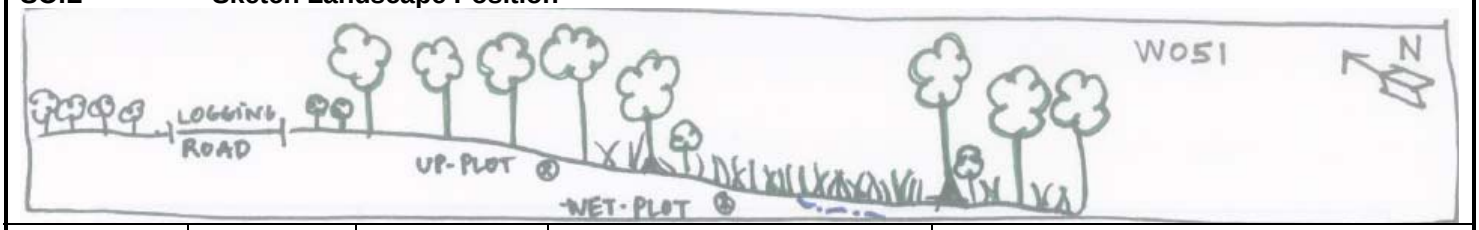
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: surface
Depth to Saturation (including capillary fringe): within upper 12"
Altered Hydrology (explain): none observed

☑ Inundated ☑ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
☑ Drainage Patterns within Wetland ☑ OTHER (explain): trees with elevated roots

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
7”-0”	Oa	—	—	Sapric
0”-11”	A	10YR 2/1	—	Loam, mucky, granular structure
11”-20”	B	Gley1 5/10GY	<2%, few, distinct	Sandy clay loam, some medium coarse fragments, sub-angular blocky structure

HYDRIC SOIL INDICATOR(S): V. Mineral Histic

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☑	☐
Wetland Hydrology Met?	☑	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☑	☐

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W051 PLOT: Wetland

Stantec

Project Title: Highland Wind **Transect Number: W066 Plot Number: Wetland**

Delineators: MPA, DMD **Date: 9/22/08**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
red spruce (*Picea rubens*)*		2/2	100	FACU
Poles:				
red spruce (*Picea rubens*)*		30/41	73	FACU
balsam fir (*Abies balsamea*)		1/41	2	—
yellow birch (*Betula alleghaniensis*)		5/41	12	—
paper birch (*Betula papyrifera*)		5/41	12	—
Shrubs:				
speckled alder (*Alnus incana*)		50/74	68	FACW
balsam fir (*Abies balsamea*)		1/74	1	—
paper birch (*Betula papyrifera*)		1/74	1	—
red spruce (*Picea rubens*)		20/74	27	FACU
showy mountain-ash (*Sorbus decora*)		1/74	1	—
mountain holly (*Nemopanthus mucronatus*)		1/74	1	—
Herbs:				
three-seeded sedge (*Carex trisperma*)		85/86	98	OBL
speckled alder (*Alnus incana*)		1/86	1	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

__1__	__1__	__0__	___2__	__0___	__1___	__0___
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: __4__ Non-hydrophytes Subtotal: __1__

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = ___80_____ = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

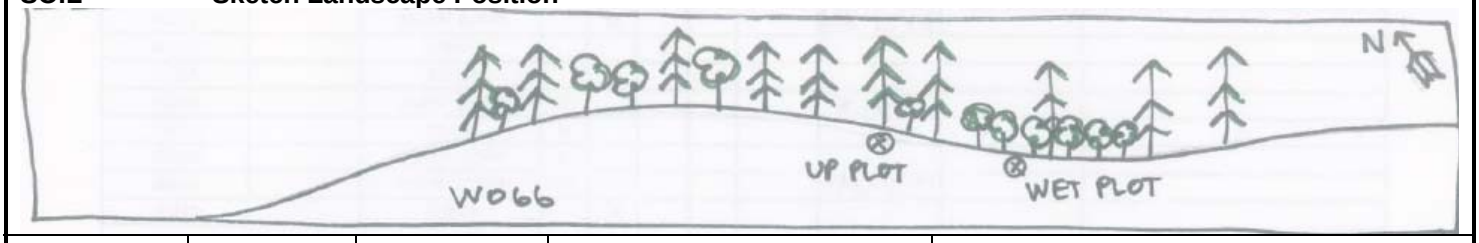
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: ____8" below ground surface_____
Depth to Saturation (including capillary fringe): ___surface_____
Altered Hydrology (explain): _____none observed_____

□ Inundated ☑ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
14”	O		--	Over rock

HYDRIC SOIL INDICATOR(S): XIII. “Problem” Soil Areas: closely resembles histric epipedon, but lacks underlying “horizon with redoximorphic features”

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☑	☐
Wetland Hydrology Met?	☑	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☑	☐

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W066 PLOT: Wetland

Stantec

Project Title: Highland Wind **Transect Number:** W087 **Plot Number:** Wetland

Delineators: DMD, ETD **Date:** 9/30/08

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
American beech (*Fagus grandifolia*)*		3/4	75	FACU
yellow birch (*Betula alleghaniensis*)		1/4	25	FAC
Poles:				
American beech (*Fagus grandifolia*)*		5/10	50	FACU
striped maple (*Acer pensylvanicum*)		5/10	50	FACU
Shrubs:				
American beech (*Fagus grandifolia*)*		10/22	45	FACU
striped maple (*Acer pensylvanicum*)		5/22	23	FACU
hobblebush (*Viburnum lantanoides*)		2/22	9	—
sugar maple (*Acer saccharum*)		5/22	23	FACU-
Herbs:				
wild white violet (*Viola macloskeyi*)		20/54	37	OBL
dwarf raspberry (*Rubus pubescens*)		10/54	19	—
cinnamon fern (*Osmunda cinnamomea*)		2/54	4	—
dewdrop (*Rubus dalibarda*)		20/54	37	FAC
American willow-herb (*Epilobium ciliatum*)		2/54	4	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	0	2	3	0	3	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 6 Non-hydrophytes Subtotal: 3

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = 67 = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

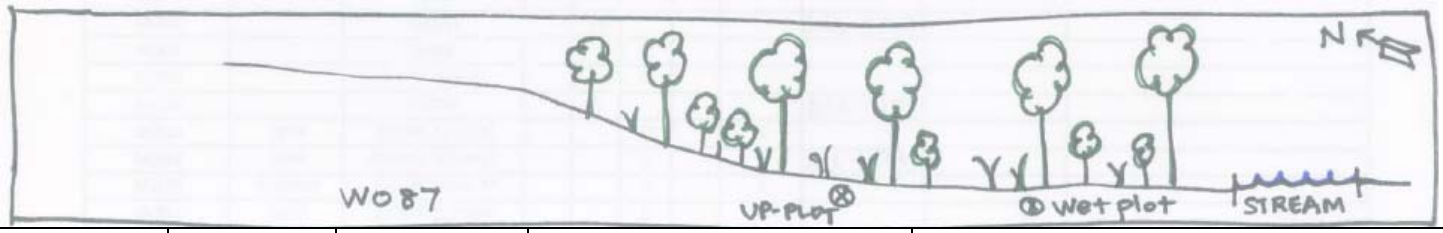
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: not recorded
Depth to Saturation (including capillary fringe): surface
Altered Hydrology (explain): none observed

□ Inundated ☑ Saturated in upper 12" ☑ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
2”-0”	O	—	—	—
0”-2”	A	10YR 2/2	—	Clay loam
2”-10”	B1	10YR 5/1	7.5YR 3/4, 2%, prominent	Sandy loam
10”-22”	B2	10YR 4/1	10YR 5/6, 5%, prominent	Clay loam
				Refusal @ 22”

HYDRIC SOIL INDICATOR(S): VI. Depleted or Gleyed Matrix

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☑	☐
Wetland Hydrology Met?	☑	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☑	☐

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W087 PLOT: Wetland

Stantec

Project Title: Highland Wind **Transect Number: W172** **Plot Number: Wetland**

Delineators: CWF, ALS **Date: 11/14/2008**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Tree				
green ash (*Fraxinus pennsylvanica*)		1/4	25	FACW
sugar maple (*Acer saccharum*): on wetland/upland edge		2/4	50	FACU-
yellow birch (*Betula alleghaniensis*)		1/4	25	FAC
Pole				
balsam fir (*Abies balsamea*)		10/10	100	FAC
Shrub				
speckled alder (*Alnus incana sp. rugosa*)		55/92	60	FACW+
balsam fir (*Abies balsamea*)		20/92	22	FAC
red osier dogwood (*Cornus sericia*)		5/92	5	—
red maple (*Acer rubrum*)		12/92	13	—
Herb				
sensitive fern (*Onoclea sensibilis*)		25/50	50	FACW
evergreen wood fern (*Dryopteris intermidia*)		5/50	10	—
rough-stemmed goldenrod (*Solidago rugosa*)		10/50	20	FAC
mad-dog skullcap (*Scutellaria lateriflora*)		5/50	10	—
northern water horehound (*Lycopus uniflorus*)		5/50	10	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	3	4	0	0	1	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 7 Non-hydrophytes Subtotal: 1

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = 88 = Percent Hydrophytes

Describe Vegetation Disturbance: None observed

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

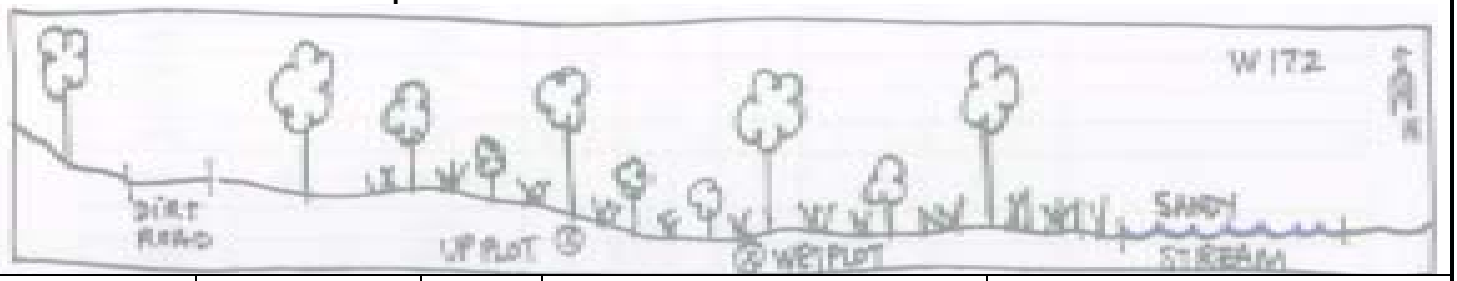
❑ NO RECORDED DATA

☑ OBSERVATIONS:
Depth to Free Water: one inch below ground surface
Depth to Saturation (including capillary fringe): surface
Altered Hydrology (explain): none observed

□ Inundated ☑ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
☑ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
17-15”	duff	—	—	—
15-0”	O	—	—	—
0-9”	B	5Y 5/3	10YR 5/8, 30% concentrations	Fine silt loam

HYDRIC SOIL INDICATOR(S): IV: Histic Epipedon.

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☑	☐
Hydric Soils Criterion Met?	☑	☐
Wetland Hydrology Met?	☑	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☑	☐

REMARKS:

PROJECT TITLE: Highland Wind TRANSECT: W172 PLOT: Wetland

Stantec

Project Title: Highland Wind | **Plot Location: 04KWE14** | **Upland/Wetland: Wetland**

Delineators: KAW | **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Tree: None				
Poles: None				
Shrubs:				
rosy meadowsweet (*Spiraea tomentosa*)		1/2	50	FACW
mountain holly (*Ilex mucronata*)		1/2	50	OBL
Herb:				
Canada reed grass (*Calamagrostis canadensis*)		10/34	29	FACW
cinnamon fern (*Osmunda cinnamomea*)		5/34	15	FACW
woolsedge (*Scirpus cf cyperinus*)		3/34	9	FACW
Virginia strawberry (*Fragaria virginiana*)		2/34	6	—
smooth goldenrod (*Solidago gigantea*)		2/34	6	—
wood horsetail (*Equisetum sylvaticum*)		2/34	6	—
pointed broom sedge (*Carex scoparia*)		2/34	6	—
wrinkle-leaved goldenrod (*Solidago rugosa*)		1/34	3	—
arrow-leaved tearthumb (*Persicaria sagittata*)		1/34	3	—
Canada-mayflower (*Maianthemum canadense*)		1/34	3	—
crested wood fern (*Dryopteris cristata*)		1/34	3	—
northern white-cedar (*Thuja occidentalis*)		1/34	3	—
red maple (*Acer rubrum*)		1/34	3	—
American twinflower (*Linnaea borealis*)		1/34	3	—
orange hawkweed (*Hieracium aurantiacum*)		1/34	3	—
Bryophyte: peat moss (*Sphagnum* sp.) throughout plot				

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	4	0	0	0	0	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 5 | Non-hydrophytes Subtotal: 0

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes + Subtotal Non-Hydrophytes}} = \frac{100}{} = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: Plot is located in an existing transmission line that under goes periodic control of woody vegetation.

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage — Identification: _____
Aerial photography — Identification: _____
Other — Identification: _____

❑ NO RECORDED DATA

☒ OBSERVATIONS:
Depth to Free Water: To ground surface
Depth to Saturation (including capillary fringe): To ground surface
Altered Hydrology (explain): Some soil compaction and rutting as a result of construction and maintenance activities.

□ Inundated ☒ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**

Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
				1" of peat moss over rock

HYDRIC SOIL INDICATOR(S): XIII – Problem soil

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04KWE14** UPLAND/WETLAND: **Wetland**

Stantec

Project Title: Highland Wind **Plot Location: 04KWE14** **Upland/Wetland: Upland**

Delineators: KAW **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees: None				
Poles: None				
Shrubs: None				
Herbs:				
bracken fern (*Pteridium aquilinum*)		50/83	60	FACU
eastern hay-scented fern (*Dennstaedtia punctilobula*)		10/83	12	—
graceful sedge (*Carex gracillima*)		10/83	12	—
orange hawkweed (*Hieracium aurantiacum*)		5/83	6	—
Canada-mayflower (*Maianthemum canadense*)		3/83	4	—
yellow hawkweed (*Hieracium caespitosum*)		1/83	1	—
Virginia strawberry (*Fragaria virginiana*)		1/83	1	—
paper birch (*Betula papyrifera*)		1/83	1	—
balsam fir (*Abies balsamea*)		1/83	1	—
common blackberry (*Rubus allegheniensis*)		1/83	1	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	0	0	0	0	1	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 0 Non-hydrophytes Subtotal: 1

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 0 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: Plot is located in an existing transmission line that under goes periodic control of woody vegetation.

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

☐ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

☐ NO RECORDED DATA

☒ OBSERVATIONS:
Depth to Free Water: To ground surface
Depth to Saturation (including capillary fringe): To ground surface
Altered Hydrology (explain): Some soil compaction and rutting as a result of construction and maintenance activities.

☐ Inundated ☒ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits
☐ Drainage Patterns within Wetland ☐ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**

Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
3-0"	Oa	—	—	—
0-0.5"	E	10YR4/1	—	Very fine sandy loam
0.5-3"	B	10YR4/3	10YR4/6, 30%, F, D	Very fine sandy loam
				Refusal at 6" below surface with hand
				auger.

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☒
Hydric Soils Criterion Met?	☐	☒
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☒

REMARKS: Hydrology as result of recent heavy rain.

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04KWE14** UPLAND/WETLAND: **Upland**

Stantec

Project Title: Highland Wind | **Plot Location: 04KW021** | **Upland/Wetland: Wetland**

Delineators: KAW | **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Tree:				
balsam fir (*Abies balsamea*)		6/10	60	FAC
yellow birch (*Betula alleghaniensis*)		1/10	10	—
northern white-cedar (*Thuja occidentalis*)		1/10	10	—
green ash (*Fraxinus pennsylvanica*)		1/10	10	—
red spruce (*Picea rubens*)		1/10	10	—
Poles:				
black ash (*Fraxinus nigra*)		15/22	68	FACW
striped maple (*Acer pensylvanicum*)		5/22	23	FACU
sugar maple (*Acer saccharum*)		2/22	9	—
Shrubs:				
black ash (*Fraxinus nigra*)		2/9	22	FACW
balsam fir (*Abies balsamea*)		2/9	22	FAC
red maple (*Acer rubrum*)		2/9	22	FAC
yellow birch (*Betula alleghaniensis*)		2/9	22	FAC
striped maple (*Acer pensylvanicum*)		1/9	11	—
Herbs:				
northeastern manna grass (*Glyceria melicaria*)		80/111	72	OBL
spotted touch-me-not (*Impatiens capensis*)		20/111	18	—
blue marsh violet (*Viola cuculatta*)		10/111	9	—
fringed sedge (*Carex crinita*)		1/111	1	—
pointed broom sedge (*Carex scoparia*)		1/111	1	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	2	4	0	0	1	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 7 | Non-hydrophytes Subtotal: 1

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 88 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent alteration

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ❑ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ❑ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: at 8" below ground surface
  - Depth to Saturation (including capillary fringe): to ground surface
  - Altered Hydrology (explain): No apparent alteration

□ Inundated ☒ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**

Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
18"	Oa	—	—	Sapric organic horizon to refusal with hand auger

HYDRIC SOIL INDICATOR(S): III - Histosols

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04KW021** UPLAND/WETLAND: **Wetland**

Stantec

Project Title: Highland Wind | **Plot Location: 04KW021** | **Upland/Wetland: Upland**

Delineators: KAW | **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
balsam fir (*Abies balsamea*)		7/18	39	FAC
red spruce (*Picea rubens*)		4/18	22	FAC
northern white-cedar (*Thuja occidentalis*)		4/18	6	—
eastern hemlock (*Tsuga canadensis*)		1/18	6	—
yellow birch (*Betula alleghaniensis*)		1/18	6	—
sugar maple (*Acer saccharum*)		1/18	6	—
Poles:				
striped maple (*Acer pensylvanicum*)		10/10	100	FACU
Shrubs:				
balsam fir (*Abies balsamea*)		20/22	91	FAC
striped maple (*Acer pensylvanicum*)		1/22	5	—
red maple (*Acer rubrum*)		1/22	5	—
Herbs:				
balsam fir (*Abies balsamea*)		5/13	38	FAC
wild sarsaparilla (*Aralia nudicaulis*)		3/13	23	FACU
starflower (*Trientalis borealis*)		1/13	8	—
northern wood sorrel (*Oxalis montana*)		1/13	8	—
red wakerobin (*Trillium erectum*)		1/13	8	—
red maple (*Acer rubrum*)		1/13	8	—
Canada-mayflower (*Maianthemum canadense*)		1/13	8	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	0	4	0	0	2	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 4 | Non-hydrophytes Subtotal: 2

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 67 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent alteration.

HYDROLOGY

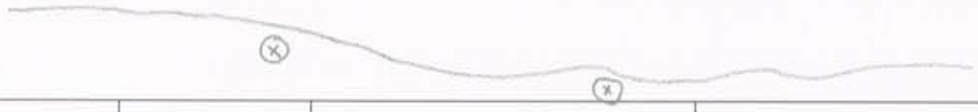
1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ❑ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ❑ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: At 18" below ground surface
  - Depth to Saturation (including capillary fringe): To ground surface following recent rains
  - Altered Hydrology (explain): No apparent alteration

□ Inundated ☒ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
10-2"	Oe	—	—	
2-0"	Oa	—	—	
0-2"	E	10YR3/1	—	Fine sandy loam
2-8"	B	10YR4/4	—	Loamy sand

HYDRIC SOIL INDICATOR(S): Non-hydric soil

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☐	☒
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☒

REMARKS: Hydrology met as a result of recent heavy rains

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04KW021** UPLAND/WETLAND: **Upland**

Stantec

Project Title: Highland Wind **Plot Location: 03TTS07** **Upland/Wetland: Wetland**

Delineators: TT **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
northern white-cedar (*Thuja occidentalis*)		11/26	42	FACW
balsam fir (*Abies balsamea*)		5/26	19	FAC
eastern hemlock (*Tsuga canadensis*)		5/26	19	FACU
green ash (*Fraxinus pennsylvanica*)		4/26	15	—
yellow birch (*Betula alleghaniensis*)		1/26	4	—
Poles:				
balsam fir (*Abies balsamea*)		20/48	42	FAC
green ash (*Fraxinus pennsylvanica*)		10/48	21	FACW
northern white-cedar (*Thuja occidentalis*)		5/48	10	—
black ash (*Fraxinus nigra*)		5/48	10	—
red maple (*Acer rubrum*)		5/48	10	—
yellow birch (*Betula alleghaniensis*)		3/48	6	—
Shrubs:				
green ash (*Fraxinus pennsylvanica*)		10/28	36	FACW
balsam fir (*Abies balsamea*)		5/28	18	FAC
black ash (*Fraxinus nigra*)		5/28	18	FACW
eastern hemlock (*Tsuga canadensis*)		3/28	11	—
red maple (*Acer rubrum*)		3/28	11	—
witch-hazel (*Hamamelis virginiana*)		1/28	4	—
mountain ash (*Sorbus* sp.)		1/28	4	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	6	3	0	1	1	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 10 Non-hydrophytes Subtotal: 2

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 83 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent disturbance.

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

❑ NO RECORDED DATA

☒ OBSERVATIONS:
Depth to Free Water: To ground surface
Depth to Saturation (including capillary fringe): To ground surface
Altered Hydrology (explain): No apparent alteration

☒ Inundated ☒ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

Project Title: Highland Wind **Plot Location: 03TTS07** **Upland/Wetland: Wetland**

Delineators: TT **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
(cont.)				
Herb:				
northern wood sorrel (*Oxalis montana*)		15/56	27	FAC-
marsh fern (*Thelypteris palustris*)		10/56	18	FACW
three-seeded sedge (*Carex trisperma*)		10/56	18	OBL
bristly blackberry (*Rubus hispidus*)		10/56	18	FACW
greater bladder sedge (*Carex intumescens*)		5/56	9	—
northern white-cedar (*Thuja occidentalis*)		3/56	5	—
sensitive fern (*Onoclea sensibilis*)		3/56	5	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

____ OBL ____ FACW ____ FAC ____ OTHER HYDROPHYTES ____ FAC- ____ FACU ____ UPL

Hydrophytes Subtotal: ____ Non-hydrophytes Subtotal: ____

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance:

HYDROLOGY

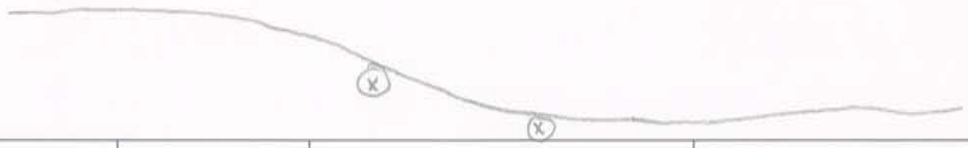
1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ❑ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ❑ NO RECORDED DATA
- ❑ OBSERVATIONS:
  - Depth to Free Water: _____
  - Depth to Saturation (including capillary fringe): _____
  - Altered Hydrology (explain): _____

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
15+"	O			

HYDRIC SOIL INDICATOR(S): III - Histosol

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **03TTS07** UPLAND/WETLAND: **Wetland**

Stantec

Project Title: Highland Wind **Plot Location: 03TTS07** **Upland/Wetland: Upland**

Delineators: TT **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Tree:				
eastern hemlock (*Tsuga canadensis*)		15/25	60	FACU
northern white-cedar (*Thuja occidentalis*)		8/25	32	FACW
red maple (*Acer rubrum*)		2/25	8	—
Poles:				
eastern hemlock (*Tsuga canadensis*)		5/6	83	FACU
northern white-cedar (*Thuja occidentalis*)		1/6	17	—
Shrubs:				
striped maple (*Acer pensylvanicum*)		30/86	35	FACU
eastern hemlock (*Tsuga canadensis*)		30/86	35	FACU
red spruce (*Picea rubens*)		15/86	17	—
balsam fir (*Abies balsamea*)		5/86	6	—
hobblebush (*Viburnum lantanoides*)		5/86	6	—
red maple (*Acer rubrum*)		1/86	1	—
Herbs:				
Canada dwarf-dogwood (*Chamaepericlymenum candense*)		40/116	34	FAC-
three-leaved goldthread (*Coptis trifolia*)		40/116	34	FACW
common lowbush blueberry (*Vaccinium angustifolium*)		20/116	17	—
starflower (*Trientalis borealis*)		5/116	4	—
sharp-toothed nodding aster (*Oclemena acuminata*)		3/116	3	—
northern wood sorrel (*Oxalis montana*)		3/116	3	—
red maple (*Acer rubrum*)		3/116	3	—
snowberry (*Symphoricarpos albus*)		1/116	1	—
bluebead-lily (*Clintonia borealis*)		1/116	1	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	2	0	0	1	4	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 2 Non-hydrophytes Subtotal: 5

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes + Subtotal Non-Hydrophytes}} = 29 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent disturbance

HYDROLOGY

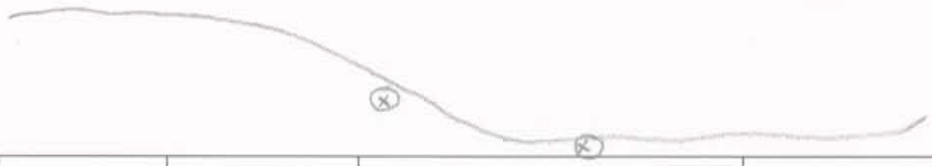
1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ☐ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ☐ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: More than 8" below ground surface
  - Depth to Saturation (including capillary fringe): More than 8" below ground surface
  - Altered Hydrology (explain): No apparent alteration

☐ Inundated ☐ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits
☐ Drainage Patterns within Wetland ☐ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
8-0"	O	—	—	—
0-4"	E	7.5YR7/1	—	Fine sand
4-8"	B	2.5YR3/6	—	Loamy sand
				Refusal with hand auger at 16" below surface

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☒
Hydric Soils Criterion Met?	☐	☒
Wetland Hydrology Met?	☐	☒

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☒

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **03TTS07** UPLAND/WETLAND: **Upland**

Stantec

Project Title: Highland Wind | **Plot Location:03TTS10** | **Upland/Wetland: Wetland**

Delineators: TT | **Date: June 29, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees: None				
Poles: None				
Shrubs:				
white meadowsweet (*Spiraea alba* var. *latifolia*)		40/45	89	FAC
rosy meadowsweet (*Spiraea tomentosa*)		5/45	11	—
Herbs:				
barber-pole bulrush (*Scirpus microcarpus*)		35/105	33	OBL
sensitive fern (*Onoclea sensibilis*)		25/105	24	FACW
bristly blackberry (*Rubus hispidus*)		20/105	19	—
nodding sedge (*Carex gynandra*)		10/105	10	—
wrinkle-leaved goldenrod (*Solidago rugosa*)		5/105	5	—
red raspberry (*Rubus idaeus*)		5/105	5	—
three-seeded sedge (*Carex trisperma*)		5/105	5	—
Bryophyte:				
peat moss (*Sphagnum* sp.) throughout				

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	1	1	0	0	0	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 3 Non-hydrophytes Subtotal: 0

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-Hydrophytes = 100 = Percent Hydrophytes

Describe Vegetation Disturbance: Plot is located in an existing transmission line that under goes periodic control of woody vegetation.

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

❑ RECORDED DATA
Stream, lake, or tidal gage Identification:_____
Aerial photography Identification:_____
Other Identification:_____

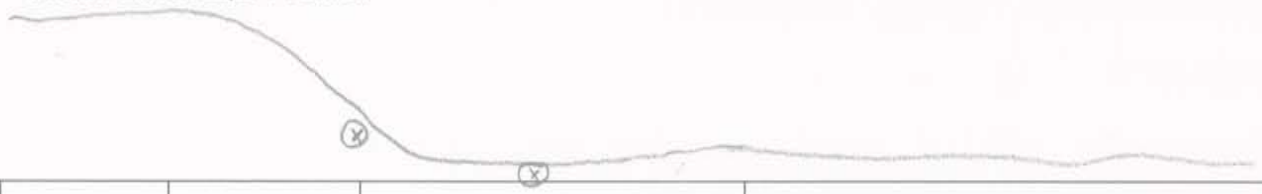
❑ NO RECORDED DATA

☒ OBSERVATIONS:
Depth to Free Water: To ground surface
Depth to Saturation (including capillary fringe): To ground surface
Altered Hydrology (explain): Some soil compaction and rutting as a result of construction and maintenance activities

☒ Inundated ☒ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits
☐ Drainage Patterns within Wetland ☐ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
15+"	O	—	—	—

HYDRIC SOIL INDICATOR(S): III - Histosol

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **03TTS10** UPLAND/WETLAND: **Wetland**

Stantec

Project Title: Highland Wind | **Plot Location: 03TTS10** | **Upland/Wetland: Upland**

Delineators: TT | **Date: June 29, 2009**

VEGETATION Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Tree: None			
Poles: None			
Shrubs:	10/13	77	FAC
white meadowsweet (*Spiraea alba* var. *latifolia*)	3/13	23	FAC
red maple (*Acer rubrum*)			
Herbs:			
eastern hay-scented fern (*Dennstaedtia punctilobula*)	70/168	42	UPL
Canada dwarf-dogwood (*Chamaepericlymenum candense*)	40/168	24	FAC-
violet (*Viola* sp.)	30/168	18	—
Canada-mayflower (*Maianthemum canadense*)	15/168	9	—
red raspberry (*Rubus idaeus*)	5/168	3	—
wrinkle-leaved goldenrod (*Solidago rugosa*)	5/168	3	—
interrupted fern (*Osmunda claytoniana*)	3/168	2	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

0	0	2	0	1	0	1
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 2 Non-hydrophytes Subtotal: 2

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 50 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: Plot is located in an existing transmission line that under goes periodic control of woody vegetation.

HYDROLOGY

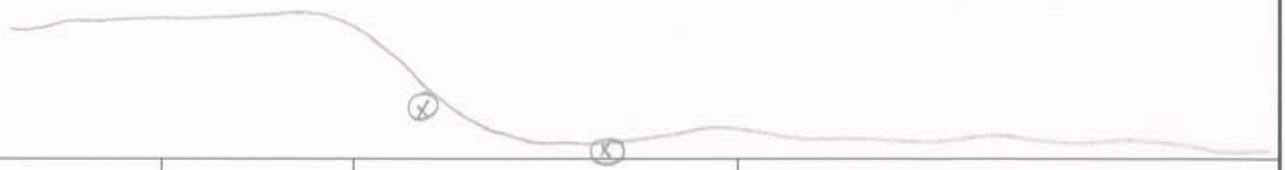
1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ❑ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ❑ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: More than 7" below ground surface
  - Depth to Saturation (including capillary fringe): More than 7" below ground surface
  - Altered Hydrology (explain): Some soil compaction and rutting as a result of construction and maintenance activities

□ Inundated □ Saturated in upper 12" □ Water Marks □ Drift Lines □ Sediment Deposits
□ Drainage Patterns within Wetland □ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**



Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
4-2"	Duff	—	—	—
2-0"	O	—	—	—
0-3"	E	7.5YR6/1	—	Loamy fine san
3-7"	B	7.5YR3/4	—	Fine sandy loam
				Refusal at 11" with hand auger

HYDRIC SOIL INDICATOR(S): Non-hydric

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☐	☒
Hydric Soils Criterion Met?	☐	☒
Wetland Hydrology Met?	☐	☒

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☐	☒

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **03TTS10** UPLAND/WETLAND: **Upland**

Stantec

Project Title: Highland Wind | **Plot Location: 04TTN18** | **Upland/Wetland: Wetland**

Delineators: TT, KAW | **Date: June 30, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
red spruce (*Picea rubens*)		6/11	55	FACU
yellow birch (*Betula alleghaniensis*)		3/11	27	FAC
eastern hemlock (*Tsuga canadensis*)		1/11	9	—
paper birch (*Betula papyrifera*)		1/11	9	—
Poles:				
yellow birch (*Betula alleghaniensis*)		30/50	60	FAC
red spruce (*Picea rubens*)		20/50	40	FACU
Shrubs:				
speckled alder (*Alnus incana*)		30/63	48	FACW
hobblebush (*Viburnum lantanoides*)		20/63	32	FAC
red maple (*Acer rubrum*)		10/63	16	—
northern white-cedar (*Thuja occidentalis*)		3/63	5	—
Herbs:				
northeastern manna grass (*Glyceria melicaria*)		80/153	52	OBL
wrinkle-leaved goldenrod (*Solidago rugosa*)		40/153	26	FAC
sharp-tooted nodding aster (*Oclemena acuminata*)		10/153	7	—
wood horsetail (*Equisetum sylvaticum*)		8/153	5	—
nodding sedge (*Carex gynandra*)		5/153	3	—
cinnamon fern (*Osmunda cinnamomea*)		5/153	3	—
bristly blackberry (*Rubus hispidus*)		5/153	3	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	1	4	0	0	2	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 6 | Non-hydrophytes Subtotal: 2

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes} + \text{Subtotal Non-Hydrophytes}} = 75 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent disturbance

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ☐ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ☐ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: To ground surface
  - Depth to Saturation (including capillary fringe): To ground surface
  - Altered Hydrology (explain): No apparent alteration.

☒ Inundated ☒ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits
☒ Drainage Patterns within Wetland ☐ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**

Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
16+"	O	—		

HYDRIC SOIL INDICATOR(S): III - Histosols

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04TTN18** UPLAND/WETLAND: **Wetland**

Stantec

Project Title: Highland Wind **Plot Location: 04TTN18** **Upland/Wetland: Wetland**

Delineators: TT, KAW **Date: June 30, 2009**

VEGETATION	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
Trees:				
red spruce (*Picea rubens*)		6/11	55	FACU
yellow birch (*Betula alleghaniensis*)		3/11	27	FAC
eastern hemlock (*Tsuga canadensis*)		1/11	9	—
paper birch (*Betula papyrifera*)		1/11	9	—
Poles:				
yellow birch (*Betula alleghaniensis*)		30/50	60	FAC
red spruce (*Picea rubens*)		20/50	40	FACU
Shrubs:				
speckled alder (*Alnus incana*)		30/63	48	FACW
hobblebush (*Viburnum lantanoides*)		20/63	32	FAC
red maple (*Acer rubrum*)		10/63	16	—
northern white-cedar (*Thuja occidentalis*)		3/63	5	—
Herbs:				
northeastern manna grass (*Glyceria melicaria*)		80/153	52	OBL
wrinkle-leaved goldenrod (*Solidago rugosa*)		40/153	26	FAC
sharp-tooted nodding aster (*Oclemena acuminata*)		10/153	7	—
wood horsetail (*Equisetum sylvaticum*)		8/153	5	—
nodding sedge (*Carex gynandra*)		5/153	3	—
cinnamon fern (*Osmunda cinnamomea*)		5/153	3	—
bristly blackberry (*Rubus hispidus*)		5/153	3	—

Note 1: Use asterisk * to indicate plants with adaptations to wetland hydrology.
Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
Note 2: Species with NA or NI status are reported, but are not calculated in the tally below.

1	1	4	0	0	2	0
OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL

Hydrophytes Subtotal: 6 Non-hydrophytes Subtotal: 2

$$\frac{100 \times \text{Subtotal Hydrophytes}}{\text{Subtotal Hydrophytes + Subtotal Non-Hydrophytes}} = 75 = \text{Percent Hydrophytes}$$

Describe Vegetation Disturbance: No apparent disturbance

HYDROLOGY

1. Hydrology is often the most difficult feature to observe.
2. Interpretation must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

- ☐ RECORDED DATA
  - Stream, lake, or tidal gage — Identification: _____
  - Aerial photography — Identification: _____
  - Other — Identification: _____
- ☐ NO RECORDED DATA
- ☒ OBSERVATIONS:
  - Depth to Free Water: To ground surface
  - Depth to Saturation (including capillary fringe): To ground surface
  - Altered Hydrology (explain): No apparent alteration.

☒ Inundated ☒ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits
☒ Drainage Patterns within Wetland ☐ OTHER (explain):

Stantec

SOIL **Sketch Landscape Position**

Depth	Horizon	Matrix Color	Redoximorphic Features Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
16+"	O	—		

HYDRIC SOIL INDICATOR(S): III - Histosols

REFERENCE: New England Hydric Soils Technical Committee. 2004. 3rd ed., *Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.

OPTIONAL SOIL DATA:

TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	YES	NO
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND?

YES	NO
☒	☐

REMARKS:

PROJECT TITLE: **Highland Wind** PLOT LOCATION: **04TTN18** UPLAND/WETLAND: **Wetland**

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Appendix 6
Significant Vernal Pool Data Forms

Significant Vernal Pool Data Collection Form

Project: Highland Wind	Survey Date (1st): 5-7-09
Town/County: Highland Plantation, Somerset	Surveyor's Initials (1st): ATA
Associated Wetland ID (if applicable): W169	Survey Date (2nd): 5-22-09
Vernal Pool ID: 04AA	Surveyor's Initials (2nd): KAW

VERNAL POOL SURVEY INFORMATION: Is this pool?: ☒ **SVP** **or** ☐ **VP**

Photos:* 14 (ATA); 21-24 (KAW); 48 (KAW)
*Number and Location

Wetland Habitat Characterization:

- **Choose the best descriptor for the physical setting**

☐ Isolated Wetland Depression
☐ Isolated Upland Depression
☐ Other:_____
☒ Pool associated with larger wetland complex
☐ Floodplain Depression

- **Check all wetland types that best apply to this pool:**

☐ Forested swamp
☒ Shrub swamp
☐ Peatland (fen or bog)
☐ Emergent marsh
☐ Wet meadow
☐ Shallow pond
☐ Abandoned beaver flowage
☐ Active beaver flowage
☐ Slow stream
☐ Floodplain overflow
☐ Headwater seepage
☐ Other:_____

Vernal Pool Status under the Natural Resources Protection Act (NRPA)

Natural Origin

- **Select the pool's origin:**

☒ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

Hydrology

- **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

☐ Permanent ☒ Semi-permanent ☐ Ephemeral ☐ Unknown

Semi-permanent: drying partially in all years and completely in drought years
Ephemeral: drying out during the growing season in most years
Water had receded by the second visit and much of the pool was dry on a later season visit.

- **Maximum depth at survey:**

Visit 1:	☐ 0-12"	☒ 12-36"	☐ 36-60"	☐ >60"
Visit 2:	☒ 0-12"	☐ 12-36"	☐ 36-60"	☐ >60"

- **Approximate size of pool (at spring highwater):**

Width: 50 ft. Length: 130 ft.

- **Faunal indicators (check all that apply):**

☐ Fish (list species if known):_____
☐ Bull or green frog tadpoles

Inlet/Outlet Permanency

Type of inlet or outlet:

☒ No inlet or outlet
☐ Ephemeral inlet or outlet
☐ Permanently flowing inlet or outlet
☐ Other (explain):_____

- **Predominant substrate:**

☒ Mineral soil (bare, leaf-litter bottom, upland mosses)
☐ Mineral soil (sphagnum moss present)
☐ Organic matter (muck, mud): shallow or restricted to deepest area
☐ Organic matter (muck, mud): deep and wide spread

Significant Vernal Pool Data Collection Form (Page 2 of 2)

- **Non-woody pool vegetation (check all that apply):**

☐ Terrestrial nonvascular species, (e.g., haircap moss *Lycopodium* spp.)

☐ Sphagnum moss

☐ Dry site ferns (e.g., spinulose wood ferns, lady fern, polypody fern)

☐ Wet site ferns (e.g. *Osmunda* spp.)

☐ Moist site ferns (e.g., sensitive fern, marsh fern, NY fern)

☒ Wet site graminoids (e.g., grasses, sedges)

☐ Moist site vasculars (e.g., skunk cabbage, jewelweed)

☐ Aquatic vasculars (e.g., pickerelweed)

☐ Floating submerged aquatics (e.g. water lilies, bladderwort)

Abundance Criteria:

- Was the entire pool comprehensively surveyed for egg masses? ☒ Yes ☐ No

Indicator Species	Egg Masses						Tadpoles/Larvae			
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	65	65	S	S	3	3				
Spotted salamander	5	5								
Blue-spotted salamander	0	0								

* Method of verification: S = Seen; H = Handled; P = Photographed

** Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:** ☐ Yes ☒ No

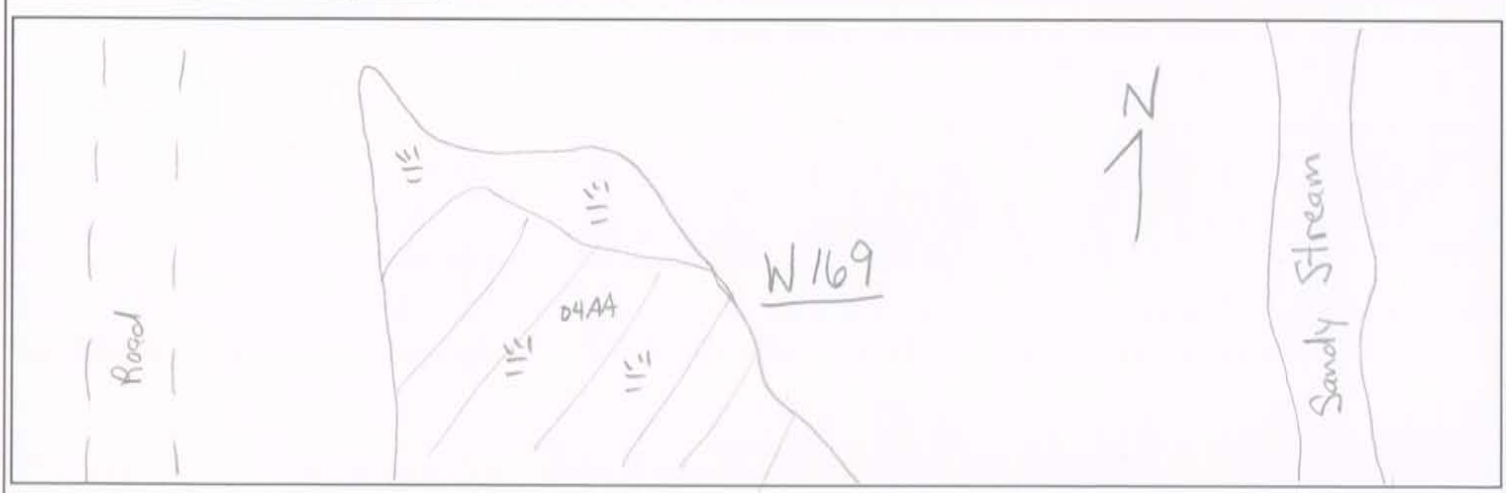
Rarity Criteria:

- Was a specific effort made to survey for rare species: ☒ Yes ☐ No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	☐	☐	☐	☐		Wood turtle	☐	☐	☐	☐	
Spotted turtle	☐	☐	☐	☐		Ribbon snake	☐	☐	☐	☐	
Ringed boghaunter	☐	☐	☐	☐		Comet darner	☐	☐	☐	☐	

* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

Field Sketch (04 AA):



Significant Vernal Pool Data Collection Form

Project: Highland Wind	Survey Date (1st): 5-11-09
Town/County: Highland Plantation, Somerset	Surveyor's Initials (1st): ETD
Associated Wetland ID (if applicable): W295	Survey Date (2nd): 5-20-09
Vernal Pool ID: 05ED	Surveyor's Initials (2nd): ETD

VERNAL POOL SURVEY INFORMATION: Is this pool?: ☒ **SVP** **or** ☐ **VP**

Photos:* 7
*Number and Location

Wetland Habitat Characterization:

- **Choose the best descriptor for the physical setting**

☐ Isolated Wetland Depression ☒ Pool associated with larger wetland complex
☐ Isolated Upland Depression ☐ Floodplain Depression
☐ Other:_____

- **Check all wetland types that best apply to this pool:**

☒ Forested swamp ☐ Wet meadow ☐ Slow stream
☐ Shrub swamp ☐ Shallow pond ☐ Floodplain overflow
☐ Peatland (fen or bog) ☐ Abandoned beaver flowage ☐ Headwater seepage
☐ Emergent marsh ☐ Active beaver flowage ☐ Other:_____

Vernal Pool Status under the Natural Resources Protection Act (NRPA)

Natural Origin

- **Select the pool's origin:**

☒ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

Hydrology

- **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

☐ Permanent ☐ Semi-permanent ☒ Ephemeral ☐ Unknown

Semi-permanent: drying partially in all years and completely in drought years
Ephemeral: drying out during the growing season in most years
Surface water likely dries completely, but mucky substrate may stay saturated.

- **Maximum depth at survey:**

Visit 1: ☒ 0-12" ☐ 12-36" ☐ 36-60" ☐ >60"
Visit 2: ☒ 0-12" ☐ 12-36" ☐ 36-60" ☐ >60"

- **Approximate size of pool (at spring highwater):**

Width: 6_____ ft. Length: 6_____ ft.

- **Faunal indicators (check all that apply):**

☐ Fish (list species if known):_____ ☐ Bull or green frog tadpoles

Inlet/Outlet Permanency

Type of inlet or outlet:
☒ No inlet or outlet ☐ Permanently flowing inlet or outlet
☐ Ephemeral inlet or outlet ☐ Other (explain):_____

- **Predominant substrate:**

☐ Mineral soil (bare, leaf-litter bottom, upland mosses) ☒ Organic matter (muck, mud): shallow or restricted to deepest area
☐ Mineral soil (sphagnum moss present) ☐ Organic matter (muck, mud): deep and wide spread

Significant Vernal Pool Data Collection Form (Page 2 of 2)

- **Non-woody pool vegetation (check all that apply):**

☐ Terrestrial nonvascular species, (e.g., haircap moss *Lycopodium* spp.)

☒ Sphagnum moss

☐ Dry site ferns (e.g., spinulose wood ferns, lady fern, polypody fern)

☐ Wet site ferns (e.g. *Osmunda* spp.)

☐ Moist site ferns (e.g., sensitive fern, marsh fern, NY fern)

☒ Wet site graminoids (e.g., grasses, sedges)

☒ Moist site vasculars (e.g., skunk cabbage, jewelweed)

☐ Aquatic vasculars (e.g., pickerelweed)

☐ Floating submerged aquatics (e.g. water lilies, bladderwort)

Abundance Criteria:

- Was the entire pool comprehensively surveyed for egg masses? ☒ Yes ☐ No

Indicator Species	Egg Masses						Tadpoles/Larvae			
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	47	47	S	S	3	3				
Spotted salamander	0	0								
Blue-spotted salamander	0	0								

* Method of verification: S = Seen; H = Handled; P = Photographed

** Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:** ☐ Yes ☒ No

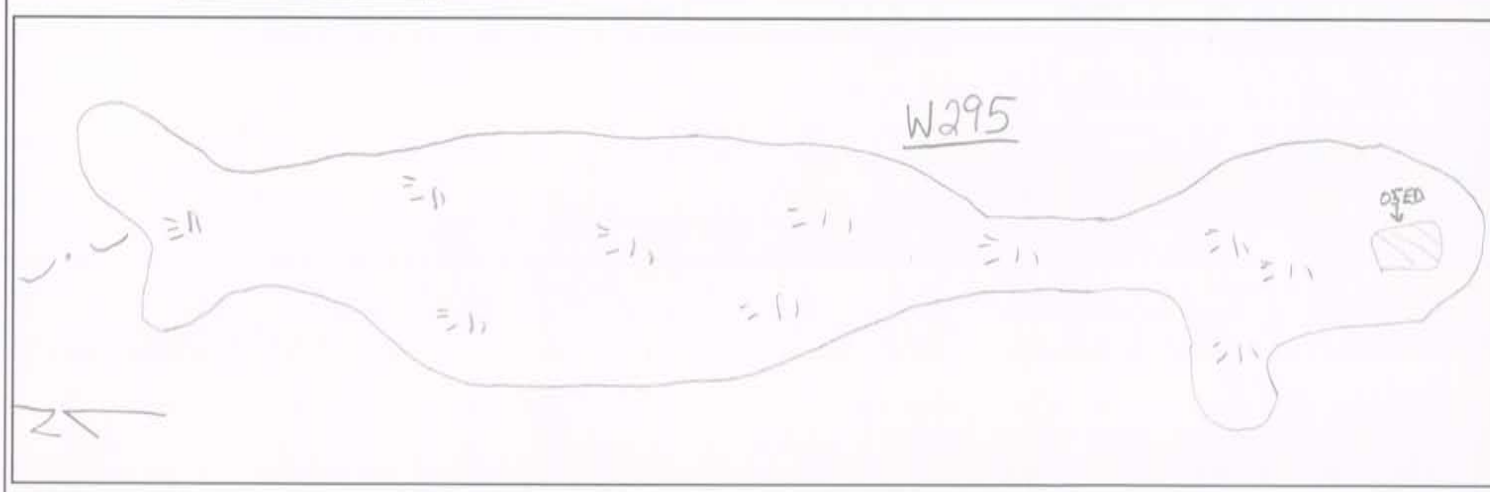
Rarity Criteria:

- Was a specific effort made to survey for rare species: ☒ Yes ☐ No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	☐	☐	☐	☐		Wood turtle	☐	☐	☐	☐	
Spotted turtle	☐	☐	☐	☐		Ribbon snake	☐	☐	☐	☐	
Ringed boghaunter	☐	☐	☐	☐		Comet darner	☐	☐	☐	☐	

* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

Field Sketch (05ED):



Significant Vernal Pool Data Collection Form

Project: Highland Wind	Survey Date (1st): 5-11-09
Town/County: Highland Plantation, Somerset	Surveyor's Initials (1st): ETD
Associated Wetland ID (if applicable): W315	Survey Date (2nd): 5-20-09
Vernal Pool ID: 08ED	Surveyor's Initials (2nd): ETD

VERNAL POOL SURVEY INFORMATION: Is this pool?: ☒ **SVP** **or** ☐ **VP**

Photos:* No photo available
*Number and Location

Wetland Habitat Characterization:

- **Choose the best descriptor for the physical setting**

☐ Isolated Wetland Depression
☐ Isolated Upland Depression
☐ Other:_____
☒ Pool associated with larger wetland complex
☐ Floodplain Depression

- **Check all wetland types that best apply to this pool:**

☒ Forested swamp
☐ Shrub swamp
☐ Peatland (fen or bog)
☐ Emergent marsh
☐ Wet meadow
☐ Shallow pond
☐ Abandoned beaver flowage
☐ Active beaver flowage
☐ Slow stream
☐ Floodplain overflow
☐ Headwater seepage
☐ Other:_____

Vernal Pool Status under the Natural Resources Protection Act (NRPA)

Natural Origin

- **Select the pool's origin:**

☒ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

Hydrology

- **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

☐ Permanent ☒ Semi-permanent ☐ Ephemeral ☐ Unknown

Semi-permanent: drying partially in all years and completely in drought years
Ephemeral: drying out during the growing season in most years
Presence of green frog tadpoles indicates that pool is semi-permanent to permanent.

- **Maximum depth at survey:**

Visit 1: ☒ 0-12" ☐ 12-36" ☐ 36-60" ☐ >60"
Visit 2: ☒ 0-12" ☐ 12-36" ☐ 36-60" ☐ >60"

- **Approximate size of pool (at spring highwater):**

Width: 8 ft. Length: 10 ft.

- **Faunal indicators (check all that apply):**

☐ Fish (list species if known):_____
☒ Bull or green frog tadpoles

Inlet/Outlet Permanency

Type of inlet or outlet:
☒ No inlet or outlet
☐ Ephemeral inlet or outlet
☐ Permanently flowing inlet or outlet
☐ Other (explain):_____

- **Predominant substrate:**

☐ Mineral soil (bare, leaf-litter bottom, upland mosses)
☒ Mineral soil (sphagnum moss present)
☐ Organic matter (muck, mud): shallow or restricted to deepest area
☐ Organic matter (muck, mud): deep and wide spread

Significant Vernal Pool Data Collection Form (Page 2 of 2)

- **Non-woody pool vegetation (check all that apply):**

☐ Terrestrial nonvascular species, (e.g., haircap moss *Lycopodium* spp.)

☒ Sphagnum moss

☐ Dry site ferns (e.g., spinulose wood ferns, lady fern, polypody fern)

☐ Wet site ferns (e.g. *Osmunda* spp.)

☐ Moist site ferns (e.g., sensitive fern, marsh fern, NY fern)

☒ Wet site graminoids (e.g., grasses, sedges)

☐ Moist site vasculars (e.g., skunk cabbage, jewelweed)

☐ Aquatic vasculars (e.g., pickerelweed)

☐ Floating submerged aquatics (e.g. water lilies, bladderwort)

Abundance Criteria:

- Was the entire pool comprehensively surveyed for egg masses? ☒ Yes ☐ No

Indicator Species	Egg Masses						Tadpoles/Larvae			
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	54	0	S	N/A	3	N/A	N/A	S	N/A	3
Spotted salamander	0	0								
Blue-spotted salamander	0	0								

* Method of verification: S = Seen; H = Handled; P = Photographed

** Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:** ☐ Yes ☒ No

Rarity Criteria:

- Was a specific effort made to survey for rare species: ☒ Yes ☐ No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	☐	☐	☐	☐		Wood turtle	☐	☐	☐	☐	
Spotted turtle	☐	☐	☐	☐		Ribbon snake	☐	☐	☐	☐	
Ringed boghaunter	☐	☐	☐	☐		Comet darner	☐	☐	☐	☐	

* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

Field Sketch (08ED):

Photo 1. Significant Vernal Pool 04AA in wetland W169.
Highland Plantation, Maine. Stantec Consulting. May 8, 2009.

Photo 2. Significant Vernal Pool 04AA in wetland W169.
Highland Plantation, Maine. Stantec Consulting. May 22, 2009.

Photo 3. Significant Vernal Pool 05ED in wetland W295.
Highland Plantation, Maine. Stantec Consulting. May 11, 2009.

Photo 4. Significant Vernal Pool 08ED in wetland W315.
Highland Plantation, Maine. Stantec Consulting. May 11, 2009.

Photo 5. Vernal Pool 01AA in wetland W101.
Highland Plantation, Maine. Stantec Consulting. May 7, 2009.

Photo 6. Vernal Pool 03AA in wetland W072.
Highland Plantation, Maine. Stantec Consulting. May 15, 2009.

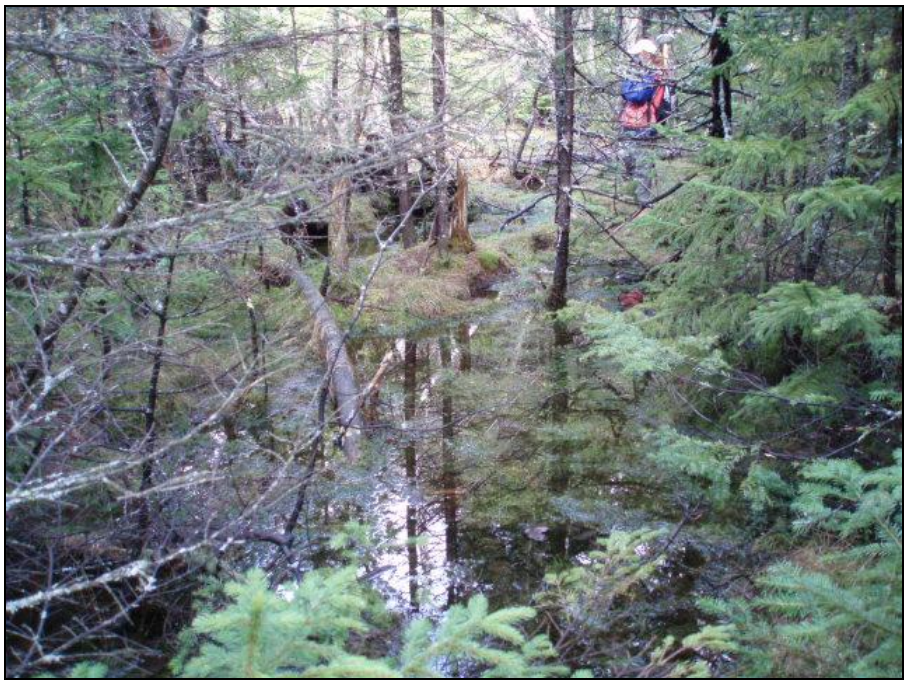


Photo 7. Vernal Pool 06AA in wetland W134.
Highland Plantation, Maine. Stantec Consulting. May 7, 2009.

Photo 8. Vernal Pool 08KW in wetland W072.
Highland Plantation, Maine. Stantec Consulting. May 15, 2009.

Photo 9. Vernal Pool 17KW in wetland W134.
Highland Plantation, Maine. Stantec Consulting. May 8, 2009.

Photo 10. Vernal Pool 21KW in wetland W263.
Highland Plantation, Maine. Stantec Consulting. May 11, 2009.

Photo 11. Vernal Pool 22KW in wetland W265.
Highland Plantation, Maine. Stantec Consulting. May 12, 2009.

Appendix 7
Representative Site Photographs

Photo 1. Wetland altered by timber harvesting activity and currently characterized as emergent. Stantec Consulting, September 22, 2008.

Photo 2. Wetland altered by timber harvesting activity and currently characterized as emergent. Stantec Consulting, September 24, 2008.

Photo 3. Forested wetland altered by timber harvesting activity .
Stantec Consulting, September 30, 2008.

Photo 4. Scrub-shrub wetland altered by timber harvesting activity.
Stantec Consulting, October 21, 2008.

Photo 5. Emergent wetland.
Stantec Consulting, September 18, 2008.

Photo 6 Forested wetland.
Stantec Consulting, September 22, 2008.

Photo 7. Scrub-shrub wetland.
Stantec Consulting, October 6, 2008.

Photo 8. Intermittent stream.
Stantec Consulting, November 11, 2008.

Photo 9. Intermittent stream.
October 14, 2008.

Photo 10. Intermittent stream.
Stantec Consulting, September 26, 2008.

Photo 11. Intermittent stream.
Stantec Consulting, September 29, 2008.

Photo 12. Intermittent stream.
Stantec Consulting, September 20, 2008.

Photo 13. Sandy stream.
Stantec Consulting, November 14, 2008.

Photo 14. Perennial stream.
Stantec Consulting, November 14, 2008.

Photo 15. Bald upland.
Stantec Consulting, October 7, 2008.

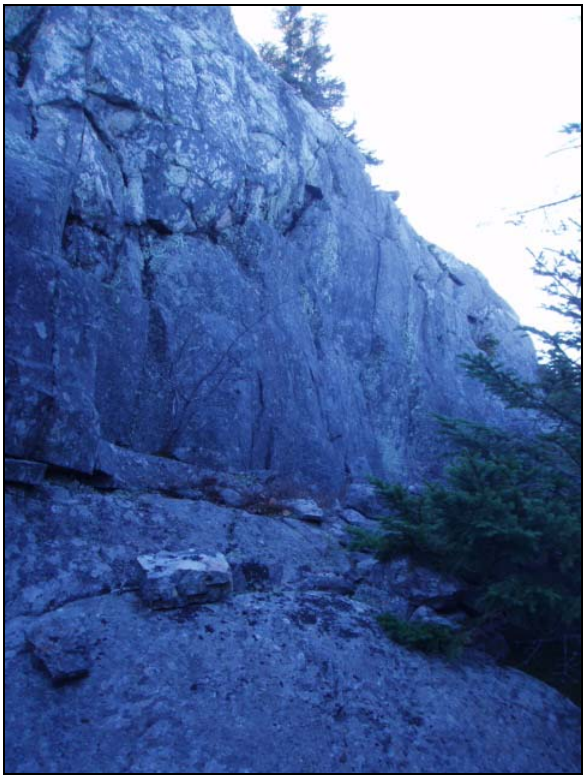


Photo 16. Rock face upland.
Stantec Consulting, October 7, 2008.

Photo 17. Spruce fir-higher elevation upland.
Stantec Consulting, September 9, 2008.

Photo 18. Beech-birch-maple upland.
Stantec Consulting, September 8, 2008.

Photo 19. Mixed woods upland.
Stantec Consulting, September 8, 2008.

Photo 20. Upland clear cut.
Stantec Consulting, October 27, 2008.

Photo 21. Cleared upland.
Stantec Consulting, September 10, 2008.

Appendix 8
Agency Correspondence

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

September 9, 2008

Lisa MacDonald
Stantec Consulting
30 Park Drive
Topsham, ME 04086

Re: Request for Significant Wildlife Habitat Information
Highland Plantation

Dear Ms. MacDonald:

Enclosed please find a map in response to your request for information regarding Significant Wildlife Habitat in ***Highland Plantation, Maine***. The map shows your approximate project area and was generated from Maine Geographic Information System (GIS) data layers maintained by the Maine Department of Environmental Protection (DEP) and the Maine Department of Inland Fisheries and Wildlife (IF&W). Based on this information, it appears that ***no Significant Wildlife Habitats or other habitat features have been identified within the project area***

Please note that GIS datalayers for Vernal Pools are not currently available. The project area should be screened by a qualified professional during the appropriate identification period to determine if significant vernal pools are present

Thank you for consulting the Department during the project planning process. Please feel free to contact the Department if you have questions or require additional information.

Sincerely,

Amy Lemelin

Amy Lemelin
Bureau of Land and Water Quality

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

Highland Wind Project
Highland Plantation

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Map Notes:
- Land Licensing Sites were either digitized on screen, or collected using a Garmin Etrex GPS Unit. Feature locations have an accuracy of +/- 15 meters.
- Background hydrologic, topographic and political features are from MEGIS data layers with an accuracy of +/- 40 feet.
- All spatial data is projected to NAD 1983 UTM Zone 19.
- All spatial data is specific to Maine DEP Bureau of Land and Water Quality.
Data is maintained by the Maine DEP GIS Unit, Janet Parker and DLRR, Lisa-kay Keen.
- This map is to be used for reference purposes only and does not represent authoritative locations of displayed features.

Map Prepared By: Amy Lemelin
6/2/2008
Maine DEP, BLWQ,

Legend

- Inland_Waterfowl_Wader_Habitat_NRPA_revised
- Inland_Waterfowl_Wader_Habitat_Shoreland_revised
- Railroads
- Shorebird roosting area
- Shorebird feeding area
- Tidal_Waterfowl_Wader_Habitat
- Seabird_Nesting_Islands

Roads

- Town Road
- Town Road - Summer
- Town Road - Winter
- State-aided Highway
- State Highway
- Toll Highway
- Private Road
- Reservation Road
- Seasonal Parkway
- Roads_E911
- Small Wetlands (points)
- Large Wetlands (polys)

Streams

- <all other values>

TYPE

- Perennial
- Intermittent
- Ponds and Lakes
- Rivers

franklin
RGB
- Red: Band_1
- Green: Band_2
- Blue: Band_3

hancock
RGB
- Red: Band_1
- Green: Band_2
- Blue: Band_3

somerset_n
RGB
- Red: Band_1
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- Blue: Band_3

somerset_s
RGB
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1 inch equals 9,826 feet

Highland Wind Project
Highland Plantation

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MENAP_Sensitive_Plant_Areas

- Grasslands / Shrublands / Barrens
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- Estuarine / Saltwater Habitats
- Freshwater Forested and Non-Forested Wetlands
- Rare Plant Locations (Field Verified within the past 20 years)
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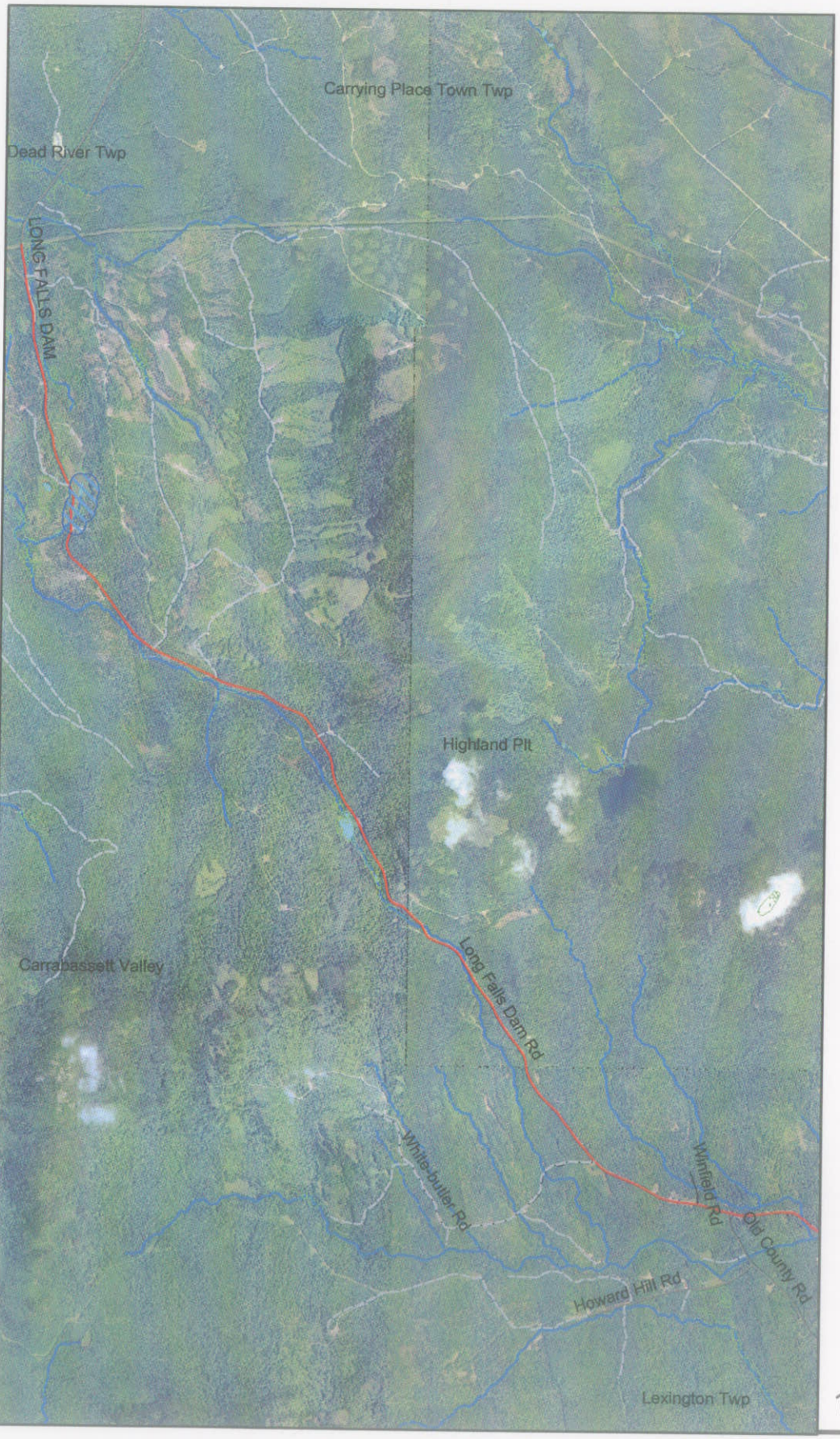
1 inch equals 4,167 feet

Highland Wind Project
Highland Plantation



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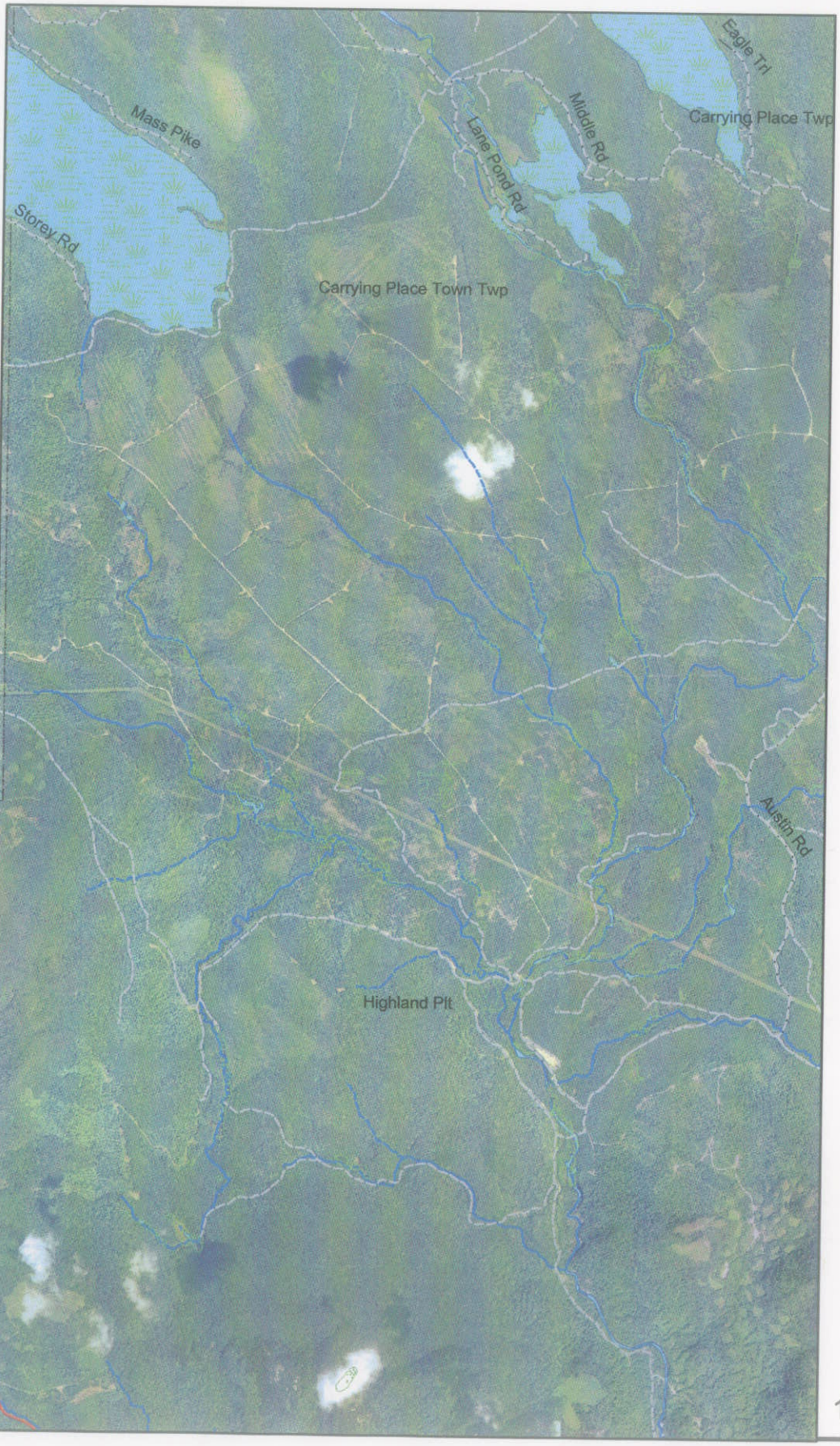
1 inch equals 4,167 feet

Highland Wind Project
Highland Plantation



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6/2/2008
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- Drainage_Divides

1 inch equals 4,167 feet

STATE OF MAINE
DEPARTMENT OF INLAND FISHERIES & WILDLIFE

WILDLIFE DIVISION
Region D
689 Farmington Road
Strong, Maine 04983

Phone (207) 778-3324 FAX (207) 778-3323

JOHN ELIAS BALDACCI
GOVERNOR

ROLAND D. MARTIN
COMMISSIONER

August 28, 2008

Lisa MacDonald
Stantec Consulting
30 Park Drive
Topsham, ME 04086

Dear Ms. MacDonald:

I received your 13 August 28, 2008 letter requesting Significant and Essential Wildlife Habitat information for the property in Highland Plantation. Enclosed are the results of my review.

Essential Habitats:

Essential Habitats are defined as "areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require special management considerations". Essential Habitat protection in Maine currently applies to bald eagle, roseate and least tern, and piping plover nest sites, but additional listed species may receive attention in the future.

According to MDIFW records, there are no Essential Habitats known to be associated with this property.

Significant Wildlife Habitats:

The Natural Resources Protection Act, administered by the Maine Department of Environmental Protection, provides protection to certain natural resources including Significant Wildlife Habitats. Significant Wildlife Habitats are defined by the NRPA as:

- Habitat for state and federally listed endangered and threatened species.
- High and moderate value deer wintering areas (DWAs) and travel corridors.
- High and moderate value waterfowl and wading bird habitats (WWHs), including nesting and feeding areas.
- Shorebird nesting feeding and staging areas.
- Seabird nesting islands.

Waterfowl and Wading Bird Habitat (WWH):

According to MDIFW records this parcel is associated with several WWHs, all are rated either Moderate or High Value. Please see the enclosed map(s). The Maine DEP and Maine IFW recommend that towns place Moderate and High Value WWHs in Resource Protection. Therefore you should check with LURC for harvest regulations. If the town does not have this area in Resource Protection, it is still important to maintain a 250' undisturbed (permanent clearings, roads, etc.) buffer. Within this buffer, uneven-aged forest management should be used if the landowner is going to harvest any trees. Volume removal should not exceed 30% in a 15-year period and a well-distributed overstory should be maintained. No trees should be cut within 75 feet of the shore.

Threatened, Endangered or Special Concern Species

Finally, the department maintains a statewide database of Threatened and Endangered wildlife species and habitats, or Species of Special Concern. In general, these records are not the product of recent or intensive surveys for T/E species. Review of department records show no such habitats associated with your project area.

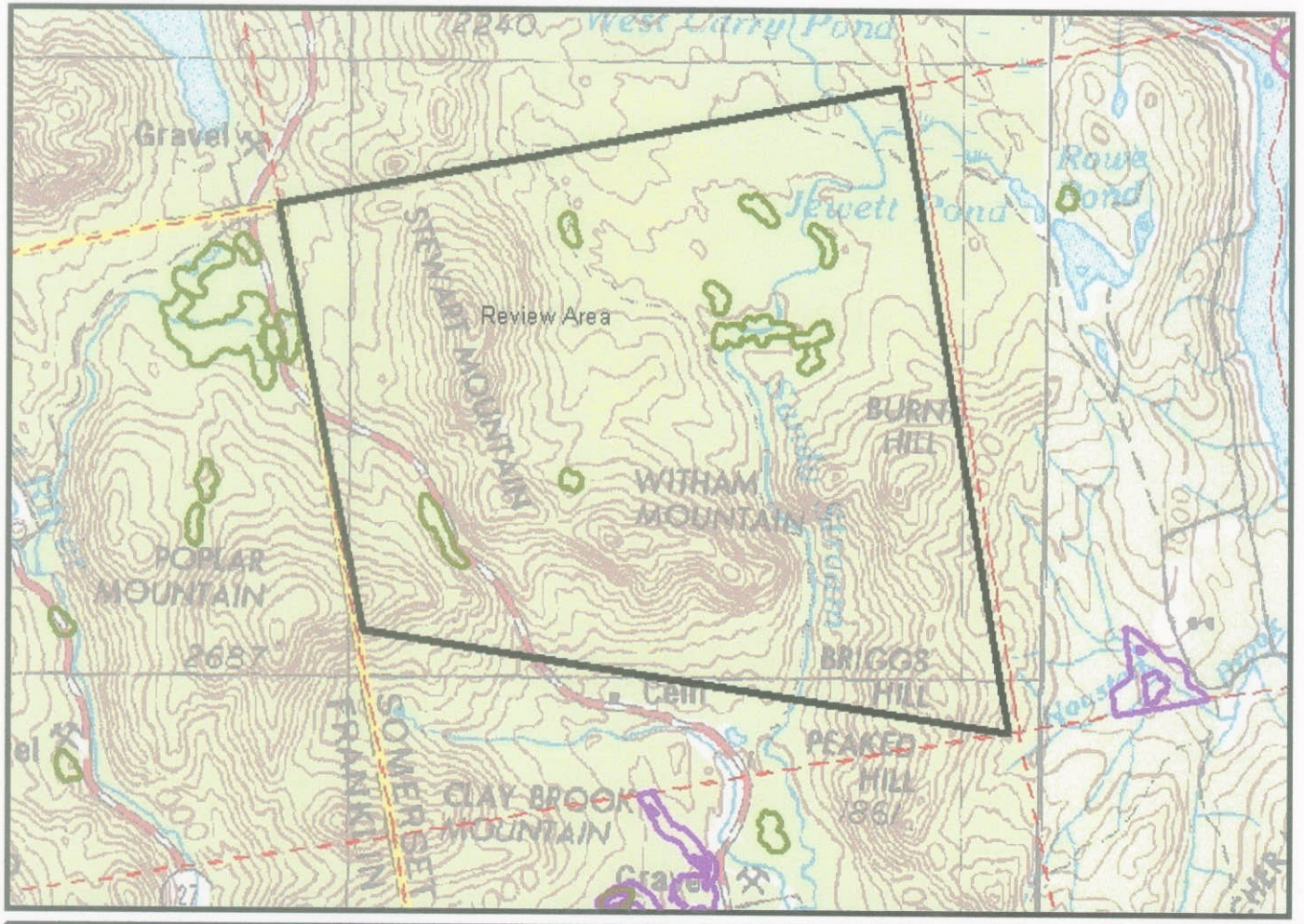
If you have any questions or would like further assistance please contact this office, we would be glad to help.

Yours truly,

Robert C. Cordes

Robert C. Cordes
Asst. Regional Wildlife Biologist

Search for Wildlife Observations & Habitat



- Bald Eagle Nest Site
- Piping Plover / Least Tern Nesting, Feeding, & Brood-rearing Area
- Roseate Tern Nesting Area
- Deer Winter Area
- Inland Waterfowl / Wading Bird Habitat
- Tidal Waterfowl / Wading Bird Habitat
- Seabird Nesting Island
- Shorebird Area
- Biological Conservation Database Rare Species or Habitat Observation
- Township Boundary
- County

0 1 2 3 4 Miles

1:107,245

UTM Projection, Zone 19N, NAD83

N

689 Farmington Road
Strong, ME 04983-9419
Voice: (207) 778-3324
Fax: (207) 778-3323

August 28, 2008

Maine Department of Inland Fisheries & Wildlife
689 Farmington Road, Strong, ME 04983-9419
Phone: (207) 778-3324, FAX: (207) 778-3323

Site-Specific Search of Wildlife Observations and Habitat

SEARCH PARAMETERS

County:	Franklin, Somerset
IF&W Region:	D
Township(s):	Carrabassett Valley, Carrying Place Town Twp, Dead River Twp, Highland Plt, Lexington Twp
Search Center:	414772 east, 4994581 north (UTM NAD83 coordinates)
Search Area:	35.95 sq. miles
Date:	Thursday, August 28, 2008

RESULTS

Essential Wildlife Habitats

BALD EAGLE NEST SITES
None Found

PIPING PLOVER / LEAST TERN NESTING, FEEDING, AND BROOD-REARING AREAS
None Found

ROSEATE TERN NESTING AREAS
None Found

Natural Resource Protection Act (NRPA) Habitats

Title 38, Chapter 3, Article 5-A, Section 480 of M.R.S.A. identifies habitats protected under the Natural Resources Protection Act (NRPA). Included in the definitions section (480-B) is "Significant Wildlife Habitat," which means areas that have been mapped by MDIFW or are within any other protected natural resource including habitat for listed endangered/threatened animal species; high/moderate value deer wintering areas; high/moderate value waterfowl/wading bird habitat; shorebird nesting, feeding, and staging areas; and seabird nesting islands. Although all of these habitats are mapped by MDIFW, to date only seabird nesting islands have gone through the formal NRPA process and are regulated. Shorebird areas are regulated as mapped

under recent amendments to NRPA. Specific deer wintering areas and waterfowl/wading bird habitat (inland and tidal) have been mapped and designated "Candidate NRPA," indicating they potentially meet the NRPA Significant Habitat criteria but have not been formally zoned. Recent amendments to NRPA identified criteria to determine high and moderate Waterfowl and Wading bird habitats for protection under NRPA. Data requested for NRPA purposes (such as waterfowl and wading bird habitat, seabird nesting islands, and shorebird areas) should be obtained from Maine DEP.

SEABIRD NESTING ISLANDS
None Found

DEER WINTER AREAS
None Found

INLAND WATERFOWL/WADING BIRD HABITATS

Areas rated as high or moderate qualify as Candidate NRPA habitats. The mapped boundary includes a 250-ft upland zone that is used by wildlife associated with the wetland. This data set was developed in accordance with NRPA and the Comprehensive Planning and Land Use Regulation Act (Growth Management).

Code	Rating	Acres	Wetland Acres
UMO-9443	moderate	41	11.69
UMO-9454	moderate	35	0
UMO-10621	moderate	29	0
UMO-10707	moderate	33	0
UMO-10752	moderate	165	48.44
UMO-10949	high	22	0
UMO-10982	moderate	74	19.76

CODE = Unique identifier assigned by MDIFW to the polygon. Polygons with a code beginning with "UMO" were identified by the University of Maine analysis of wetland habitats in 2002. These polygons do not have corresponding records in MDIFW's databases.
RATING = Inland waterfowl/wading bird habitats with a "high" or "moderate" rating are considered as Candidate NRPA.
ACRES = Size of the IWWH in acres.
WETLAND ACRES = size of entire wetland in acres (this may encompass several IWWH polygons).

TIDAL WATERFOWL/WADING BIRD HABITATS
None Found

SHOREBIRD AREAS
None Found

Land Use Regulation Commission (LURC) Deer Winter Areas and Seabird Nesting Islands

None Found

Rare, Threatened, or Endangered (RTE) Species Observations (Natural Heritage data)

POINTS OBSERVATIONS BUFFERED BY 0.25 MILES

None Found

MAPPED HABITAT POLYGONS

None Found

MAINE HISTORIC PRESERVATION COMMISSION
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04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

September 18, 2008

Ms. Lisa MacDonald
Stantec Consulting
30 Park Drive
Topsham, ME 04086

Project: MHPC #1598-08 – Highland Wind Project
Town: Highland Plantation, ME

Dear Ms. MacDonald:

In response to your recent request, I have reviewed the information received August 15, 2008 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act.

No archaeological survey has been done in the project area, so there are no known archaeological sites. Archaeological survey will be necessary for prehistoric/Native American archaeological sites at powerline and access road crossings of streams, and where powerlines or access roads intersect glacial outwash/esker surficial deposits. In addition, a survey for bedrock exposures that may have been used as stone tool raw material sources (quarries) by Native Americans must be undertaken on the highlands were turbines and associated access roads and powerlines will be located. A list of qualified prehistoric archaeologists is enclosed along with material explaining the Phase I/II/III approach to archaeological survey. This information can also be found on our website: www.maine.gov/mhpc/project_review This office must approve any proposal for archaeological fieldwork.

Regarding architectural resources, I have concluded that there are no National Register listed or known National Register eligible properties in the project area. However, no architectural survey of the project area has ever been conducted. I have concluded that additional information is necessary to identify historic above ground properties within the proposed undertaking's area of potential effect (APE). Therefore, in order to determine whether such resources exist, a Section 106-specific architectural survey will need to be completed in accordance with our survey guidelines and associated forms, which are both downloadable from our website: www.maine.gov/mhpc/project_review (see tabs in the white box on the left side of the webpage under Project Review) Please also find attached our revised photographic policy to be referenced in lieu of the policy in our on-line survey manual. Any computer generated template other than that provided by MHPC must be approved by MHPC prior to submission.

PHONE: (207) 287-2132

FAX: (207) 287-2335

No changes to the survey forms are to be made without consulting MHPC. Please note that the APE may include properties that have been surveyed as part of prior project reviews. A list of historic preservation consultants is enclosed for your information.

Once the information mentioned above is received, we will forward a response regarding the results of our evaluation. Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

enc.

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JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

Prehistoric Archaeologists Approved List: Review and Compliance Consulting/Contracting (Active)

LEVEL 1

Ms Edna Feighner (207-879-9496)
NH Division of Historical Resources
PO Box 2043
Concord NH 03302-2043
Efeighner@NHCHR.state.nh.us

James A Clark (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
clark.ja@gmail.com

Mr. Michael Brigham (207-778-7012)
Archaeology Research Center
University of Maine at Farmington
139 Quebec St
Farmington ME 04938
brigham@maine.edu

Richard P Corey (207-778-7012)
PO Box 68
E Wilton ME 04234-0068
rcorey@maine.edu

Edward Kitson (207-778-7012)
Archaeology Research Center
University of Maine at Farmington
139 Quebec St
Farmington ME 04938
kitson@maine.edu

Mr Brian Valimont (207-251-9467)
New England Archaeology Co LLC
117 Cat Mousam Rd
Kennebunk ME 04043
newarch1@verizon.net

Ms. Sarah Haugh (207-879-9496 x238)
Tetra Tech
451 Presumpscot St
Portland ME 04103
sarah.haugh@tetratech.com

LEVEL 2

Dr Richard Will (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485
willtrc@adelphia.net

Dr Jonathan Lothrop (412-856-6400)
GAI Consultants
570 Beatty Rd
Monroeville PA 15146
j.lothrop@gaiconsultants.com

Dr Stuart Eldridge (207-879-9496)
Tetra Tech
451 Presumpscot St
Portland ME 04103
stuart.eldridge@tetratech.com

Dr Ellen Cowie (207-778-7012)
Archaeology Research Center
University of Maine at Farmington
139 Quebec St
Farmington ME 04938-1507
ecowie@maine.edu

Robert N Bartone
Archaeology Research Center
University of Maine at Farmington
139 Quebec St
Farmington ME 04938
b_bartone@maine.edu

Dr Victoria Bunker (603-776-4306)
PO Box 16
New Durham NH 03809-0016
vbi@worldpath.net

Dr Bruce J Bourque (207-287-3909)
Maine State Museum
83 State House Station
Augusta ME 04333-0083
bbourque@abacus.bates.edu

Dr Leslie Shaw (207-725-3815)
Dept of Sociology & Anthropology
Bowdoin College
Brunswick ME 04011
e-mail: lshaw@bowdoin.edu

David Putnam (207-762-5078)
47 Hilltop Rd
Chapman ME 04757
putnamd@umpi.edu

Dr Nathan Hamilton (207-780-5324)
Dept of Geography & Anthropology
University of Southern Maine
Gorham ME 04038

Dr William R Belcher
US Army CILHI
310 Worchester Ave Bldg 45
Hickam AFB HI 96853-5530
wbelcher@msn.com

Dr Steven L Cox (207-342-7790)
57 Ghent Rd
Searsmont ME 04973
stevencox@fairpoint.net

Geraldine Baldwin (914-271-0897)
John Milner Associates Inc
1 Croton Point Ave Ste B
Croton-on-Hudson NY 10520
FAX: 914-271-0898
GeraldineBaldwin@aol.com

Dr. Robert Goodby (603-446-2366)
Monadnock Archaeological Consulting
16 Fox Hill Rd
Stoddard NH 03464
MonadArch@surfglobal.net

Edward Moore
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485

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ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

CONTRACT ARCHAEOLOGY GUIDELINES

June 10, 2002

This document is provided as background information to agencies, corporations, professional consultants or individuals needing contract archaeological services (also known as Cultural Resources Management archaeology) in Maine. These guidelines are based on state rules (94-089 Chapter 812).

Project Types

The vast majority of contract archaeology survey work falls into one of three categories. **Phase I** surveys are designed to determine whether or not archaeological sites exist on a particular piece of land. Such work involves checking records of previous archaeology in the area, walking over the landscape to inspect land forms and look for surface exposures of soil and possible archaeological material, and the excavation of shovel test pits in areas of high probability. **Phase II** surveys are designed to focus on one or more sites that are already known to exist, find site limits by digging test pits, and determine site content and preservation. Information from Phase II survey work is used by the Maine Historic Preservation Commission (MHPC) to determine site significance (eligibility for listing in the National Register of Historic Places). **Phase III** archaeological work, often called data recovery, is careful excavation of a significant archaeological site to recover the artifacts and information it contains in advance of construction or other disturbance.

Archaeological sites are further divided into two broad categories of culture, **prehistoric** (or Native American), and **historic** (or European-American). Different archaeological specialists are usually needed for prehistoric or historic sites because the nature of content and preservation and site locations are quite different.

Scope of Work

In responding to a project submission, the MHPC may issue a letter specifying which type of archaeological survey is needed (prehistoric, historic or both) and at what level (Phase I, II, or III). Often the response letter contains further information, such as the suspected presence of an historic site of a certain age, or a statement that only a portion of the project parcel in question is sensitive for prehistoric sites and only that portion needs archaeological survey.

Once the project applicant has one or more scopes of work (proposals) from appropriate archaeologists (see below), the applicant should submit their preferred proposal *(without attached financial information or bid total)* to the MHPC for approval. MHPC will not comment upon cost, but will comment on the appropriateness of the scale and scope of the work. An approval from MHPC of the scope of work is the applicant's guarantee that, if the field and laboratory work are done according to the scope, and appropriately described in writing, the results will be accepted by MHPC.

The final written report on the project must also be submitted to MHPC for review and comment.

PHONE: (207) 287-2132

FAX: (207) 287-2335

Finding an Archaeologist

At the time that MHPC issues a letter requiring archaeological survey work, MHPC will also supply one (or more) lists of archaeologists (Levels 1 and/or 2, historic or prehistoric) appropriate to the type of work (Phase I, II, III, historic or prehistoric). Archaeologists on the Level 2 Approved Lists can do projects of any level, including Phase I archaeological survey projects. Level 1 archaeologists are restricted to doing Phase I surveys, and certain planning projects for municipal governments.

MHPC maintains lists of archaeologists interested in working in different geographic areas of Maine, and those who are qualified in different types of work. The archaeologists themselves indicate their availability (except for short-term absence) to MHPC on a periodic basis, so archaeologists on the list can be expected to respond to inquiries. The applicant should solicit proposals or bids for work from archaeologists whose names appear on the list supplied by MHPC.

These archaeologists' names are taken from lists of archaeologists approved for work in Maine by MHPC under a set of rules establishing minimal qualifications, such as previous supervisory experience in northern New England, and an appropriate graduate degree. *However, the inclusion of an archaeologist on one of these lists should not be interpreted as an endorsement by the MHPC beyond these limited qualification criteria. Moreover, the MHPC cannot recommend the services of an individual archaeologist.*

Project Final Report

Whatever the archaeological survey result, a final report on the project should be submitted by the applicant to the MHPC. The MHPC will review the report, and issue further guidance or issue a "clearance" letter for the project.

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JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

Maine Historic Preservation Commission

Photographic Policy

Supplement to the Guidelines for Identification: Architecture and Cultural Landscapes Survey Manual. 26 June 2008

Architectural Survey

The following is required of grant funded, MDOT, and Federal agency surveys and encouraged with volunteer surveys.

A. Black and White Film.

Each resource shall be photographed with black and white film. This film shall be developed and a contact print made from the negatives. The negatives and contact print shall be indexed to the survey forms and the corresponding digital images (see below) and submitted with the survey.

If the facilities are available, surveyors may choose to print each film image, utilizing a true black and white photographic process and printed preferably on non-resin coated fiber based paper. The finished photographs need to be thoroughly washed, printed with borders, and measure 3 ½ x 5 inches. These photographs may be mounted on the survey forms using archivally safe adhesive, such as Elmer's Glue. Photographs attached with paperclips or staples will not be accepted.

B. Digital Images

An identical (or nearly identical) image shall be taken of each resource with a digital camera. The original image size must be no smaller than 1600 x 1200pixels at 300 pixles per inch. The digital images shall be saved in RGB color format. All digital images shall be burned onto a CD-R Gold or DVD-R Gold disk, and labled with project name/ pin #/ surveyor name and date. The individual images must be labeled in a manner that allows them to be linked to the specific survey form.

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Each digital image shall be uploaded onto survey form in the MHPC/MDOT Survey website, (once it is on-line). A test image, in black and white, shall then be digitally printed directly onto a blank survey form (using the required cover-stock). If the printed image is clear (no bleeding), then all the survey images can be printed directly onto the forms (in black and white), when the forms are printed from the website. If the test image is not clear, then all the digital images should be printed onto photographic paper as specified below and this image will then be affixed to the submitted copy of the survey using archivally safe adhesive. The digital images shall be indexed to the survey forms and the black and white negatives.

Digital image printing: The following printer/ink/paper combinations have been found to meet a 75 year archival standards. All digital images printed for architectural surveys must meet this standard.

***NOTE**: The list below includes products known at this time to meet the minimum documentation specifications established for the submission of architectural surveys. The list is not intended to be restrictive or comprehensive, and does not constitute, and shall not be taken as, endorsement by the Maine Historic Preservation Commission of any of the specific products or manufacturers identified.*

Epson Stylus Photo 1400	Epson ClariaA Hi-Definition Inks@	Premium Presentation Paper Matte Epson Ultra Premium Glossy Photo Paper
Epson Style Mate	Epson Picture Mate Pigment Inks	Epson PictureMate Paper
Epson Stylus CX4800 (contains scanner)	Epson DURABrite Ultra Pigmented Inks	Premium Presentation Paper Matte Epson Ultra Premium Glossy Photo Paper
Hewlett-Packard Photosmart 325 and 475	HP Vivera 95 dye-based Inks	Epson HP Premium Plus Photo Paper
Hewlett-Packard Photosmart 8450	HP Vivera dye-based Inks	HP Premium Plus Photo Paper
Hewlett-Packard Photosmart B9180	HP Vivera Pigment Inks	HP Advanced Photo Paper Glossy HP Photo Matte Paper
Hewlett-Packard Photosmart C6180 (all in one series)	HP Vivera Inks	HP Premium Plus Photo Paper
Lexmark Home Photo Center P6250	Lexmark Evercolor Dye/ Pigment Hybrid Photo Inks	Lexmark Premium Photo Paper High Gloss

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National Register Photographs.

All photographs provided to MHPC for submission with a National Register of Historic Places nomination must conform to the National Register Photographic Policy as stated by the National Park Service. This policy is available on line at:
http://www.nps.gov/history/nr/policyexpansion.htm

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GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

Historic Preservation Consultants

The following list includes architectural and landscape historians, historians, and preservation planners who appear to meet the minimum National Park Service professional qualification standards in 36 CRF 61. Inclusion on this list does not represent an endorsement by the Maine Historic Preservation Commission.

Nicholas C Avery
2326 East Main Rd
Portsmouth RI 02871
401-683-2122
hortus@avery-design.net

Ann G Ball
119 Princess Point Rd
Yarmouth ME 04096
anneball@maine.rr.com

Rose-Marie Ballard
PO Box 1209
Damariscotta ME 04543
207-633-3890

Rochelle L Bohm
644 Hammond St
Bangor ME 04401
207-990-3585

Deirdre A Brotherson
16 K St
Concord NH 03301
603-225-7204

Richard M Candee
6 Scituate Rd
York ME 03909
207-363-6635

Erik Carson
56 Ryder Rd
Yarmouth ME 04096
207-846-3536

Christopher W Closs & Co
PO Box 530
Hopkinton NH 03229-0530
603-746-4789

Martha B Deprez
17 West St
Portland ME 04102
207-772-4312 or
774-5561

Pamela Griffin
(Landscape History)
291 Mere Point Rd
Brunswick ME 04011
Work: 207-871-0003
Home: 207-729-3018

Edward L Hawes PhD
PO Box 787
Brunswick ME 04011
207-729-5878
Fax: 207-725-3989
ehawes@polar.bowdoin.edu

Robin A S Haynes
46 Edwards St
Bath ME 04530
207-442-7301

Charlton Hudson
PO Box 22
Lincolnville ME 04849-0022
207-338-1638

Thomas B. Johnson
184 Portland St
South Beriwck ME 03908
(603) 783-9511 ext. 206

Kari Ann Laprey
5 Groundnut Hill Rd
Cape Neddick ME 03902
207-361-2601

Carolyn Lockwood
773 High St
Bath ME 04530
207-443-6605
olops@gwi.net

Rosalind Magnuson
14 Sea Garden Circle
Kennebunk ME 04043
207-967-3543

Steven C Mallory
1504 Shurpike Rd
Shushan NY 12873
scmallory@aol.com

Sara K Martin
75 Leighton St
Bangor ME 04401
207-990-5744
saramartin2000@yahoo.com

Theresa Shea Mattor
(Landscape History)
28 My Ln
Hollis ME 04042
207-727-5059
ivyland@sacoriver.net

Ann Morris
(Historian)
60 Lake Ave
Rockland ME 04841
207-594-4601

Woodward D Openo
PO Box 618
Somersworth NH 03878-0618
603-692-6057

Roger G Reed
19 Terrace Ave
Newton MA 02161
617-739-7542
Fax: 617-964-1672

Janet Roberts
40 Weymouth St
Brunswick ME 04011
207-729-8967

Deborah Thompson
117 Norfolk St
Bangor ME 04401
207-947-8016

Wick York
PO Box 334
Stonington CT 06378-0334
wyork@portone.com

Gregory Farmer
Agricola Corporation
(Documentation/Planning)
PO Box 861
Chicopee MA 01014-0861
413-592-3875

Henry Amick
Amick Museum Resource Dev
3003 Washtenaw Ave Ste 1-E
Ann Arbor MI 48104
734-994-1004
henry@henryamick.com

PHONE: (207) 287-2132

FAX: (207) 287-2335

Barba & Wheelock
Architecture Preservation & Design
500 Congress St
Portland ME 04101-3403
207-772-2722

Circa, Inc
PO Box 28365
Raleigh NC 27611
919-834-4757
Fax: 919-834-4756
www.circa-inc.com

EBI Consulting
21 B St
Burlington MA 01803
781-273-2500
Fax: 781-273-3311

Douglas J Kelleher
Epsilon Associates Inc
3 Clock Tower Pl Ste 205
Maynard MA 01754
978-897-7100
dkelleher@epsilonassociates.com

Hardlines Design Company
4608 Indianola Ave
Columbus OH 43214
614-784-8733
Fax: 614-784-9336

Cindy Hamilton
Heritage Consulting Group
89 Bethleham Pike Ste 200
Philadelphia PA 19118
215-248-1260
CHamilton@Heritage-Consulting.com

Richard Casella
Historic Documentation Company Inc
490 Water St
Portsmouth RI 02871-4229
401-683-3483
Fax: 401-683-4217

History Matters
1502 21st St NW 2nd Fl
Washington DC 20036
202-223-8845
www.historymatters.net

Bruce G Harvey
Kleinschmidt Associates
225 Greenfield Pkwy Ste 115
Liverpool NY 13088
315-463-5013
Fax: 315-463-5126

New England Preservation Collaborative Inc
PO Box 132
Montpelier VT 05601
802-999-7928
Fax: 802-846-7544
www.nepreservation.com

Lucinda Brockway
(Landscape History)
Past Designs
53 High St
Kennebunk ME 04043
207-985-4326
cindy@pastdesigns.com

Powers & Company Inc
211 North 13th St Ste 500
Philadelphia PA 19107
215-636-0192
www.powersco.net

Lynne Emerson Monroe
Preservation Company
5 Hobbs Road
Kensington NH 03833
603-778-1799

Roxanne Eflin
Preservation Planning Associates
56 Joy Valley Rd
Buxton ME 04093
207-929-5630
Fax: 207-929-5620
Cell: 207-229-9465
roxanneeflin@yahoo.com
www.preservationplanningassociates.com

Public Archaeology Lab
210 Lonsdale Ave
Pawtucket RI 02860
401-728-8780

Matt Bivens
SCI Engineering
130 Point West Blvd
St Charles MO 63301
636-949-8200
mbivens@sciengineering.com

Henry Wyatt
Southport Historical & Architectural Consulting
PO Box 312
West Southport ME 04576-0312
207-633-4217
southarch@aol.com

Amy Cole Ives
Sutherland Conservation & Consulting
20 Warren Street
Hallowell ME 04347
207-242-0618
amycoleives@sutherlandcc.net

Christine Beard
Leslie Donovan
Tremont Preservation Services, LLC
21 Market Street
Suite 250
Ipswich, MA 01938
978-356-0322
978-356-0811 (fax)

TTL- Architects LLC
28 Danforth Street, Suite 213
Portland ME 04101-4596
207-761-9662
ttlarch@aol.com

Rita Walsh
VHB/Vanasse Hangen Brustlin, Inc
101 Walnut St
PO Box 9151
Watertown MA 02471-9151
617-924-1770 ext 1286
Fax: 617-923-2336
rwalsh@vhb.com

STATE OF MAINE
DEPARTMENT OF CONSERVATION
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

JOHN ELIAS BALDACCI
GOVERNOR

PATRICK K. MCGOWAN
COMMISSIONER

August 27, 2008

Lisa MacDonald
Stantec Consulting
30 Park Drive
Topsham, ME 04086

Re: Rare and exemplary botanical features, Proposed Highland Wind Project, Highland Plantation, Maine.

Dear Ms. MacDonald:

I have searched the Natural Areas Program's digital, manual and map files in response to your request of August 13, 2008 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in the Town of Highlands Plantation, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to Steve Timpano, Environmental Coordinator, Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project areas. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. Note also, that Witham Mountain has been identified through landscape analysis as having the potential to support exemplary natural habitat. We recommend that a survey be conducted to determine if the forest on the ridge tops and upper slopes of the mountain meet the criteria for designation as an exemplary forest type.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project sites. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

MAINE NATURAL AREAS PROGRAM
MOLLY DOCHERTY, DIRECTOR

PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $75.00 for our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Douglas Suitor
Associate Information Manager
Maine Natural Areas Program
207-287-8044
douglas.suitor@maine.gov

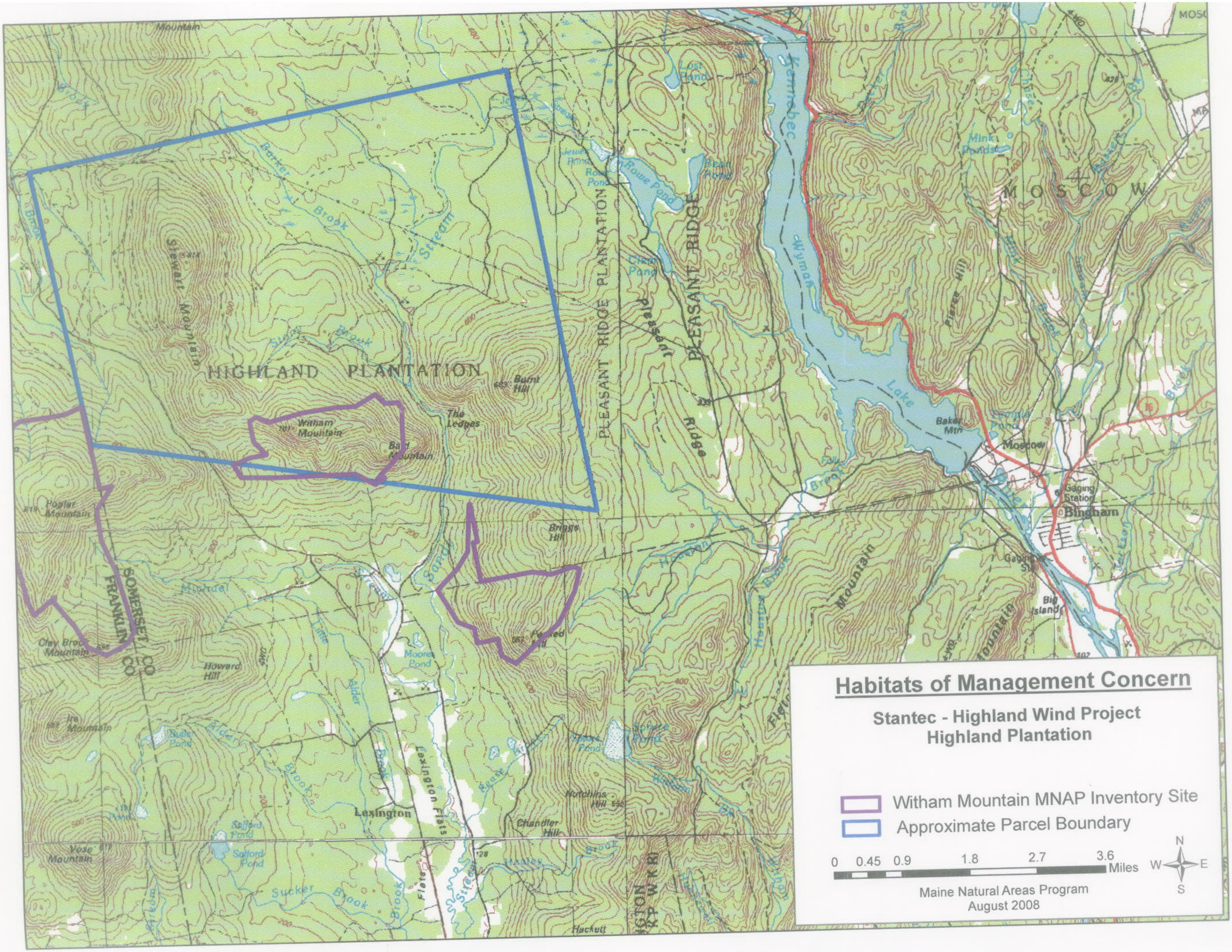
Enclosures

Rare and Exemplary Botanical Features in the Project Vicinity

8/27/2008

Documented within a Four-Mile Radius of the Proposed Highland Wind Project, Highland Plantation, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Listera auriculata Auricled Twayblade	1896-08-20	G3G4	S2	T	Alluvial banks, calcareous silts or crevices, alder-thickets, and swamps.
Listera auriculata Auricled Twayblade	1978	G3G4	S2	T	Alluvial banks, calcareous silts or crevices, alder-thickets, and swamps.
Erigeron hyssopifolius Hyssop-leaved Fleabane	1906-07	G5	S2	SC	Calcareous rocks, talus and gravels.
Arnica lanceolata Hairy Arnica	1919-07-09	G3	S2	T	Ledgy or gravelly shores or wet cliffs, often subalpine.


Habitats of Management Concern
Stantec - Highland Wind Project
Highland Plantation
Witham Mountain MNAP Inventory Site
Approximate Parcel Boundary
0 0.45 0.9 1.8 2.7 3.6 Miles
N
S
E
W
Maine Natural Areas Program
August 2008
HIGHLAND PLANTATION
PLEASANT RIDGE PLANTATION
PLEASANT RIDGE
MOSCOW
SOMERSET CO
FRANKLIN CO
Witham Mountain
Bald Mountain
The Ledges
Burnt Hill
Stewart Mountain
Briggs Hill
Kennebec
Wyman
Lake
Bingham
Moscow
Lexington
Lexington Flats
Rowe Pond
Barker Brook
Stream
Howard Hill
Poplar Mountain
Clay Brook Mountain
Vose Mountain
Chandler Hill
Hutchins Hill
Baker Mtn
Pierce Hill
Gaging Station
Big Island

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

SH Known historically from the state, not verified in the past 20 years.

SX Apparently extirpated from the state, loss of last known occurrence has been documented.

SU Under consideration for assigning rarity status; more information needed on threats or distribution.

S#? Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

PE Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

Visit our website for more information on rare, threatened, and endangered species!
http://www.mainenaturalareas.org/docs/rare_plants/factsheets.php

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
1168 Main Street
Old Town, ME 04468
(207) 827-5938 Fax: (207) 827-6099

In Reply Refer To: 53411-2008-SL-0351
FWS/Region5/ES/MEFO

August 25, 2008

Lisa McDonald
Stantec
30 Park Drive
Topsham, ME 04068

Dear Ms. McDonald:

Thank you for your letter dated August 1, 2008 requesting information or recommendations from the U.S. Fish and Wildlife Service (Service) for a potential wind power site in Highland Plantation, Maine. One of the purposes of this letter is to advise you of applicable federal wildlife laws, including the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. We do this so you can make an informed decision regarding site selection, project design, and the general requirements of these Acts. Preconstruction surveys may allow for the project to be designed in such a way to avoid or minimize the impacts to federally protected species.

Project Name/Location: Highland Wind Project, Highland Plantation, Maine

Federally listed threatened and endangered species

This project occurs within the range of the Canada lynx (*Lynx canadensis*) in Maine, a federally-threatened species under the jurisdiction of the Service. There have been no formal surveys in Highland Plantation, although lynx have been documented in adjacent townships (Carryingplace 1994, Pleasant Ridge 1996, Concord 1996, and Dead River 1948, 1957). Highland Plantation is not within the proposed critical habitat for the Canada lynx.

Canada lynx occur throughout northern Maine and could occur within your project area. Canada lynx in Maine prefer to use regenerating spruce-fir habitats having high stem densities. These regenerating stands support high populations of snowshoe hare (*Lepus americanus*), the primary food of the Canada lynx. Highest hare densities are generally present about 12 to 30 years after clearcutting or heavy partial harvesting. Forest practices that diminish habitat quality for snowshoe hares may have an adverse affect on Canada lynx. We have developed *Canada lynx habitat management guidelines for Maine.* Please email (mark_mccollough@fws.gov) or call (207 827-5938 x.12) if you are interested in obtaining a copy.

Section 9 of the Endangered Species Act prohibits the take of any federally listed animal species by any person subject to the jurisdiction of the United States. As defined in the ESA, take means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm is defined to mean "an act which kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR §17.3). "Harass" means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering."(Id).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of the project and a listed species will be adversely affected, then initiation of formal consultation between that agency and the Service pursuant to section 7 of the ESA is required. Such consultation would result in a biological opinion addressing the anticipated effects of the project to the listed species, and may authorize a limited level of incidental take. If a Federal agency is not involved in the project, and federally listed species may be taken as a result of the project, then an incidental take permit pursuant to section 10(a)(1)(B) of the ESA may be obtained. The Service may issue such a permit upon completion of a satisfactory habitat conservation plan for the listed species that would be taken by the project.

Construction activities may cause adverse effects to the federally-threatened Canada lynx. The Service recommends that preconstruction surveys for Canada lynx be conducted using winter snow tracking surveys in the townships where construction of towers, roads, transmission lines, and other associated facilities are to be located. In the absence of snow tracking data, Canada lynx will be assumed to be present at densities found elsewhere in northwestern Maine. Habitat modeling may be a useful tool in identifying where past, present, and future lynx habitat occurs in relation to proposed developments. These data should be shared with the Service and federal permitting agencies (FERC, Army Corps of Engineers, or others) that will be required to consult with the Service according to Section 7 of the Endangered Species Act.

Other protected species and rare natural communities:

Several protected species or habitats of concern may occur in your area (see attached map). Peregerine falcons (state endangered) may occur in the area and a nesting location occurs at nearby Henhawk ridge. Spring salamanders (state special concern) have also been noted in the area.

We recommend that you contact the Maine Department of Inland Fisheries and Wildlife for additional information on state-threatened and endangered wildlife and wildlife species of special concern. The Maine Endangered Species Act may protect some of the species in your project area.

Steve Timapano
Maine Department of Inland Fisheries and Wildlife
284 State Street
State House Station 41
Augusta, ME 04333-0041
Phone: 207 287-5258

We recommend that you contact the Maine Natural Areas Program for additional information on state-threatened and endangered plant species, plant species of special concern, and rare natural communities.

Lisa St. Hilaire
Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333
Phone: 207 287-8046

Bald and golden eagles

Occasional, transient bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquilla chrysaetos*) may occur in the area. Based on the information currently available to us, the nearest bald eagle nest occurs on the Kennebec River in adjacent Carryingplace Township (see attached map). No golden eagle nesting areas are known within the vicinity of Highland Plantation, but Maine Inland Fisheries and Wildlife receives frequent reports of golden eagles in the western Maine mountains during the summer months and during migration. The bald eagle was removed from the federal threatened list on August 9, 2007 and is now protected from take under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. "Take" means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. The term "disturb" under the Bald and Golden Eagle Protection Act was recently defined within a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31332). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Further information on bald eagle delisting and their protection can be found at http://www.fws.gov/migratorybirds/baldeagle.htm.

Please consult with our new national bald eagle guidelines, which can found at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

These Guidelines are voluntary and were prepared to help landowners, land managers and others meet the intent of the Eagle Act and avoid disturbing bald eagles. If you believe your project

will result in taking or disturbing bald or golden eagles, please contact our office for further guidance. We encourage early and frequent consultations to avoid take of eagles.

Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up to date account of bald eagle nests in these project areas.

Wind energy projects can affect bald eagles by direct take of resident or transient birds or by introducing new sources of disturbance (noise, significant changes to the landscape). The effect of wind power development on bald eagles has been poorly studied.

Bird and Bat Concerns

Wind energy is renewable, produces no emissions, and is considered to be generally environmentally friendly technology supported by the Department of the Interior. However, wind energy projects can adversely affect wildlife, especially birds and bats and their habitats. Operational wind turbines can adversely affect wildlife in a variety of ways. Foremost, the potential exists for bird and bat collision within the rotor-swept area of each turbine. The potential for collision with resident or migratory species of birds and bats is affected by many factors but location of the wind turbines appears to be one of the most important.
The potential harm makes careful evaluation of wind facilities essential. Each proposed development site is unique and requires individual evaluation. The Service's policy on wind energy development should be consulted as you develop this project. It can be found at http://www.fws.gov/habitatconservation/wind.pdf .

The potential collision hazard of proposed and alternative sites can be assessed by pre-construction studies of the spatial and temporal uses of the airspace by birds, bats and insects (insects are included because they are prey for birds and bats). Guidance on avoiding and minimizing wildlife impacts through proper evaluation of potential wind power sites, proper location and design of turbines and associated structures and pre- and post-construction monitoring can also be found at http://www.fws.gov/habitatconservation/wind.pdf .

Wetlands

Your project will likely require bridging, filling, or degrading certain wetlands or other waters of the United States under jurisdiction of section 404 of the Clean Water Act, which may require permits be acquired from the U.S. Army Corps of Engineers. In the event section 404 permits are necessary, the Service will make recommendations to avoid, minimize and mitigate impacts to fish and wildlife resources.

In summary, to ensure that the proposed areas for wind energy development in Highland Plantation are developed in the most environmentally sound manner, we recommend that you follow the guidance on avoiding and minimizing wildlife impacts as found on our website.

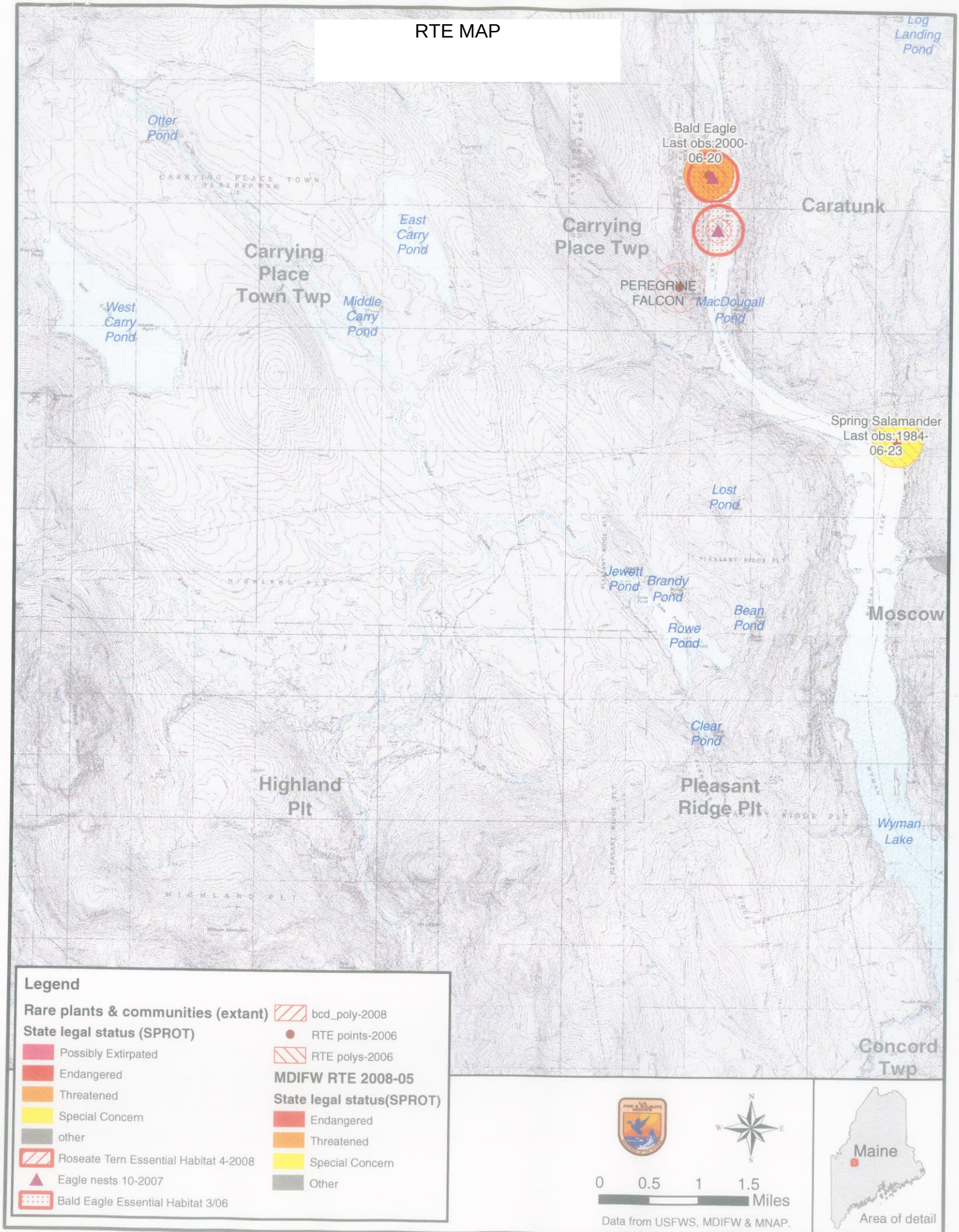
If you have any questions, please call Mark McCollough, endangered species biologist, at (207) 827-5938 ext.12, Wende Mahaney, federal projects and wetland biologist at (207) 827-5938, or Fred Seavey, federal energy projects biologist at (207) 827-5938.

Sincerely,

Lori H. Nordstrom

Lori H. Nordstrom
Project Leader
Maine Field Office

RTE MAP


Log Landing Pond
Otter Pond
Bald Eagle Last obs:2000-06-20
Caratunk
East Carry Pond
Carrying Place Twp
Carrying Place Town Twp
PEREGRINE FALCON
MacDougall Pond
West Carry Pond
Middle Carry Pond
Spring Salamander Last obs:1984-06-23
Lost Pond
Jewett Pond
Brandy Pond
Bean Pond
Moscow
Rowe Pond
Clear Pond
Highland Plt
Pleasant Ridge Plt
Wyman Lake
Concord Twp
Legend
Rare plants & communities (extant)
State legal status (SPROT)
Possibly Extirpated
Endangered
Threatened
Special Concern
other
Roseate Tern Essential Habitat 4-2008
Eagle nests 10-2007
Bald Eagle Essential Habitat 3/06
bcd_poly-2008
RTE points-2006
RTE polys-2006
MDIFW RTE 2008-05
State legal status(SPROT)
Endangered
Threatened
Special Concern
Other
N
W
E
S
0 0.5 1 1.5
Miles
Data from USFWS, MDIFW & MNAP.
Maine
Area of detail

Appendix 14-2
Wetland Functions and Values Assessment

1.0 INTRODUCTION

An analysis was conducted to assess the capacity of wetlands within the Highland Wind Project (Project) area to provide 13 functions and values. This analysis focused on those wetlands to be impacted by the proposed Project and included evaluating the potential effects that the proposed development may have on these functions and values. Wetland functions and values were assessed using the *Highway Methodology Workbook, Wetland Functions and Values: A Descriptive Approach*.[1] This method bases function and value determinations on the presence or absence of specific criteria for each of the wetland functions and values defined below. These criteria are assessed through direct field observations and a review of existing resource maps and databases. As part of the evaluation, the most important functions and values associated with the on-site wetlands are identified. In addition, the ecological integrity of the wetlands is evaluated based on the existing levels of disturbance and the overall significance of the wetlands within the local watershed. This analysis separately evaluated those wetlands that will be altered by permanent fill and those forested wetlands that will be altered by the removal of canopy vegetation to construct the electrical corridors associated with the Project.

° **Groundwater Interchange (Recharge/Discharge)**
This function considers the potential for the project area wetlands to serve as groundwater recharge and/or discharge areas. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

° **Floodwater Alteration (Storage and Desynchronization)**
This function considers the effectiveness of the wetlands in reducing flood damage by attenuating floodwaters for prolonged periods following precipitation and snow melt events.

° **Fish and Shellfish Habitat**
This function considers the effectiveness of seasonally or permanently flooded areas within the subject wetlands for their ability to provide fish and shellfish habitat.

° **Sediment/Toxicant Retention**
This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland to function as a trap for sediments, toxicants, or pathogens, and is generally related to factors such as the type of soils, the density of vegetation, and the position in the landscape.

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

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

° ***Sediment/Shoreline Stabilization***
This function considers the effectiveness of a wetland to stabilize stream banks and shorelines against erosion, primarily through the presence of persistent, well-rooted vegetation.

° **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.

° **Recreation (Consumptive and Non-Consumptive)**
This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.

° **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.

° **Uniqueness/Heritage**
This value relates to the effectiveness of the wetland or its associated water bodies to provide certain special values such as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.

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

° **Endangered Species Habitat**
This value considers the suitability of the wetland to support threatened or endangered species.

[1] U.S. Army Corps of Engineers. 1999. *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach.* U.S. Army Corps of Engineers. New England Division. 32pp. NAEEP-360-1-30a.

2.0 WETLANDS ALTERED BY FILL

Wetland fill impacts are scattered across the ridgeline portion of the Project area and occur in association with roads, turbines and the Operations & Maintenance building. A total of 41 separate wetlands will be affected by permanent fill (Refer to Table 14-1 in Section 14 for details). In addition to those wetlands within the ridgeline portion of the Project, a single 30-square foot permanent fill impact will occur in association with the electrical generator lead. Within the ridgeline Project area, individual fill impacts range from approximately 5 square feet to approximately 5,000 square feet. Twelve wetlands will be completely filled, and the remaining wetlands will be partially filled. The average size of those wetlands that will be completely filled is approximately 968 square feet. Wetlands that will be partially filled are generally larger in size, ranging in size from approximately 200 square feet to 76,669 (1.8 acres).[2] Wetlands that are small and isolated typically have a lower functional capacity than larger and more complex wetlands. Landscape position and surrounding land use also can affect a wetland's capacity to provide functions and values, as well as opportunity. For example, wetlands located higher in a watershed generally have less opportunity to provide floodwater alteration than those located lower in the watershed. Wetlands that have been altered by timber harvesting, such as many of the wetlands with the ridgeline Project area, often have at least temporarily reduced functional capacity as a result of vegetation removal and soil compaction. Other alterations such as direct fill permanently reduce a wetland's capacity to provide functions and values. Existing functions and values provided by the individual wetlands are summarized in Table 1.

2.1 Functions and Values

Groundwater Interchange
There is no identified sand and gravel aquifer underlying the ridgeline portion of the Project area, so it is unlikely that there is significant groundwater interchange occurring within these wetlands. Those wetlands associated with watercourses such as W325, which is associated with a small perennial stream, and W174, which is adjacent to Sandy Stream, likely have at least limited groundwater interchange with these streams. Within those small, isolated wetlands, particularly those underlain by soils with a thick organic layer or fine particulate soils, there is likely to be very limited groundwater interchange occurring. In general, groundwater interchange is not considered a principal function of any of the assessed wetlands.

Floodwater Alteration
Each assessed wetland provides some localized floodwater alteration by receiving and detaining overland flows from adjacent uplands. These wetlands provide localized floodwater alteration by detaining varying amounts of surface runoff in topographic basins and slowing overland flows in dense woody and herbaceous vegetation. Water retention periods, particularly in smaller wetlands such as W119 and W139, may not be significant. However, these wetlands do slow at least some runoff from adjacent uplands, helping to desynchronize the rate at which surface runoff ultimately reaches lower watershed surface bodies. In general, those wetlands located higher in the watershed, such as those on the top of the ridgelines, will have less opportunity to provide floodwater alteration, particularly if they are not associated with a watercourse. Of those assessed wetlands, floodwater alteration would be a principal function for wetlands W168 and W174, which occur within the mapped floodplain of Sandy Stream. For the other wetlands, this function occurs, but it is not considered principal.

Fish and Shellfish Habitat
Eleven of the assessed wetlands are associated with a watercourse. Of these wetlands, five are associated with intermittent streams that are unlikely to provide fisheries habitat. In addition, five of the perennial streams, including Stony Brook, do not appear able to support fisheries for much of the year because flows are too rapid following spring snowmelt and are subsequently too shallow during the summer months. The presence of northern spring salamanders (*Gyrinophilus porphyriticus*), a species that typically occurs in streams without fish, in Stony Brook and some of its tributaries further suggests

[2] Wetland size reflects that portion of the wetland delineated within the Project area. In some instances wetlands extend beyond the wetland boundary and their area is larger.

that these streams are unable to support fisheries. Fish were not observed in any of these watercourses associated with these wetlands during the course of delineations, but specific surveys were not conducted. Sandy Stream does support fish and as such only wetlands W174 and possibly W168 would provide or contribute to this function.

Sediment and Toxicant Retention
As with floodwater alteration, all of the wetlands within the Project area have some capacity to provide sediment and toxicant retention. Wetlands can retain surface water and slow its flow thereby allowing sediments and toxicants to settle out of the water column. The opportunity for these wetlands to provide this function varies greatly depending upon their landscape position, particularly their proximity to existing development and watercourses. Those wetlands such as wetlands W353 and W354, which occur down slope on an existing access road, receive surface water run off that is sometimes sediment laden. Sediments settle out of the run off within these two wetlands before reaching Sandy Stream. Sediment and toxicant retention is a principal function for those wetlands located adjacent to existing development and larger watercourses (i.e., Sandy Stream), but those isolated wetlands on the ridgeline have both a limited capacity and limited opportunity to provide this function.

Nutrient Removal/Retention/Transformation
Similar to sediment and toxicant retention, the wetlands within the Project area have varying capacity to provide this function depending upon the size, community type, landscape position and other physical characteristics. Because there does not appear to be a source of excess nutrients immediately within the Project area, this is not considered a principal function provided by the assessed wetlands.

Production Export
Production export is a wetland function that typically occurs in the form of nutrient or biomass transport via watercourses, removal of timber and other natural products, and foraging by wildlife species. For those eleven wetlands that are associated with a watercourse, production export will occur, but the level of nutrient/biomass transport by these streams depends upon characteristics such as the size of the stream, the time period that the stream contains flowing water, and the landscape surrounding the stream. Based upon the landscape setting, stream size and consistency of flow, Sandy Stream is likely capable of transporting more nutrients/biomass than the other streams. For the remaining 30 wetlands, production export will be limited primarily to timber harvesting and foraging by wildlife. Seventeen of the wetlands impacted by fill and 1 wetland impacted by clearing are currently forested or have at least a forested component, and the majority of the other wetlands are previously harvested forested wetlands. The larger wetlands will have a greater capacity to provide useable timber. Of the forested wetlands, only wetland W263, which is almost two acres in size, has a reasonable capacity to provide harvestable timber. Production export via foraging wildlife likely occurs in all of the wetlands, but is limited. Of the assessed wetlands, production export occurs or could occur in all of them, but is likely only principal for W174, which is directly associated with Sandy Stream.

Sediment/Shoreline Stabilization
Eleven of the assessed wetlands are associated with a watercourse and as such provide this function at varying levels. Some of the wetlands such as W325 are only directly associated with the stream for a few feet, so the capacity for stabilization is relatively limited. In other instances such as wetland W148, the stream channel ends a short distance after entering the wetland, so again there is little opportunity for shoreline stabilization to occur. Of the thirteen wetlands associated with a watercourse, this is only a principal function for wetland W174, which follows the shoreline of Sandy Stream.

Wildlife Habitat
Within the larger forested landscape, all of the wetlands within the Project area provide wildlife habitat; however, only a few of them provide habitat specifically for wetland-associated or aquatic-dependant species. In general, the majority of the assessed wetlands lack open water or emergent marsh habitat required by wildlife species such as waterfowl, wading birds and some amphibians. Vernal pools were documented in nine of the wetlands. Four of the wetlands occur on the ridgeline portion of the Project area and five of the wetlands occur along the electrical generator lead.

Within the ridgeline portion of the Project area, the vernal pools within wetlands W079 and W163 both occur in what appear to be a roadside borrows, and the two vernal pools within wetland W282 occur within skidder ruts. Only the vernal pool within wetland W263 is naturally occurring and is located at the base of a wind-thrown tree. With the exception of the vernal pool within wetland W163, these vernal pools are relatively small and have limited habitat. In 2009, 105 spotted salamander (*Ambystoma maculatum*) egg masses and more than 50 wood frog (*Rana sylvatica*) egg masses were documented in the wetland W163 vernal pool. This pool appears to have a sufficient hydro-period to allow successful development and emergence of these amphibian larvae. In addition to the four wetlands that include vernal pools, other wetlands in proximity to these pools may provide habitat for the adult spotted salamander, wood frogs and other terrestrial amphibians such as the red-back salamander (*Plethodon cinereus*). All of the assessed wetlands provide some type of wildlife habitat, but this is likely only a principal function for wetland W163.

Recreation
The ridgeline portion of the Project area is open to the public for recreation, including hunting and fishing. The individual wetlands are generally too small to specifically provide these opportunities, but they are part of a landscape that does. This value is not attributed directly to any of the assessed wetlands.

Education/Scientific Value
Many of the assessed wetlands have been altered by timber harvesting activities, including road construction and removal of canopy trees, which limits their educational/scientific value. The vernal pool within wetland W163 could provide an educational opportunity, but because it is located within an industrial forest and far from the nearest school, this value would be very limited. In general, this value is not attributed to these wetlands.

Uniqueness/Heritage
In part because many of the assessed wetlands have been altered by timber harvesting activities, they do no represent exemplary examples of their community types. Project specific surveys did not identify rare plants, habitat for rare animal species or historical features within any of these wetlands. This value is not specifically attributed to these wetlands.

Visual Quality/Aesthetics
As part of a generally undeveloped landscape, these wetlands contribute to the overall visual quality of the area as seen from surrounding vantage points. This value, however, is not specifically attributed to the individual wetlands.

Endangered Species Habitat
None of the wetlands that will be impacted specifically contain habitat for endangered species. However, wetland W155 is associated with Stony Brook, which is one of two streams within the Project area where the Roaring Brook mayfly (*Epeorus frisoni*), a state listed endangered species, was documented. Wetland W155 helps protect the water quality of Stony Brook and as such at least indirectly affects the habitat for the Roaring Brook mayfly.

2.2 Summary

All of the assessed wetlands provide varying levels of floodwater alteration, sediment/toxicant retention, production export and wildlife habitat. Additionally, those eleven wetlands associated with a watercourse provide fisheries habitat and sediment/shoreline stabilization, and one of these eleven, wetland W155, indirectly affects habitat for the endangered Roaring Brook mayfly. Floodwater alteration is a principal function for wetlands W168 and W174, which occur within the mapped floodplain of Sandy Stream, and production export also is likely a principal function for wetland W174. Sediment and toxicant retention is a principal function for those wetlands located adjacent to existing development and larger watercourses (i.e., Sandy Stream), including wetlands W168, W174, W353 and W354. Wildlife habitat is likely only a principal function for wetland W163. The 12 wetlands that will be completely filled as a result of the Project will no longer provide their current functions, and those wetlands that will be partially filled will have a reduced capacity to provide these functions. In some instances, wetlands will have increased

opportunity to provide sediment/toxicant retention where new roads and turbine pads are constructed on the landscape.

3.0 WETLANDS ALTERED BY VEGETATION REMOVAL

Removal of canopy vegetation will impact two forested wetlands within the aboveground portion of the collector line, one forested wetland in proximity to a turbine, and 35 forested wetlands within the electrical generator lead corridor. The extent of clearing will range from approximately 8 square foot to approximately 109,950 square feet (2.5 acres). For the majority of these wetlands, the conversion from forested wetland community type will only affect a portion of the wetland, and for those 10 wetlands already bisected by the existing Central Maine Power Company (CMP) transmission line, this will be an expansion of the current clearing limits. Removal of the canopy of these wetlands will have some limited affect on existing functions, although changes to wildlife habitat may be more significant. Refer to Table 1 for a summary of functions and values provided by the individual wetlands.

3.1 Functions and Values

Groundwater Interchange
There is no identified sand and gravel aquifer underlying the ridgeline portion of the Project area or the electrical generator lead, so it is unlikely that there is significant groundwater interchange occurring within these wetlands. Those wetlands associated with watercourses such as W476, which is associated with a small intermittent stream, and W443, which is associated with five streams, likely have at least limited groundwater interchange with these streams. Within those small, isolated wetlands, particularly those underlain by soils with a thick organic layer or fine particulate soils, there is likely to be very limited groundwater interchange occurring. In general, groundwater interchange is not considered a principal function of any of the assessed wetlands.

Floodwater Alteration
Each assessed wetland provides some localized floodwater alteration by receiving and detaining overland flows from adjacent uplands. These wetlands provide localized floodwater alteration by detaining varying amounts of surface runoff in topographic basins and slowing overland flows in dense woody and herbaceous vegetation. Water retention periods, particularly in smaller wetlands such as W375 and W376, may not be significant. However, these wetlands do slow at least some runoff from adjacent uplands thereby helping to desynchronize the rate at which surface runoff ultimately reaches lower watershed surface bodies. In general, those wetlands not associated with a watercourse with have less opportunity to provide this function. Of those assessed wetlands, floodwater alteration would be a principal function for wetlands W443 and W452, which occur within the mapped floodplain of Houston Brook. For the other wetlands, this function occurs, but it is not considered principal.

Fish and Shellfish Habitat
Three wetlands are associated with at least one watercourse. The streams associated with wetlands W476 and W482 are intermittent and unlikely to provide fisheries habitat. Three streams within wetland W443 are perennial, and two are intermittent. One of the intermittent streams occurs separately within the wetlands, but the other four streams are a single interconnected system. Fish were observed in the larger of the perennial streams, and since these four streams are interconnected, they all potentially provide fisheries habitat. Of these two wetlands, fisheries habitat would only be a principal function for wetland W433.

Sediment and Toxicant Retention
As with floodwater alteration, all of the wetlands within the Project area have some capacity to provide sediment and toxicant retention. Wetlands can retain surface water and slow its flow thereby allowing sediments and toxicants to settle out of the water column. The opportunity for these wetlands to provide this function varies greatly depending upon their landscape position, particularly their proximity to existing development and watercourses. Those wetlands such as wetlands W433, which occur down slope on an existing road, receive surface water run off that is some times sediment laden. Sediments settle out of the run off within the wetland before reaching nearby streams. Sediment and toxicant retention is a

principal function for those wetlands located adjacent to existing development and larger watercourses, but those isolated wetlands have both a limited capacity and limited opportunity to provide this function.

Nutrient Removal/Retention/Transformation
Similar to sediment and toxicant retention, the wetlands within the ridgeline portion of the Project area have varying capacity to provide this function depending upon the size, community type, landscape position, and other physical characteristics. There does not appear to be a source of excess nutrients immediately within the ridgeline Project area. Where the generator lead passes through pockets of residential development, there may be some additional sources of nutrients such as fertilizers applied to lawns and gardens, but there does not appear to be a large source of excess nutrients. Because there is no evident opportunity for wetlands to provide this function, it is not considered a principal function.

Production Export
Production export is a wetland function that typically occurs in the form of nutrient or biomass transport via watercourses, removal of timber and other natural products, and foraging by wildlife species. For the three wetlands that are associated with watercourses, production export will occur, but the level of nutrient/biomass transport by these streams depends upon characteristics such as the size of the stream, the time period that the stream contains flowing water, and the landscape surrounding the stream. Based upon the landscape setting, stream size and consistency of flow, the largest of the perennial streams within wetland W443 is likely capable of transporting more nutrients/biomass than the other streams. For the remaining 35 wetlands, production export will be limited primarily to timber harvesting and foraging by wildlife. These wetlands are currently forested or have at least a forested component. The larger wetlands such as wetland W414, W443 and W452 will have a greater capacity to provide useable timber. Production export via foraging wildlife likely occurs in all of the wetlands, but is limited. Of the assessed wetlands, production export occurs or could occur in all of them, but may only be principal for the three largest wetlands: W414, W443 and W452.

Sediment/Shoreline Stabilization
Only three of the assessed wetlands are associated with at least one watercourse and as such provide this function. Wetlands W476 and W482 are the headwaters of their associated stream and are only directly associated with the stream channel for a very short distance. Because of this limited direct association with their streams, the capacity of wetlands W476 and W482 to provide this function is minimal. In contrast, wetland W443 is associated with five stream channels and has sediment/shoreline stabilization as a principal function.

Wildlife Habitat
Within the larger forested landscape, all of the wetlands within the Project ridgeline provide wildlife habitat; however, only a few of them provide habitat specifically for wetland-associated or aquatic-dependant species. Similarly, those wetlands along the proposed electrical generator lead occur within a predominantly forested landscape that is interspersed areas of sparse residential development. These wetlands also provide habitat for wildlife, but like the ridgeline wetlands few provide habitat for those wetland-associated or wetland-dependent species such as waterfowl, wading birds and some amphibians. Wetland W443 does have some areas of deeper water. Historic beaver (*Castor canadensis*) activity was observed along one of the larger perennial streams within this wetland and a great blue heron (*Ardea herodias*) was seen flying into the wetland at a point beyond the delineation limits. Vernal pools also were documented in five of the assessed wetlands, W414, W431, W443, W452, and W471. The vernal pools within wetlands W414 and W443 are located within the existing CMP transmission line. Two of the pools occur in small excavations adjacent to H-frame structures, and the other four occur in equipment ruts. The vernal pool within wetland W431 is a small man-made excavation. The four pools within wetland W471 occur in ATV or skidder ruts as does one of the pools in wetland W452. Two of the other pools in wetland W452 are naturally occurring.

The vernal pools within wetlands W414 and W443, are relatively small and based on surveys conducted in the spring of 2009 had relatively low egg mass counts (generally less than five total egg masses). Similarly, four of the pools located in wetland W452 and W471 are relatively small with relatively low egg mass counts based upon surveys conducted in the spring of 2010. The pool within wetland W431 is

larger than most of the other pools and 28 wood frog egg masses were documented during 2009 surveys; however, water depth within this pool suggests that it may have an insufficient hydrologic period to allow successful development of the larvae. Based upon egg mass counts in 2010, two of the man-made pools in wetland W471 received comparably more use by breeding amphibians, but neither appears to have a sufficient hydrologic period to allow successful development of the larvae. One naturally occurring pool in wetland W452 is large enough and has a hydrologic period that appears sufficient to allow amphibian larvae time to develop and metamorphose. All of the assessed wetlands provide some type of wildlife habitat, but this is likely only a principal function for wetland W443.

Recreation
The ridgeline portion of the Project area is open to the public for recreation including hunting and fishing. The individual wetlands are generally too small to specifically provide these opportunities, but they are part of a landscape that does. This value is not attributed directly to anyone of these wetlands. The electrical generator lead corridor that extends east beyond the Project ridgeline passes through areas of rural residential development and may not be open to consumptive recreational opportunities such as hunting. The CMP transmission line is utilized as a recreational corridor for snowmobile and all-terrain vehicle riders, but this is not a value specifically attributed to any of the wetlands.

Education/Scientific Value
Many of the assessed wetlands have been altered by timber harvesting activities and construction of the CMP transmission line, which limits their educational/scientific value. The identified vernal pools are all man-made and do not represent particularly good examples of this type of habitat and would not provide valuable educational opportunities. In general, this value is not attributed to these wetlands.

Uniqueness/Heritage
In part because many of the assessed wetlands have been altered by timber harvesting activities or by construction of the existing CMP transmission line, they do no represent exemplary examples of their community types. Project specific surveys did not identify rare plants, habitat for rare animal species or historical features within any of these wetlands. This value is not specifically attributed to these wetlands.

Visual Quality/Aesthetics
As part of a generally undeveloped landscape, those wetlands located within the ridgeline portion of the Project area do contributed to the overall visual quality of the area as seen from surrounding vantage points. This value, however, is not specifically attributed to the individual wetlands. The wetlands located adjacent to and/or bisected by the existing CMP transmission line have a significantly reduced visual quality and are not considered to provide this value.

Endangered Species Habitat
None of the wetlands that will be impacted contain identified habitat for endangered species and as such do not provide this value.

3.2 Summary

All of the assessed wetlands provide varying levels of floodwater alteration, sediment/toxicant retention, production export and wildlife habitat. Additionally, the three wetlands associated with a watercourse provide sediment/shoreline stabilization and wetland W443 provides fisheries habitat. Floodwater alteration is a principal function for wetlands W443, W452 and W471, which occur within the mapped floodplain of Houston Brook. Sediment and toxicant retention is a principal function for those wetlands located adjacent to existing development and larger water courses such as wetland W443. Of the assessed wetlands, production export appears only to be principal for the three largest wetlands: W414, W443 and W452. Wildlife habitat also is likely a principal function for wetland W443. Removal of canopy vegetation within these wetlands will initially reduce their capacity to provide some of these functions, particularly water quality protection functions such as sediment/toxicant retention, but as low-growing woody vegetation becomes re-established these functions should be more fully restored. The primary change in function will relate to wildlife habitat since these communities will be converted from forested cover types to either scrub-shrub or wet meadow. The vernal pools should continue to function as they

are currently since most of them occur within the existing transmission line, but there will likely be some change in use, particularly for terrestrial species that prefer wooded cover.