NEW HAMPSHIRE WETLANDS PERMIT APPLICATION FOR THE ANTRIM WIND PARK PROJECT IN ANTRIM, NEW HAMPSHIRE

Submitted to:

NEW HAMPSHIRE SITE EVALUATION COMMITTEE

Submitted by:

Antrim Wind Energy
155 Fleet St.
Portsmouth, NH 03801-0065

Prepared by:

TRC

14 Gabriel Drive

Augusta, ME 04330

July 2015

NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: http://des.nh.gov/onestop

RSA/Rule: Env-Wq 100-900

Administrative Use Only	*Administrative Use Only*	*Administrative Use Only*	File No.:
			Check No.:
			Amount:
			Initials:

1. REVIEW TIME:
Indicate your Review Time below. Refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. PROJECT LOCATION:
Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **354 Keene Road**		TOWN/CITY: **Antrim**	
TAX MAP: **212; 235; 236; 239**	BLOCK:	LOT: **212-27,30,34; 235-14**	UNIT:
USGS TOPO MAP WATERBODY NAME:	☒ NA	STREAM WATERSHED SIZE:	☒ NA

LOCATION COORDINATES (If known): **N: 230,000 ft E: 890,000 ft** ☐ Latitude/Longitude ☐
UTM ☒ State Plane

3. PROJECT DESCRIPTION:
Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The proposed Antrim Wind Energy Project is a wind energy generation facility to be located in Antrim, New Hampshire. The project will include the construction of nine (9) wind turbine generators, a substation, an operations and maintenance building, and assocaited access roads, crane pads, and stormwater management facilities. The proposed site is linear, running approximately norht to south along the ridge top of Tuttle Hill and spanning several individually owned parcels. The site will be accessed from State Route 9 (Keene Road).

4. RELATED PERMITS, ENFORCEMENT, EMERGENCY AUTHORIZATION, SHORELAND, ALTERATION OF TERRAIN, ETC…

Existing Wetlands Bureau Permit No. 2012-00211
Existing A of T Bureau Permit No. SEC-0005

5. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:
See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB **15** - **1904** .

b. ☐ Designated River the project is in ¼ miles of: _____ ; and
date a copy of the application was sent to Local River Advisory Committee: Month: __ Day: __ Year: ____
☒ NA

6. APPLICANT INFORMATION (Desired permit holder)		
LAST NAME, FIRST NAME, M.I.:		
TRUST / COMPANY NAME: **Antrim Wind Energy, LLC**	MAILING ADDRESS: **155 Fleet Street**	
TOWN/CITY: **Portsmouth**	STATE: **NH**	ZIP CODE: **03801-4050**
EMAIL or FAX: **generate@eolian-energy.com**	PHONE: **603-570-4842**	
ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize DES to communicate all matters relative to this application electronically		

7. PROPERTY OWNER INFORMATION (If different than applicant)		
LAST NAME, FIRST NAME, M.I.: **See attached Exhibit 10**		
TRUST / COMPANY NAME:	MAILING ADDRESS:	
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize DES to communicate all matters relative to this application electronically		

8. AUTHORIZED AGENT INFORMATION		
LAST NAME, FIRST NAME, M.I.: **Valleau, Dana, B.**	COMPANY NAME: **TRC**	
MAILING ADDRESS: **14 Gabriel Drive**		
TOWN/CITY: **Augusta**	STATE: **ME**	ZIP CODE: **04330**
EMAIL or FAX: **dvalleau@trcsolutions.com**	PHONE: **207-215-4582**	
ELECTRONIC COMMUNICATION: By initialing here **DV**, I hereby authorize DES to communicate all matters relative to this application electronically		

9. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to be reviewed for the presence of historical/ archeological resources.
8. I authorize DES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of DES correspondence. DES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
	John B. Kenworthy	7/2/15

MUNICIPAL SIGNATURES

10. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name legibly	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.

2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.

3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

11. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.

2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;

3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.

4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and

5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

12. IMPACT AREA:
For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact
Permanent: impacts that will remain after the project is complete.
Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	5,896	☐ ATF		☐ ATF
Scrub-shrub wetland	2,270	☐ ATF		☐ ATF
Emergent wetland	955	☐ ATF		☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream	156	☐ ATF		☐ ATF
Perennial Stream / River	296 / 74	☐ ATF	/	☐ ATF
Lake / Pond	/	☐ ATF	/	☐ ATF
Bank - Intermittent stream	/	☐ ATF	/	☐ ATF
Bank - Perennial stream / River	/	☐ ATF	/	☐ ATF
Bank - Lake / Pond	/	☐ ATF	/	☐ ATF
Tidal water	/	☐ ATF	/	☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland		☐ ATF		☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
TOTAL	9,573 / 74		/	

13. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200
☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking)	**9,573** sq. ft.	X	$0.20 =	$ **1,914.60**
Temporary (seasonal) docking structure:	sq. ft.	X	$1.00 =	$
Permanent docking structure:	sq. ft.	X	$2.00 =	$
Projects proposing shoreline structures (including docks) add $200			=	$
			Total =	$
The Application Fee is the above calculated Total or $200, whichever is greater			=	$ **1,914.60**

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

Water Division/ Wetlands Bureau/ Land Resources Management

Check the Status of your application: http://des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:
1. The need for the proposed impact.
Impacts to wetlands have been avoided and minimized to the greatest extent practical. Turbine, access road, substation, and collector system facilities have been carefully sited to meet design, operational, and safety needs while avoiding and minimizing impacts to natural resources, including wetlands. Ten identified wetlands will be impacted either temporarily or permanently as a result of Project construction and operation. No jurisdictional vernal pools, or areas currently described as potential vernal pools will be impacted as a result of Project construction or operation. In total, approximately 0.22 acre (9,573 square feet) of wetland and stream impact are expected to be incurred as a result of construction and operation of the proposed project. Forested and scrub-shrub wetland fill impacts total approximately 9,121 square feet and stream impacts from culvert placement for two road crossings total approximately 452 square feet. This small amount of impact is the result of careful Project planning and design, which aimed to avoid and minimize impacts to these important resources. The direct wetland impacts are those which were deemed unavoidable during the Project planning process.
2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.
During the development of the Project the AWE made significant efforts to avoid and minimize impact to wetlands and surface waters. Prior to siting of any facilities, AWE conducted a reconnaissance survey for sensitive resources, including wetlands, streams and natural communities. Once these areas were identified, facilities were sited and formal delineations were conducted. During detailed design of the facility, numerous revisions were made to the iterative Project layout design process to further reduce the level of impact of the Project. However, due to design and construction constrains of wind projects in New England, some level of wetland impact was unavoidable. AWE believes that the Project, as presented, represents the lowest possible degree of impact to wetlands and surface waters. For additional information on the alternatives evaluated for this Project, please refer to Section I of the SEC Application.

3. The type and classification of the wetlands involved.
Detailed narrative descriptions of all identified wetland features relevant to the Project are provided in the full Wetland Delineation Report, which is provided in Exhibit 5 of this Wetlands Permit Application. In general, wetlands within the Project area consist primarily of small forested wetlands that occur along skidder trails, in confined pockets in the regional bedrock, in saddle areas along the ridgeline, and in areas with poorly drained soils that support wetland vegetation. Streams within the Project area include unnamed perennial and intermittent streams which drain either to the north toward Route 9, or to the southeast into Gregg Lake. Because the proposed Project area is along a ridgeline and is moderately well drained, very few perennial streams occur. Observations in the field generally suggest that rainfall and snow-melt quickly run off the ridge to lower elevations, without collecting volumes that fill natural depressions or create natural ponds. A total of ten wetlands will be impacted by Project operation and development. Seven of these are palustrine forested wetlands (five PFO1 and two PFO4), and three are palustrine scrub-shrub wetlands (PSS1), two of which are in maintained electric transmission ROW and the other is in an inactive borrow pit. For detailed descriptions of these wetlands, please see the Wetland Delineation Report, Exhibit 5 of this Application, Table 4-1, pages 7-9.
4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.
The locations of wetlands to be impacted relative to nearby wetlands and surface waters are illustrated in Appendix A, Figure 2, Maps 1-4 provided in the Wetland Delineation Report, which is Exhibit 5 of this Application.
5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.
None of the wetlands or surface waters impacted by the Project is considered rare.
6. The surface area of the wetlands that will be impacted.
In total, approximately 0.22 acre (9,573 square feet) of wetland and stream impact are expected to be incurred as a result of construction and operation of the proposed project. Forested and scrub-shrub wetland fill impacts total approximately 9,121 square feet and stream impacts from culvert placement for two road crossings total approximately 452 square feet. Specific impacts to wetlands and streams are described in Tables 4-1 and 4-2 of the Wetland Delineation Report, which is provided in Exhibit 5 of this Application.

7. The impact on plants, fish and wildlife including, but not limited to: a. Rare, special concern species; b. State and federally listed threatened and endangered species; c. Species at the extremities of their ranges; d. Migratory fish and wildlife; e. Exemplary natural communities identified by the DRED-NHB; and f. Vernal pools.
The Project does not expect to have an undue adverse impact on fish and wildlife species. A detailed discussion of the fish and wildlife impacts associated with the Project is included in Section J of the SEC Application and associated appendices. a. Rare, special concern species; b. State and federally listed threatened and endangered species; c. Species at the extremities of their ranges; d. Migratory fish and wildlife; e. Exemplary natural communities identified by the DRED-NHB; and f. Vernal pools.
8. The impact of the proposed project on public commerce, navigation and recreation.
A detailed discussion of impact of the Project on public commerce, navigation and recreation is included in Section K of the SEC Application.
9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.
A detailed discussion of the aesthetic impact of the Project is included in Section J of the SEC Application and associated appendix. The Project does not anticipate having an undue adverse impact.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.
The Project is located entirely on private land and any land access is granted at the will of the landowners. The Project will limit access to their immediate project facilities and access to the remainder of the property will remain at the landowner's will. Please see Section J.6 of the SEC application for a further discussion of public rights of passage or access.
11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.
No wetland impacts will occur within 20 feet of adjacent property boundaries. All abutting property owners will be notified of the proposed project in accordance with NHDES rules. Documentation of this notification is found in Exhibit 4
12. The benefit of a project to the health, safety, and well being of the general public.
Public health and safety impacts of the Project are discussed in Section J of the SEC Application.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

Due to the lack of groundwater resources on the site, this project is not expected to have any direct or indirect impacts on groundwater drinking resources. The AWE site does not have any aquifers on the project site and there are no source water protection and/or well head protection areas on or adjacent to the site. The closest public water supply well is 1.06 miles from the project development. The project does not propose to make large groundwater withdrawals and thus will have no effect on groundwater supply.

Most of the site is made up of stony soils that are relatively shallow in depth to bedrock, and observations in the field generally suggest that rainfall and snow melt in the spring quickly run off the ridge to lower elevations, without collecting volumes that fill natural depressions or create natural ponds. The small forested wetland areas on the site occur along skidder trails, confined pockets in the regional bedrock, and in saddle areas along the ridgeline. These type of soils limit the value of these wetlands for groundwater recharge. Additionally, wetlands with peaty, organic soils increase the retention time of water, slowing recharge.

The limited ability of the site wetlands to recharge groundwater combined with limited sources of potential project pollutants that would adversely affect the quality of the groundwater results in a very low potential for this project to adversely affect groundwater quality.

The majority of wetlands in the project are perched with shallow depths to bedrock or impervious soils and rely on precipitation, surface sheet flow, and shallow subsurface flows for maintenance of wetland hydrology. There are a few wetlands occurring along benches at the toe of steep slopes where the hydrology of the wetland relies primarily on the discharge of groundwater from breakout seeps. Because the project has minimal wetland impacts (0.19 acres of impact total in 10 distinct wetland areas) and proposes to maintain natural flow patterns to the extent practical, there should be minimal change in groundwater discharge patterns to wetlands.

The intent in the project development has been to minimize surface water and stormwater runoff impacts starting with the initial field survey work through the design phase and by implementing accepted erosion control and stormwater Best Management Practices (BMPs) during construction and operation of the facility. During the field survey portion of the project, areas of drainage including jurisdictional wetland and streams as well as non-jurisdictional drainage (to the extent possible) were mapped during field surveys. The design phase included maintaining natural drainage patterns where possible through the use of culverts and subsurface stone drainage ways (stone mattresses). During construction, field drainage conditions will be taken into consideration, and there will be flexibility to install appropriate measures to maintain drainage. Any runoff from the roads will be routed into undisturbed buffers to help maintain water quality and disperse and distribute water volumes to approximate pre-development flows.

Additional erosion control and stormwater BMPs to protect surface water quality during construction of this project have focused on control of erosion during construction through use of sediment barriers and the use of soil stabilization measures including erosion control blankets, spray-on polymer emulsions, and prompt stabilization of exposed surfaces. See the Civil Design Plans at Exhibit 7A of the SEC Application.
The proposed development will alter approximately 57 acres of land. In order to evaluate the project's effect on peak stormwater runoff rates, a hydrologic model was developed to evaluate the existing and proposed drainage conditions on the site. The results of the analyses indicate that there is no significant change in peak discharge rates between the pre- and post-development conditions for the 2, 10, and 50 year storm events (See

the stormwater management plans included in the Alteration of Terrain permit application included as Appendix 2B of the SEC application).

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The project is not located in a mapped floodplain. The project has been designed in conformance with standard best management practices for wind park construction and stormwater management. Details of the stormwater management plans for the Project are included in the Alteration of Terrain permit application included as Appendix 2B of the SEC Application.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

Since there are no large open bodies of water being impacted by the project, wave energy will not be affected. Two small streams are being affected by the Project, however proposed redevelopment of the site will not redirect the current. Stream crossings have been designed in accordance with the *New Hampshire Stream Crossing Guidelines* to the extent practicable to minimize the potential for erosion resulting from new crossings.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

AWE has leased approximately 1,870 acres of private land on six landowners for the development of the Project. All wetlands that will be impacted by the Project are located entirely within these parcels.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The AWE project has been designed to avoid and minimize impacts on wetlands to the extent practicable. This started with desktop review of readily available information including USGS and NWI mapping to identify the field survey area. The initial assessment of the field survey corridor started with investigation for vernal pools as snow cover left the site and later for wetlands. As it was determined there would be wetland impacts and needs for changes in project alignment and design, additional survey area was added and investigated for natural resources. This is typical of an iterative process that continued throughout the period of resource delineation and civil design (May – October, 2011; September 2014).

The total permanent impact to wetlands and surface water resources is approximately 0.21 acres. This wetland impact is only 0.3 percent of the land area to be disturbed by this project (57.3 acres).
The primary function of wetlands on the project site is wildlife habitat. The very small area of impact inherently limits the amount of impact to this function. Additionally the narrow, linear nature of these impacts (primarily from gravel roads) further limits impact to this function. The one perennial stream crossing has been designed with an open bottom arch culvert which will allow for maintenance of the natural substrates and unrestricted flows along the natural channel.

There are indirect impacts from road construction and a turbine pad to vernal pool terrestrial habitat (VP1, 2, 3, and 7), however these impacts are only to upland area and do not include any impact to the associated wetlands. It is not anticipated that these impacts will adversely affect the productivity of these pools. There is no direct impact to any of the vernal pool breeding habitats (depression). See the attached Vernal Pool Report at Exhibit 6 for additional information.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

An evaluation of the impact of the Project on historic sites is included in Section J and Appendices 9D through 9G of the SEC Application.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.
No such areas have been identified within the Project area.

20. The degree to which a project redirects water from one watershed to another.
The Project has been designed to minimize the impacts to hydrology on the site and minimize the interruption of the natural flow. Details of the design can be found in the Alteration of Terrain permit application included as Appendix 2B of the SEC Application.

Additional comments

EXHIBIT 1

COPY OF APPLICATION CHECK

Antrim Wind Energy LLC
155 Fleet Street
Portsmouth, NH 03801
603-570-4842

Centrix Bank & Trust
1 Atwood Lane, Bedford, New Hampshire 03110

001459
54-202/114

DATE 7/3/2015

PAY TO THE ORDER OF Treasurer State of New Hampshire $ **1,914.60

One Thousand Nine Hundred Fourteen and 60/100********** DOLLARS

State of New Hampshire Treasury
25 Capitol Street, Room 121
Concord, NH 03301

Memo Wetlands Permit Application Fee

AUTHORIZED SIGNATURE

⑈001459⑈ ⑆011402024⑆ 1010125354⑈

Antrim Wind Energy LLC

Treasurer State of New Hampshire 7/3/2015 001459

Wetlands Permit App Fee 1,914.60

Eastern Checking Wetlands Permit Application Fee 1,914.60

Antrim Wind Energy LLC

Treasurer State of New Hampshire 7/3/2015 001459

Wetlands Permit App Fee 1,914.60

Eastern Checking Wetlands Permit Application Fee 1,914.60

EXHIBIT 2

NEW HAMPSHIRE NATURAL HERITAGE BUREAU LETTERS

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Dana Valleau, TRC Environmental Corp.
14 Gabriel Drive
Augusta, ME 04330

From: Amy Lamb, NH Natural Heritage Bureau
Date: 6/11/2015 3:14:08 PM (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB15-1904 Town: Antrim Location: Tax Maps: Maps 212, 235, 236, 239; Lots 212-7, 30&34; 235-14; 236-1&2; 239-1

Description: The project is a wind power project located along Tuttle Hill.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: NHB requests surveys for the endangered plant species and exemplary natural community indicated below. Please send the requested information to: Amy.Lamb@dred.nh.gov. Please coordinate with Kim Tuttle of NH Fish & Game for wildlife concerns.

Invertebrate Species	State[1]	Federal	Notes
Ebony Boghaunter (*Williamsonia fletcheri*)	SC	--	Contact the NH Fish & Game Dept (see below).

Natural Community	State[1]	Federal	Notes
Inland Atlantic white cedar swamp	--	--	Changes to the hydrology of the wetland are the greatest threat facing the cedar swamp. Damming which causes pooling for extended periods can flood and drown existing trees, and drainage that results in lower water levels can lead to invasion by other species that can out compete -- and eventually eliminate -- Atlantic white cedar trees. Increased nutrient input from stormwater runoff could also deleteriously impact this acidic, low-nutrient plant community.

Plant species	State[1]	Federal	Notes
Canada shore quillwort (*Isoetes riparia var. canadensis*)	E	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.

Vertebrate species	State[1]	Federal	Notes
Marsh Wren (*Cistothorus palustris*)	--	--	Contact the NH Fish & Game Dept (see below).

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

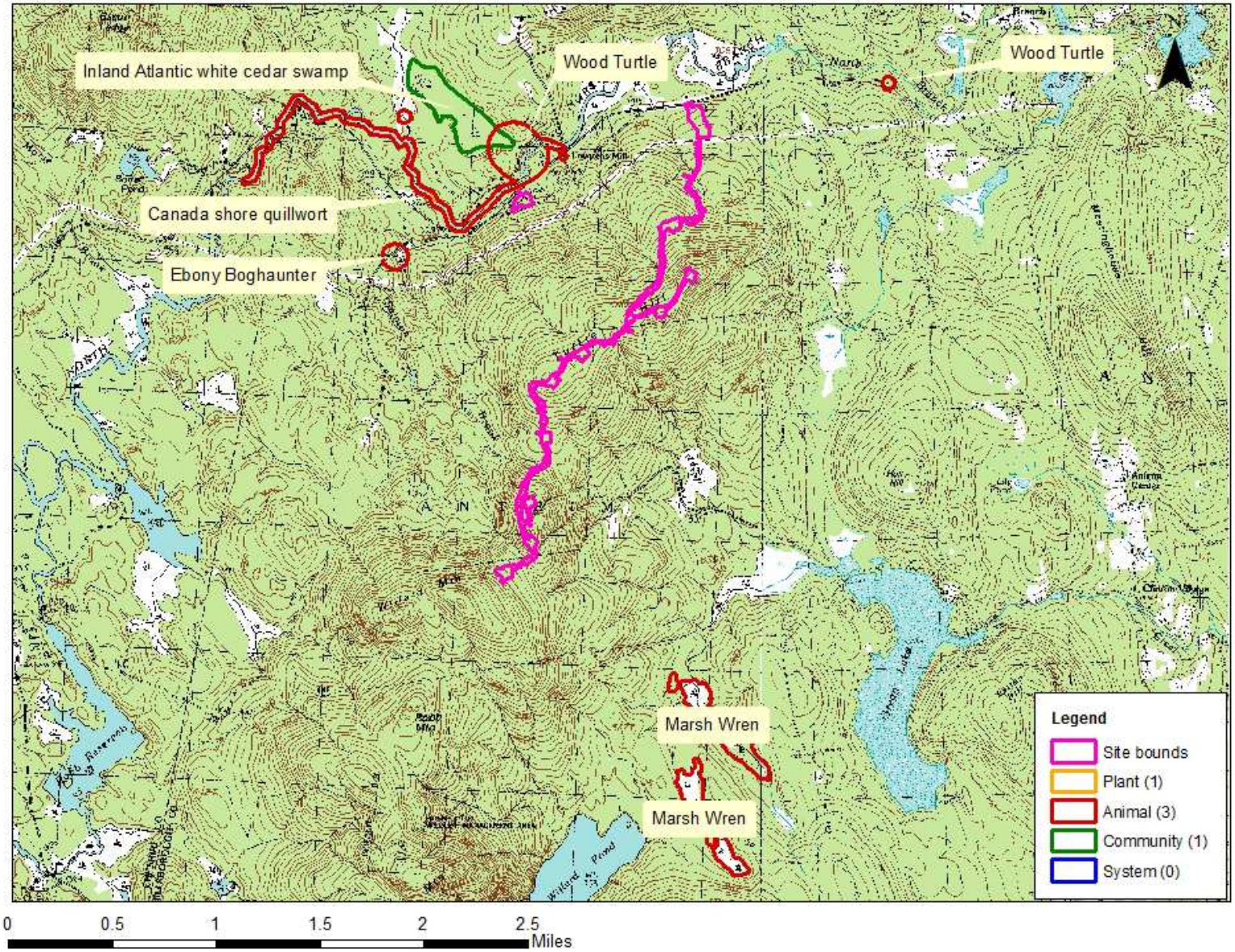
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

NHB15-1904


Inland Atlantic white cedar swamp
Wood Turtle
Wood Turtle
Canada shore quillwort
Ebony Boghaunter
Marsh Wren
Marsh Wren
Legend
Site bounds
Plant (1)
Animal (3)
Community (1)
System (0)
0
0.5
1
1.5
2
2.5
Miles

New Hampshire Natural Heritage Bureau - Animal Record

Ebony Boghaunter (*Williamsonia fletcheri*)

Legal Status

Federal: Not listed
State: Special Concern

Conservation Status

Global: Apparently secure but with cause for concern
State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2003: Area 1: Species observed on 5/30.
General Area:
General Comments:
Management Comments:

Location

Survey Site Name: Salmon Brook
Managed By: The Nature Conservancy #2

County: Hillsborough
Town(s): Antrim
Size: 7.7 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions:

Dates documented

First reported: 2003-05-30
Last reported: 2003-05-30

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Community Record

Inland Atlantic white cedar swamp

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D).

Comments on Rank: This site is probably the best, largest and most viable remaining cedar swamp in the western part of the state. It should remain among the highest conservation priorities in the state.

Detailed Description: 2006: Community observed and photographed. 2004: Community observed and photographed. 1993: *Chamaecyparis thyoides* (Atlantic white cedar) is the dominant tree with both *Acer rubrum* (red maple) and *Picea rubens* (red spruce) present in abundance. *Picea mariana* (black spruce) is scattered and less abundant. Occasionally, *Pinus strobus* (white pine) and *Betula alleghaniensis* (yellow birch) are also found. Dominant shrub species are *Gaylussacia baccata* (black huckleberry), *Nemopanthus mucronatus* (mountain holly), *Ilex laevigata* (smooth winterberry), and *Kalmia angustifolia* (sheep laurel). Common boreal components present are *Chamaedaphne calyculata* (leatherleaf), *Gaultheria hispidula* (creeping snowberry), and *Ledum groenlandicum* (Labrador tea). The herbaceous layer is fairly abundant, although richness is somewhat limited. *Osmunda cinnamomea* (cinnamon fern), *Aralia nudicaulis* (wild sarsaparilla), *Maianthemum canadense* (Canada mayflower), *Sarracenia purpurea* (pitcher-plant) and *Carex trisperma* (three-seeded sedge) are commonly present. Sphagnum species are abundant. 1990: Has *Chamaecyparis thyoides*(Atlantic white cedar) to 14 inches dbh and a few larger individuals, abundant in areas away from streams. *Picea mariana* (black spruce), *Picea rubens* (red spruce), *Abies balsamea* (balsam fir), and *Acer rubrum* (red maple) also occur. Lesser amounts of *Pinus strobus* (white pine).

General Area: 1993: Soil type is a mucky peat, with the peat deposits averaging <1 meter. The soil is permanently saturated with a couple of obvious watercourses present. The pH of the groundwater is quite acidic with a range of 3.8-4.0. 1990: Purest and largest cedar around open black spruce bog (90 percent, 10-14 inches average range). Other areas 50-80 percent. Basin is surrounded by gradually sloping uplands which are punctuated by a number of small cliffs. 1961 (Baldwin): a fairly large boggy swamp with *Chamaecyparis thyoides* (Atlantic white cedar). Contains 6 stands of cedar.

General Comments: 1997: New community boundaries mapped based on 1993 field work. 1990: Encroaching urban development.

Management Comments:

Location

Survey Site Name: Loverens Mill Cedar Swamp
Managed By: Loverens Mill Preserve

County: Hillsborough
Town(s): Antrim
Size: 51.3 acres Elevation: 1080 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Hillsboro, take Rte. 9 south ca. 5 miles south to Holmes Hill Road. Turn right (north) onto Holmes Hill. Park on the right immediately after crossing the bridge over the river, at the TNC preserve sign kiosk. After ca. 900 feet there will be a gravel road on the left. This is the trailhead. Take the marked trail on this road, up past the old mill, and look for a turnoff to the right. Proceed down this trail (N-NW). The cedar swamp is at the bottom of the basin, to the north.

Dates documented

First reported:	1961	Last reported:	2006-06-13

New Hampshire Natural Heritage Bureau - Plant Record

Canada shore quillwort (*Isoetes riparia var. canadensis*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:	Likely extensive habitat, good population condition, and good landscape context.
Detailed Description:	2009: 200-250 stems, 95% dispersing seeds.1997, 1995?: No details.
General Area:	2009: Fourth-order stream/river. Associated species include royal fern (*Osmunda regalis* var. *spectabilis*), water bulrush (*Schoenoplectus subterminalis*), and several species of algae.
General Comments:	2009: The population is further downstream from where it was first located in the mid-1990s. There are larger numbers of individuals. The presence of potential hybrids in the area suggest that there is some dynamism to the long-term occurrence.
Management Comments:	2009: Some potential damage from bathers in summer who use the rest area, although it is downstream.

Location

Survey Site Name: Loverens Mill, west of
Managed By: The Nature Conservancy #2

County: Hillsborough
Town(s): Antrim
Size: .4 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2009: Take Rte. 9 west from Hillsboro to the only rest area on the north side of the highway in Antrim. Park in the lot and proceed down a trail behind the station to the [North Branch of the] Contoocook River. Head downstream about 250 ft. until the river makes a sharp bend to the south. Look in the current and backwater area above the shallow ledge (above the drop) in 0.5 to 1.5 feet of water amidst cobbles and gravels.

Dates documented

First reported: 1993-1998 Last reported: 2009-09-20

New Hampshire Natural Heritage Bureau - Animal Record

Marsh Wren (*Cistothorus palustris*)

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2002: 5 observed on 6/18, 1 seen gathering nesting material.
General Area:
General Comments:
Management Comments:

Location

Survey Site Name: Willard Pond, NE of
Managed By:

County: Hillsborough
Town(s): Antrim
Size: 66.0 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions:

Dates documented

First reported: 2002-06-18
Last reported: 2002-06-18

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:

Detailed Description: 2010: Area 12723: 1 adult observed.2009: Area 12334: 1 observed. 2008: Area 11603: 1 adult seen. 2006: Area 11693: 1 adult seen. 2005: Area 12135: 1 adult seen. 2002: Area 12069: 1 observed.
General Area: 2010: Area 12723: Roadside along river.2005: Area 12135: Crossing highway towards North Branch of Contoocook River. 2002: Area 12069: Near cedar swamp.
General Comments:
Management Comments:

Location

Survey Site Name: Loverens Mill
Managed By: The Nature Conservancy #2

County: Hillsborough
Town(s): Antrim
Size: 88.3 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2010: Area 12723: Rte. 9 in Antrim.2009: Area 12334: TNC property at Loverens Mill. Drainage into North Branch Contoocook River. 2008: Area 11603: TNC property at Loverens Mill Road. 2002: Area 12069: Loverens Mill property near trail to cedar swamp.

Dates documented

First reported: 2002-07-28 Last reported: 2010-08-05

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau

DRED - Division of Forests & Lands
172 Pembroke Road, Concord, NH 03301
(603) 271-2214

To: Dana Valleau, Environmental Specialist, TRC

From: Amy Lamb, Ecological Information Specialist, NHB

Date: June 26, 2015

Subject: Re: NHB15-1904, NHB10-0644: Antrim Wind Energy, LLC

This is a follow-up to NHB15-1904, which indicated the presence of an exemplary natural community, an Inland Atlantic white cedar swamp, and a state endangered plant, Canada shore quillwort (*Isoetes riparia var. canadensis*), close to the proposed project area. The report also indicated the presence of three wildlife species; please note that the Natural Heritage Bureau does not provide comments regarding wildlife, and that there must be consultation with the NH Fish and Game Department for all wildlife concerns.

In the NHB15-1904 review, we requested that the project area be surveyed for the occurrence of the rare species and natural community within the project area. After this initial recommendation, it came to my attention that community mapping had occurred throughout the project area, through consultation with Melissa Coppola under project number NHB10-0644. Based on the results of those surveys, NHB does not find it likely that the natural community and rare plant identified in NHB15-1904 would be found on the property. As such, NHB no longer recommends a survey for Canada shore quillwort or Inland Atlantic white cedar swamp in the project area.

We look forward to continued communication throughout the SEC process. Please send us any additional application materials as they become available, and include us in any future communications regarding the subject project.

New Hampshire Natural Heritage Bureau

DRED - Division of Forests & Lands
PO Box 1856 -- 172 Pembroke Road, Concord, NH 03302-1856
(603) 271-2214

To: Site Evaluation Committee

From: Melissa Coppola, Environmental Information Specialist

Date: August 2, 2012

Subject: Final Report: Site Evaluation Committee #2012-01
Application for Antrim Wind Energy, LLC

The Natural Heritage Bureau (NHB), under the auspices of the NH Native Plant Protection Act of 1987 (RSA 217-A), has reviewed the application materials for Antrim Wind Energy, LLC.

NHB had requested a final site visit during the growing as a last review step. This site review was conducted on 13 July 2012. The purpose of the visit was to search for a state-listed plant species within a few targeted natural community types with greater potential for rare species. No rare plant species were observed during the surveys.

Based on the observations made during the site visit and the application materials provided, NHB has determined that it is unlikely that the proposed wind facility will impact rare plants species or exemplary natural communities.

Memo

NH Natural Heritage Bureau

To: James Kenworthy, Eolian Renewable Energy, LLC
55 Fleet St.
Portsmouth, NH 03801

From: Melissa Coppola, NH Natural Heritage Bureau
Date: 3/22/2010 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB10-0644
Project type: Roads, Driveways, Bridges: Road construction, etc.
Town: Antrim
Location: Tax Maps: 212-030, 212-027, 212-034, 211-004, 235-014
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: NHB has concerns about potential impacts to the exemplary natural community. Please send detailed site plans to mcoppola@dred.state.nh.us for further review.

Natural Community	State[1]	Federal	Notes
Inland Atlantic white cedar swamp	--	--	Changes to the hydrology of the wetland are the greatest threat facing the cedar swamp. Damming which causes pooling for extended periods can flood and drown existing trees, and drainage that results in lower water levels can lead to invasion by other species that can out compete -- and eventually eliminate -- Atlantic white cedar trees. Increased nutrient input from stormwater runoff could also deleteriously impact this acidic, low-nutrient plant community.

Vertebrate species	State[1]	Federal	Notes
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. For some purposes, including legal requirements for state wetland permits, the fact that no species of concern are known to be present is sufficient. However, an on-site survey would provide better information on what species and communities are indeed present.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

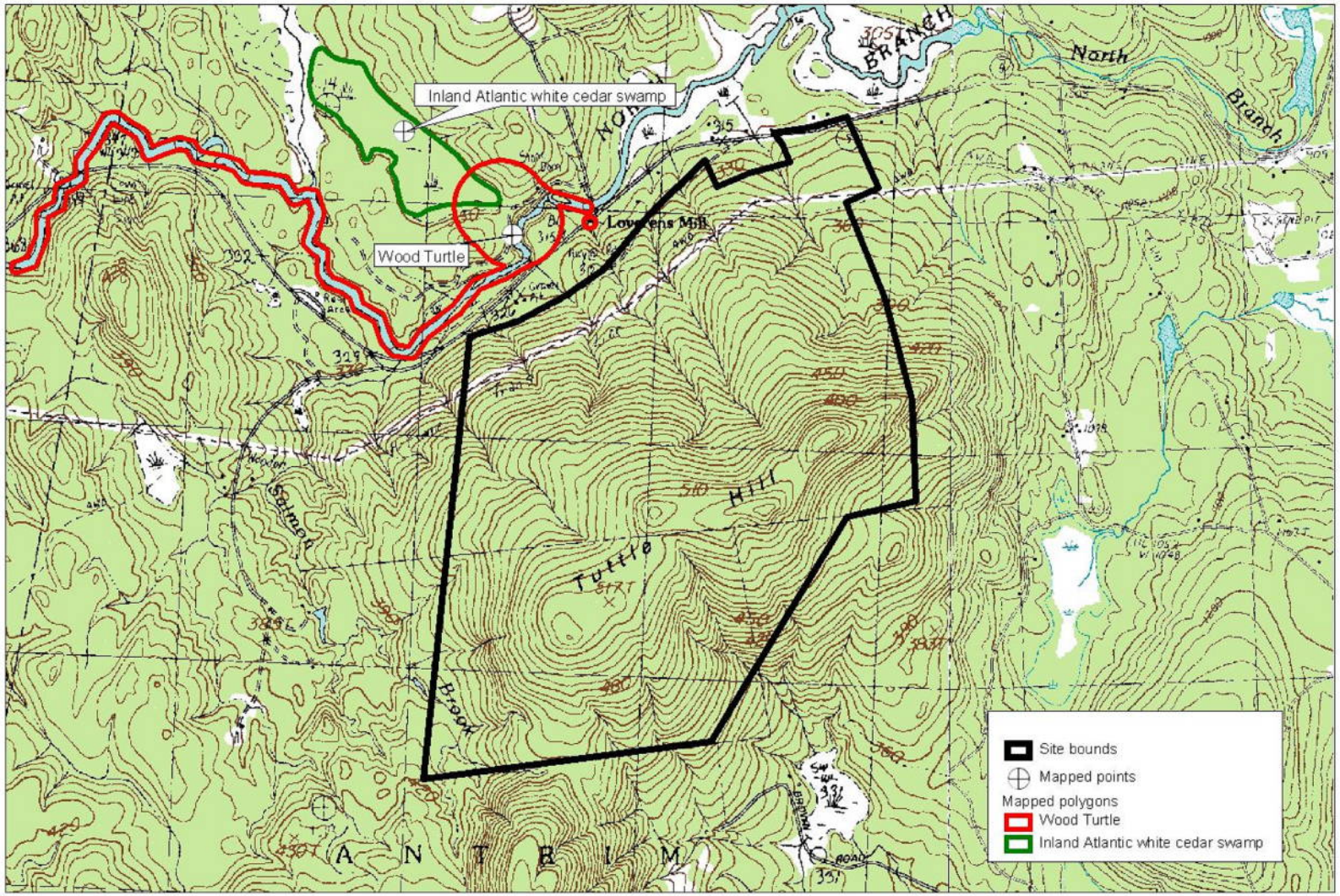
DRED/NHB
PO Box 1856
Concord NH 03302-1856

NHB10-0644

NH NATURAL HERITAGE BUREAU

Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



*Historical record

0.25 0 0.25 0.5 0.75 1 Miles

1:24000

Valid for one year from this date: 22 Mar 2010

New Hampshire Natural Heritage Bureau - Community Record

Inland Atlantic white cedar swamp

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and lanscape context ('A' on a scale of A-D).

Comments on Rank: This site is probably the best, largest and most viable remaining cedar swamp in the western part of the state. It should remain among the highest conservation priorities in the state.

Detailed Description: 2006: Community observed and photographed. 2004: Community observed and photographed. 1993: *Chamaecyparis thyoides* (Atlantic white cedar) is the dominant tree with both *Acer rubrum* (red maple) and *Picea rubens* (red spruce) present in abundance. *Picea mariana* (black spruce) is scattered and less abundant. Occasionally, *Pinus strobus* (white pine) and *Betula alleghaniensis* (yellow birch) are also found. Dominant shrub species are *Gaylussacia baccata* (black huckleberry), *Nemopanthus mucronatus* (mountain holly), *Ilex laevigata* (smooth winterberry), and *Kalmia angustifolia* (sheep laurel). Common boreal components present are *Chamaedaphne calyculata* (leather-leaf), *Gaultheria hispidula* (creeping snowberry), and *Ledum groenlandicum* (Labrador-tea). The herbaceous layer is fairly abundant, although richness is somewhat limited. *Osmunda cinnamomea* (cinnamon fern), *Aralia nudicaulis* (wild sarsaparilla), *Maianthemum canadense* (Canada mayflower), *Sarracenia purpurea* (pitcher-plant) and *Carex trisperma* (three-seeded sedge) are commonly present. Sphagnum species are abundant. 1990: Has *Chamaecyparis thyoides*(Atlantic white cedar) to 14 inches dbh and a few larger individuals, abundant in areas away from streams. *Picea mariana* (black spruce), *Picea rubens* (red spruce), *Abies balsamea* (balsam fir), and *Acer rubrum* (red maple) also occur. Lesser amounts of *Pinus strobus* (white pine).

General Area: 1993: Soil type is a mucky peat, with the peat deposits averaging <1 meter. The soil is permanently saturated with a couple of obvious watercourses present. The pH of the groundwater is quite acidic with a range of 3.8-4.0. 1990: Purest and largest cedar around open black spruce bog (90 percent, 10-14 inches average range). Other areas 50-80 percent. Basin is surrounded by gradually sloping uplands which are punctuated by a number of small cliffs. 1961 (Baldwin): a fairly large boggy swamp with *Chamaecyparis thyoides* (Atlantic white cedar). Contains 6 stands of cedar.

General Comments: 1997: New community boundaries mapped based on 1993 field work. 1990: Encroaching urban development.

Management Comments:

Location

Survey Site Name: Loverens Mill Cedar Swamp
Managed By: Loverens Mill Preserve

County:	Hillsborough	USGS quad(s):	Stoddard (4307211)
Town(s):	Antrim	Lat, Long:	430433N, 0720142W
Size:	51.3 acres	Elevation:	1080 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Hillsboro, take Rte. 9 south ca. 5 miles south to Holmes Hill Road. Turn right (north) onto Holmes Hill. Park on the right immediately after crossing the bridge over the river, at the TNC preserve sign kiosk. After ca. 900 feet there will be a gravel road on the left. This is the trailhead. Take the marked trail on this road, up past the old mill, and look for a turnoff to the right. Proceed down this trail (N-NW). The cedar swamp is at the bottom of the basin, to the north.

Dates documented

First reported: 1961 Last reported: 2006-06-13

Kimball, Ben, et al. 2006. Field visit to Loverens Mill Cedar Swamp Preserve on June 13.

Sperduto, D. & N. Ritter. 1994. Altantic White Cedar Wetlands of New Hampshire. Environmental Protection Agency, Boston, MA.

New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	SC	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2008: Area 11603: 1 adult seen.2006: Area 11693: 1 adult seen.2005: Area 12135: 1 adult seen.2002: Area 12069: 1 observed.
General Area: 2005: Area 12135: Crossing highway towards North Branch of Contoocook River.2002: Area 12069: Near cedar swamp.
General Comments:
Management Comments:

Location

Survey Site Name: Loverens Mill
Managed By: The Nature Conservancy #2

County:	Hillsborough	USGS quad(s):	Stoddard (4307211)
Town(s):	Antrim	Lat, Long:	
Size:	84.4 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2008: Area 11603: TNC property at Loverens Mill Road.2002: Area 12069: Loverens Mill property near trail to cedar swamp.

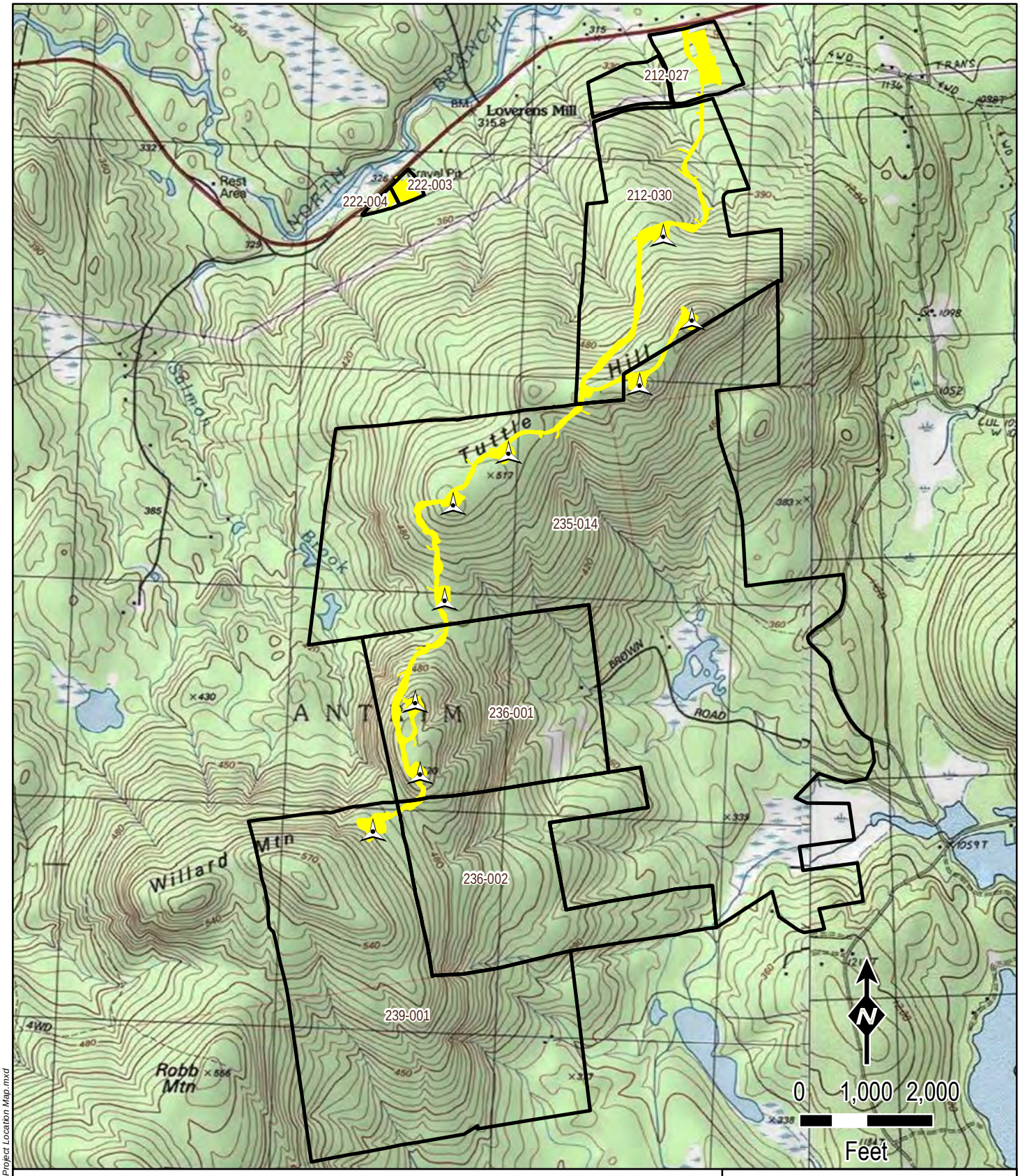
Dates documented

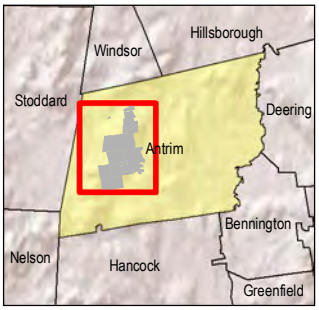
First reported:	2002-07-28	Last reported:	2008-06-01

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

EXHIBIT 3

AREA MAP





Legend

- Proposed WTG
- Project Footprint
- Project Parcels

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

354 KEENE ROAD, ANTRIM, NH

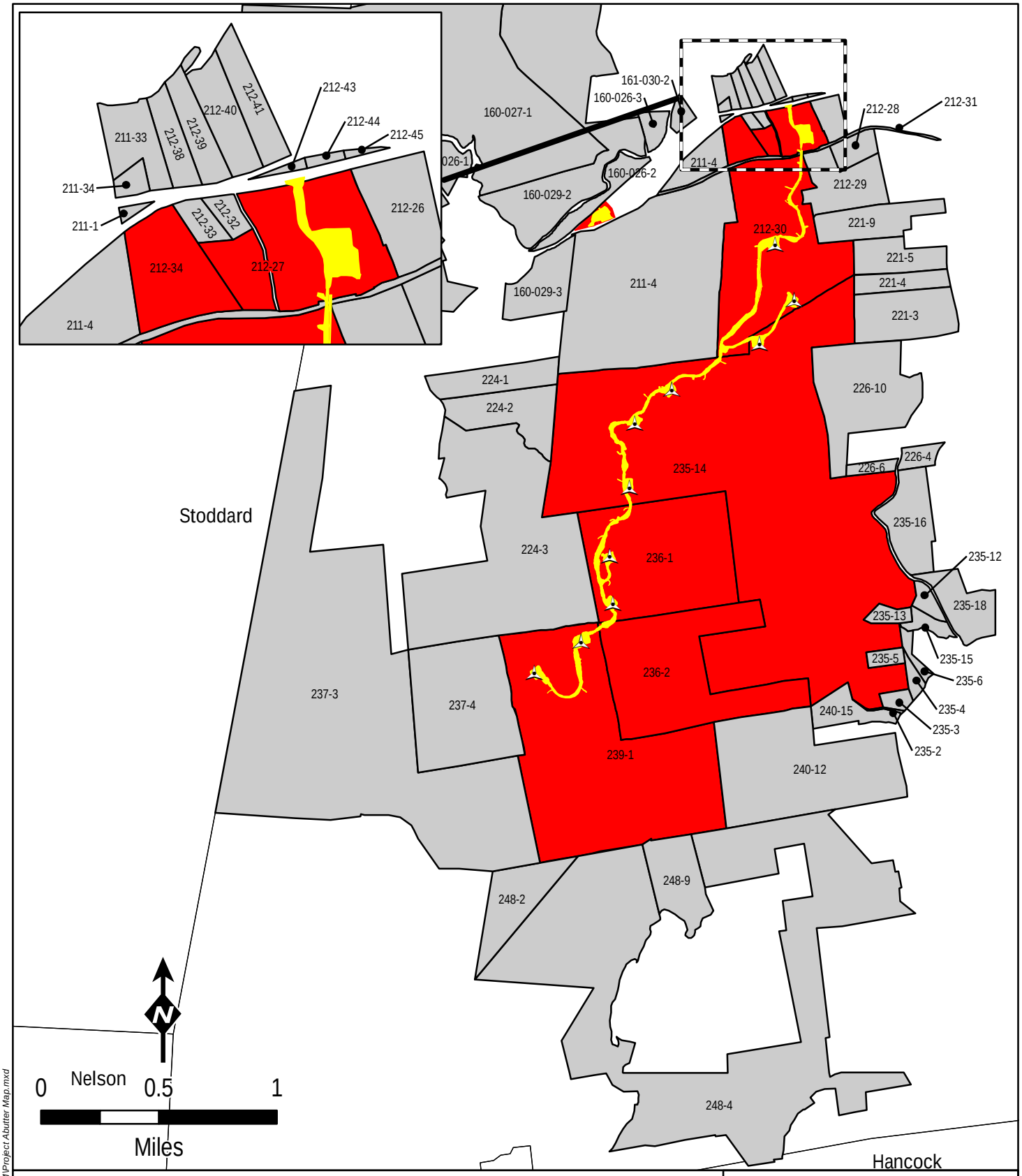
Project Location Map

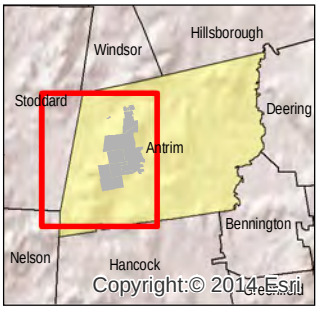
Produced by: TRC | 1/29/2015

V:\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure C1 Project Location Map.mxd

EXHIBIT 4

TAX MAP, ABUTTERS, and ABUTTER NOTIFICATION LETTER





Legend

- Proposed WTG
- Proposed Project Area - 60 Acres
- Project Parcels
- Abutter

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

354 KEENE ROAD, ANTRIM, NH

Project Abutter Map

Produced by: TRC | 7/6/2015

\\appesrit\GIS\PROJECTS\AUGUSTA\Eolian\ANTRIM\Project Abutter Map.mxd

ANTRIM ABUTTERS

Map	Lot	Owner	Type	Property Address	Owner Address	Owner Address
212	27	Ott Michael James	Project Parcel	354 Keene Road	PO Box 160	Antrim NH 03440
212	30	Ott Michael James	Project Parcel	High Range Road	PO Box 160	Antrim NH 03440
212	34	Ott Michael James	Project Parcel	Russell Road	PO Box 160	Antrim NH 03440
222	3	TWBW LLC	Project Parcel	Keene Road	155 Fleet Street	Portsmouth NH 03801
222	4	TWBW LLC	Project Parcel	Keene Road	155 Fleet Street	Portsmouth NH 03801
235	14	Antrim Limited Partnership C/O Heritage Financial Services	Project Parcel	Hattie Brown Road	100 Lowder Brook Drive #1000	Westwood MA 02090
236	1	Cotran Group Inc	Project Parcel	Brimstone Corner Road W/S	685 Massabesic Street	Manchester NH 03101
236	2	Whittemore Paul J Whittemore Helen M	Project Parcel	Brimstone Corner Road	PO Box 528	Auburn NH 03032
239	1	Whittemore Trust Whittemore Arthur F Et Al Ttes	Project Parcel	103 Camp Road - Pvt Road 38	16501 North Elmirage Road 735	Surprise AZ 85374
211	1	Jackson Bradley	Abutter	Keene Road	PO Box 632	Jaffrey NH 03452
211	4	Ellens Pastels & Art House LLC	Abutter	Keene Road	25 North Holt Hill Road	Antrim NH 03440
211	33	Hutchinson Ted Campbell Diana L	Abutter	363 Keene Road	PO Box 469	Henniker NH 03242
211	34	Hutinson Ted & Diana L	Abutter	367 Keene Road	PO Box 469	Henniker NH 03242
212	12	State of New Hampshire Fish & Game Dept	Abutter	409 Keene Road	11 Hazen Drive	Concord NH 03301
212	26	Couterier Marcel J Kusnarowis Paula J	Abutter	344 Keene Road	344 Keene Road	Antrim NH 03440
212	28	Charette Norman M	Abutter	High Range Road	PO Box 74	Westport MA 02790
212	29	Mata Cristian ET UX	Abutter	Old Keene Road	73 Rhododendron Road	Stony Brook NY 11790
212	31	Owner Unknown	Abutter	High Range Road	Unknown	Unknown
212	32	Perry Adam	Abutter	362 Keene Road	PO Box 163	Antrim NH 03440
212	33	Gauthier Raymond C and Scott H	Abutter	Keene Road	York River Trust 6 Manhattan Drive	Amherst NH 03031
212	38	Wells Fargo	Abutter	359 Keene Road	800 Walnut Street	Des Moines IA 50309
212	39	Moote Wayne A	Abutter	355 Keene Road	12 Bobolink Lane	Hillsboro NH 03244
212	40	Barry Robert W	Abutter	351 Keene Road	351 Keene Road	Antrim NH 03440
212	41	Olsen Family Partnership IV Ltd	Abutter	Keene Road	PO Box 2050	Lecanto FL 34460
212	43	Frosch Real Estate Investments LLC	Abutter	349 Keene Road	176 Old Hancock Road	Antrim NH 03440
212	44	Voydatch Steven & Mahala	Abutter	345 Keene Road	55 Jewett Road	Dunbarton NH 03045
212	45	Ellinwood Christie & Albertin	Abutter	Keene Road	PO Box 127	Antrim NH 03440
221	3	Ivey III Rev Trust Jefferson F S ttee	Abutter	20 Reed Carr Road	36 Country Club Lane	Middleton MA 01949
221	4	Garrett C Spencer & Joann H	Abutter	38 Reed Carr Road	38 Reed Carr Road	Antrim NH 03440
221	9	Berwick Bruce E & Barbara I	Abutter	72 Reed Carr Road	72 Reed Carr Road	Antrim NH 03440
222	2	Tuttle Mountain Leasing LLC	Abutter	408 Keene Road	PO Box 519	Antrim NH 03440
222	5	Meadowsend Timberlands Limited Partnership	Abutter	Keene Road	PO Box 966	New London NH 03257
224	1	Schaefer Mark J	Abutter	128 Salmon Brook Road	128 Salmon Brook Road	Antrim NH 03440
224	2	Longgood Janice	Abutter	156 Salmon Brook Road	156 Salmon Brook Road	Antrim NH 03440
224	3	Micheli Lyle J 2008 Trust Micheli Lyle J & Anne J Ttes	Abutter	Salmon Brook Road	319 Longwood Avenue	Boston MA 02115
226	4	Levesque Walter T & Joy C	Abutter	Craig Road	12 Backmeadow Road	Nobleboro ME 04555
226	6	Seroczynski Christine & Sigmond	Abutter	Craig Road	67 Indian Trail	Bristol CT 06010
226	10	Craig Jr Clark A	Abutter	224 Craig Road	224 Craig Road	Antrim NH 03440
235	2	Owner Unknown	Abutter	Private Road 70	Unknown	Unknown
235	3	Caughey Family Re Trust Caughey George H & Michelle B Ttes	Abutter	Brimstone Corner Road	1 Entrance Way	Woodside CA 94062
235	4	Robinson Daniel C & Steven E Robinson Charles E & Gary M	Abutter	Brimstone Corner Road	NE 132nd Circle	Brush Prairie WA 98606
235	5	Robinson Daniel C & Steven E Robinson Charles E & Gary M	Abutter	Brimstone Corner Road	NE 132nd Circle	Brush Prairie WA 98606
235	6	Taylor Glenn P	Abutter	19 Brimstone Corner Road	19 Brimstone Corner Road	Antrim NH 03440
235	12	State of New Hampshire	Abutter	Craig Road	State of New Hampshire	Concord NH 03301
235	13	Town of Antrim	Abutter	Craig Road	PO Box 517	Antrim NH 03440
235	15	Town of Antrim	Abutter	Craig Road	PO Box 517	Antrim NH 03440
235	16	Craig Steven M & James P	Abutter	Craig Road	224 Craig Road	Antrim NH 03440
237	3	Meadowsend Timberlands Limited Partnership	Abutter	Area Willard Mountain	PO Box 966	New London NH 03257

ANTRIM ABUTTERS

237	4	State of New Hampshire Fish & Game Dept	Abutter	West Side of Antrim	11 Hazen Drive	Concord NH 03301
240	12	Harris Center for Conservation Education	Abutter	Brimstone Corner Road	83 Kings Highway	Hancock NH 03449
240	14	Lynch Thomas F & Mary L	Abutter	53 Brimstone Corner Road	53 Brimstone Corner Road	Antrim NH 03440
240	15	Sharby Neil P & Margaret R	Abutter	Brimstone Corner Road	55 Brimstone Corner Road	Antrim NH 03440
248	2	Audubon Society of New Hampshire	Abutter	Willard Pond	3 Silk Farm Road	Concord NH 03301
248	4	Audubon Society of New Hampshire	Abutter	Willard Pond Road	3 Silk Farm Road	Concord NH 03301
248	9	Audubon Society of New Hampshire	Abutter	Willard Pond Road	3 Silk Farm Road	Concord NH 03301

ABUTTER NOTIFICATION
OF
WETLANDS PERMIT APPLICATION

VIA CERTIFIED MAIL

RE: Wetlands Permit Application
Antrim Wind Energy LLC
155 Fleet Street
Portsmouth, NH 03801
Tax Map/Lot#: 212/027, 212/030, 212/034, 236/001, 235/014, 236/002, 239/001, 222/003, 222/004

Dear Sir or Madam:

This letter is to inform you that a permit application will be filed with the NH Department of Environmental Services for a wetlands permit associated with the above referenced project. Under state law RSA 482-A:3 I (d)(1), I am required to notify you about the application, which proposes work abutting your property.

Once it if filed, the permit application, including the plans that show the proposed project, will be available for viewing at the City or Town Clerk's office in the town where the proposed project is located.

Sincerely,

John B. Kenworthy
Executive Officer
Antrim Wind Energy LLC
155 Fleet Street
Portsmouth, NH 03801
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EXHIBIT 5

WETLANDS REPORT

WETLAND DELINEATION REPORT

For
Antrim Wind Energy Project
Town of Antrim
Hillsborough County, New Hampshire

Prepared for:

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1.0 INTRODUCTION

Antrim Wind Energy LLC (AWE) is proposing to construct the Antrim Wind Energy Project (Project) on Tuttle Hill and Willard Mountain in the Town of Antrim, Hillsborough Country, New Hampshire. The proposed Project is sited entirely on privately owned land that is leased by AWE. The proposed Antrim Wind Energy Project involves the construction of wind turbines, an electrical collection system and interconnection substation, new access road, and an operations and maintenance building. There will be no new electrical transmission lines, other than collector system lines, constructed as part of this Project. The total direct impact for the access roads, the turbine pads, and electrical collector system will be approximately 57.1 acres.

The proposed project is sited on the ridges of Tuttle Hill and Willard Mountain which are oriented east-northeast to west-southwest. The ridges are approximately parallel to NH Route 9, which is about ¾ of a mile to the north. Between the ridgeline and Route 9 is an existing transmission corridor containing both an 115kV transmission line and a 34.5kV distribution circuit; the proposed Project will interconnect with the existing 115kV line. See Attachment A, Figure 1, for a map of the Project area and Project elements.

TRC Environmental Corporation (TRC) was retained by AWE to identify and delineate jurisdictional wetlands and waterways within the project area to support the design, or layout, of the proposed facilities. TRC has prepared this wetland delineation report on behalf of AWE to support the submittal of a Joint Application for a Permit (a U.S. Army Corps of Engineers (ACOE) and New Hampshire State wetlands permit).

2.0 CURRENT AND HISTORIC LAND USES

2.1 Current Land Use

Most of the Town of Antrim is undeveloped, and a large proportion of the town's landscape is heavily wooded. Much of Antrim's forested areas are located in the Rural and Rural Conservation Zoning Districts of town; these two districts constitute over 70% of Antrim's total area. These woodlands are viewed by the town as a renewable resource and are logged on a regular basis. In addition to abundant woodland, there are also numerous conservation areas, hiking trails and water features (Town of Antrim 2011).

2.2 Historic Land Use

Historically, the area of the proposed Project was cleared for sheep farming; numerous stone walls still remain as a result of this historic activity. After the decline of sheep farming, the site was allowed to regenerate into a forested condition. Subsequently, timber harvesting has occurred in many areas on Tuttle Hill and Willard Mountain. Currently, the land in and around the area of proposed development consists of undeveloped forest land in various stages of maturity, ranging from recent clear cuts and early successional stands as a result of timber harvesting, to mature forested areas.

3.0 WETLAND DELINEATION METHODOLOGY

3.1 Siting Alternatives

The layout of wind turbines is a function of several siting factors that balance the location of each wind turbine and environmental compatibility. These factors include:

- maximizing wind speed;
- minimizing tree clearing, wetland impacts, and the acquisition of land (the Project proposes to lease the land needed for the Project facilities);
- maintaining the current use of the land;
- connecting the turbines with an efficient and practical network of unpaved access roads for construction and maintenance of the turbines;
- co-locating electric cables with the access road corridor that connect the turbines to electric substation; and
- co-locating the electric transmission line that would connect the Project to the electric grid within existing infrastructure right-of-way.

These siting factors inherently create the need for a Project survey area that was sufficiently large enough to provide for an adequate area to identify cultural and natural resources and allow for the opportunity to evaluate siting alternatives that avoid and minimize impacts to any identified resources. After reviewing available topographic, soils mapping, and potential turbine locations for the Project area, TRC developed a survey area, which is depicted on Figure 1, found in Attachment A. With a survey corridor of 500 feet in width with a 250 foot radius around potential turbine locations, the survey area was approximately 462 acres.

To determine the potential for wetland impacts from construction of the Antrim Wind Energy Project, TRC assessed the survey area for the presence of federal and jurisdictional wetlands. A New Hampshire Certified Wetland Scientist from TRC conducted wetland delineations in August, September, November 2011, and October 2014 (refer to Attachment B for professional resume and qualifications). TRC also investigated hydrologic connectivity (drainage ditches, natural swales, intermittent and perennial streams outside the study corridor when necessary to verify “normal conditions” or “nexus” hydrologic determinations. The delineations were performed in accordance with the U.S. Army Corps of Engineers (USACE) wetland delineation criteria and methodology which is described in Section 3.2. The USACE data sheets have been compiled for this Wetland Delineation Report and presented in Attachment C.

This report presents the delineation methodology, wetland identification, and the results of the field wetland delineation, including descriptions of on-site hydrology, soils and vegetation (see Section 4.0). Mapping is provided in Attachment A, with Figure 2 presenting the wetland mapping.

3.2 Wetland Delineation Method

TRC wetland delineation crews surveyed proposed corridors using the Federal Routine Determination Method presented in the USACE Wetlands Delineation Manual (USACOE 1987), including clarifications and interpretations provided in the March 6, 1992 guidance memorandum (Williams 1992), USACOE and Environmental Protection Agency guidance on jurisdictional forms (USACOE 2007), and the Regional Supplements to Corps Delineation Manual (USACOE 2009).

The 1987 USACE manual and guidance memorandums emphasize a three-parameter approach to wetland boundary determination in the field. This approach involves the identification of: (i) evidence of wetland hydrology; (ii) presence of hydric soils; and (iii) predominance of hydrophytic vegetation as defined by the National Plant List Panel (Reed 1988). Positive indicators of all three parameters are normally present in wetlands and serve to distinguish between both upland and transitional plant communities. Identified wetlands were classified according to Cowardin et al. (1979).

After a wetland area was initially identified, an appropriate transect and plot location was established, generally perpendicular to the wetland/upland boundary, in order to document conditions within each plant community and firmly establish the wetland boundary using wetland indicators. USACE Wetland Determination data forms were completed for each representative wetland transect. These data forms are provided in Attachment C to this report. The wetland boundary was marked with sequentially numbered (alpha-numeric) pink flagging labeled with “Wetland Delineation”. Once wetland flags were in place, the location of each flag was pinpointed using a hand-held Global Positioning Satellite (GPS) unit. These data were downloaded into a GIS system and then plotted on the project base map (a USGS geo-referenced map), which is provided in Attachment A, Figure 2. The results of the delineations are summarized in Section 4.0.

4.0 WETLAND DELINEATION RESULTS

A total of thirty eight (38) wetland areas were identified in the Project survey area. This report describes and maps those wetlands within and in relative proximity to the proposed roads, turbines, collector system, the proposed transmission right-of-way corridor, and other facility sites associated with the Project (see Figure 2 in Attachment A). The 38 wetlands are represented in Table 4.1 due to their occurrence in the proposed corridor and in close proximity to the proposed project corridors or facility sites. Of the 38 wetlands, twenty-four (24) are deciduous broad-leaf forested wetlands, three (3) are conifer dominated forested wetland, two (2) are mixed forested and scrub-shrub wetland, and five (5) are scrub-shrub wetlands. Three (3) of the delineated wetlands within the Project corridor consist of two or more wetland types, including three (3) streams with associated palustrine wetlands (2 intermittent and 1 perennial stream). The wetland associated with the perennial water-way consists of a mixed palustrine system. Table 4-1 provides a summary of the wetlands identified along the Project corridor, including their classification in accordance with Cowardin et al (1979).

Narrative descriptions of wetland hydrology, soils and vegetation observed within the Project study area are presented in the following sections. Tables 4-1, 4-2 and 4-3 summarize the wetlands delineated in this report, streams identified, and the soil series information we assembled for the Project area respectively.

4.1 Vegetation

Within the Project area, vegetative communities consist of forested upland and wetland communities. Forest stands include mostly mixed coniferous and deciduous forest, with a small portion of the Project area sustained as a managed transmission line ROW and another portion recently timber harvested on Willard Mountain.

The wetland communities crossed by the Project include and scrub-shrub wetlands typically found in the transmission line ROW and isolated forested wetlands. The scrub-shrub wetlands typically contain sapling red maple (*Acer rubrum*), maleberry (*Lyonia lingustrina*), red osier dogwood (*Cornus stolonifera*), arrowwood (*Viburnum dentatum*), meadowsweet (*Spiraea latifolia*), and steeplebush (*Spiraea tomentosa*). The forested wetlands typically contain red maple, yellow birch (*Betula alleghaniensis*), and green ash (*Fraxinus pennsylvanica*).

Upland tree species found throughout the Project area include red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), white pine (*Pinus strobus*), red spruce (*Picea rubens*), balsam fir (*Abies balsama*), quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), eastern hemlock (*Tsuga canadensis*) and others. Upland herbaceous species include wild sarsassparilla (*Aralia nudicaulis*), New York fern (*Thelypteris noveboracensis*), Solomon's-seal (*Polygonatum pubescens*), star flower (*Trientalis borealis*), hayscented fern (*Dennstaedtia punctilobula*) and Canada mayflower (*Maianthemum canadense*).

4.2 Hydrology

Streams within the Project area include an unnamed perennial and intermittent streams draining both to the north (Route 9) toward the North Branch River and to the southeast draining into Gregg Lake. Because the Project area is along a ridgeline and moderately well drained, we

observed very few perennial streams. Observations in the field generally suggest that rainfall and snow melt in the spring quickly run off the ridge to lower elevations, without collecting volumes that fill natural depressions or create natural ponds. Small forest wetland areas occur along skidder trails, confined pockets in the regional bedrock, saddle areas along the ridgeline, and in other areas of poorly drained soils that support wetland vegetation.

4.3 Soils

TRC reviewed the published soil survey of the Project area and conducted soil profile characterizations in the study corridor to confirm the presence of hydric soil indictors. Within the Project survey area, a total of 7 different soil types have been mapped by the Natural Resource Conservation Service (formerly the Soil Conservation Service) (USDA & NRCS 2009). Table 4-3 summarizes the soil series in the project area and indicates that most of the Project area soils are mapped with a slope of 3-35 percent. The soil type mapping has also been overlain on the Project location map (see Figure 3 in Attachment A). The mapped soil types range from excessively drained to well drained soils. Field surveys have resulted in delineating additional soil types that are poorly drained to very poorly drained soils and are hydric or wetland soils. Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil.

The wetlands flagged in the Project corridors generally exhibited the soil characteristics of a dark surface horizon (A horizon) overlying grayish (10YR 5/1) to grayish brown (10YR 4/1), sandy loam subsoils with common redoximorphic features. As described below, this is typical of the loamy till parent material sediments in which many of the soils in the region are formed. The upland soils within the forested uplands lacked a low chroma matrix and had typical matrix chromas ranging between 3 and 6. In wetlands, the hydric soil showed evidence of a seasonal high water table in the form of low chroma matrix and redoximorphic features, indicating that the soils experience anaerobic conditions from prolonged saturation thereby meeting the definition of a hydric soil in some instances. The upland and more transitional area soils have developed redoximorphic features common to somewhat poorly to moderately well drained soils but did not exhibit the required low chroma matrix and as a result were not classified as hydric soils. In addition, as a result of glacial till environment, the subsoil (B) and substratum (C) horizons of both hydric and non-hydric soils commonly contain layers of loose stony material on steeper slopes with loamy materials, which are not necessarily indicative of an aquic moisture regime or reducing conditions.

Table 4-1 Summary of Wetlands within Project Area				
Figure 2 8.5” x 11” Sheet Number	**Wetland ID**	**Wetland Types and Associations**	**Associated Wetland Impact**	**Cowardin Classification**
4	AN1	Isolated forested wetland. Contains VP1	No direct impact	PFO1
4	AN2	Isolated forested wetland. Bat radar within wetland	0.005 acre/228 sq. ft. Access road.	PFO4
4	AN3	Isolated forested wetland	No direct impact	PFO1
4	AN4	Isolated forested wetland. Contains VP2	No direct impact	PFO1
4	AN5	Isolated forested wetland. Contains VP3	No direct impact	PFO1
4	AN6	Isolated forested wetland	No direct impact	PFO1
3	AN7	Isolated forested wetland straddling property line	No direct impact	PFO1
3, 4	AN8	Forested wetland draining southeast associated with intermittent stream AN9	0.001 acre/34 sq. ft. Access road.	PFO4
3	AN10	Isolated forested wetland within skidder trail	No direct impact	PFO1
1, 3	AN11	Isolated forested wetland with ephemeral inlet and outlet	No direct impact	PFO1
1	AN12	Isolated forested wetland within skidder trail	No direct impact	PFO1
1, 3	AN13	Isolated forested wetland along ATV trail	No direct impact	PFO1

Table 4-1 Summary of Wetlands within Project Area				
Figure 2 8.5" x 11" Sheet Number	**Wetland ID**	**Wetland Types and Associations**	**Associated Wetland Impact**	**Cowardin Classification**
1, 3	AN14	Isolated forested wetland within skidder trail	No direct impact	PFO1
1	AN15	Isolated forested wetland within skidder trail	No direct impact	PFO1
1	AN16	Very small isolated wetland along old skidder trail	No direct impact	PFO1
1	AN18	6 forested wetland areas draining north associated with perennial stream AN17	No direct impact	PFO1/4 & PSS1
1	AN20	Isolated scrub-shrub wetland within transmission ROW	No direct impact	PSS1
1	AN21	Isolated scrub-shrub wetland within transmission ROW	No direct impact	PSS1
1	AN22	Isolated forested wetland within skidder trail	0.004 acre/170 sq. ft. Access road.	PFO1
1	AN23	Isolated forested wetland within skidder trail	No direct impact	PFO1
4	AN24	Isolated forested wetland. Associated with VP 5. ATV trail within wetland.	No direct impact	PFO1
4	AN25	Isolated forested wetland. Associated with VP 4.	No direct impact	PFO4
5	AN26	Forested wetland draining to the northwest along property line	No direct impact	PFO1
5	AN27	Forested wetland draining to the southeast. Associated with intermittent stream AN28.	0.028 acre/ 1,218 sq. ft. Access Road	PFO1

Table 4-1 Summary of Wetlands within Project Area				
Figure 2 8.5" x 11" Sheet Number	**Wetland ID**	**Wetland Types and Associations**	**Associated Wetland Impact**	**Cowardin Classification**
1	AN30	Isolated forested wetland with ephemeral inlet and outlet	0.02 acre/869 sq. ft. Substation	PFO1
1	AN31	Isolated scrub-shrub wetland within transmission ROW	0.016 acre/708 sq. ft. Transmission tap structure and guys	PSS1
1	AN32	Isolated scrub-shrub wetland within transmission ROW	0.032 acre/1,392 sq. ft. Access Road	PSS1
1	AN33	Isolated forested wetland within skidder trail	No direct impact	PFO1
1	AN35	Isolated forested an scrub-shrub wetland located in ROW and to the North of the ROW	No direct impact	PFO1/PSS1
4	AN36	Isolated forested wetland with peat soils	No direct impact	PFO1
4	AN37	Isolated forested wetland adjacent to ATV trail	No direct impact	PFO1
4	AN38	Isolated forested wetland with potential vernal pool	No direct impact	PFO1
5	AN41	Isolated forested wetland.	0.06 acre/2,584 sq. ft. Turbine 9.	PFO1
4	AN1000	Isolated forested wetland	0.022 acre/963 sq. ft. Turbine 4.	PFO1
2	AN-LD 1	Isolated forested wetland.	No direct impact	PFO1
2	AN-LD 2	Isolated forested and scrub-shrub wetland.	No direct impact	PFO/PSS1
2	AN-LD 3	Isolated forested wetland	No direct impact	PFO1
2	AN-LD 4	Isolated scrub-shrub wetland. Formerly borrow pit area.	0.02 acre/955 sq. ft. Temporary staging area.	PSS1
TOTAL IMPACT			**0.21 acre/9,121 sq. ft.**	

4.4 Wetland Descriptions

The following narratives briefly characterize the delineated wetlands summarized in Table 4-1. Refer to Figure 2 for the location of these wetlands within the project study area and landscape in

Attachment A.

Wetland AN1 is a deciduous mixed forest wetland dominated by red maple (*Acer rubrum*), and black spruce (*Picea mariana*). It is located within a pocket of ledge along the ridgeline of Tuttle Hill. This wetland also contains Vernal Pool 1.

Wetland AN2 is a deciduous mixed forest wetland dominated by yellow birch (*Betula alleghaniensis*) and black spruce. It is located within a pocket of ledge along the ridgeline of Tuttle Hill.

Wetlands AN3, AN4 and AN5 are deciduous forested wetlands dominated by red maple. They are located within pockets of ledge along the ridgeline of Tuttle Hill. Wetland AN4 contains Vernal Pool 2, and wetland AN5 contains Vernal Pool 3.

Wetland AN6 is a deciduous forest wetland dominated by red maple. It is located within a pocket of ledge along the ridgeline between Tuttle Hill and Willard Mountain.

Wetland AN7 is a very small deciduous forest wetland dominated by red maple. It is located along a stone wall within a pocket of ledge along the ridgeline between Tuttle Hill and Willard Mountain.

Wetland AN8 is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a swale draining from Wetland AN7 towards the southeast. An intermittent stream segment (Stream AN9) is located within this wetland. The stream flows between very large boulders; eventually the hydrology disappears as the slope increases along the southeast boundary of the wetland.

Wetlands AN10, AN11 and AN12 are deciduous forest wetlands dominated by yellow birch and green ash (*Fraxinus pennsylvanica*). They are located in hillside seeps created by skidder activity.

Wetland AN13 is a deciduous forest wetland dominated by red maple. It is located within a hillside seep created by skidder activity. An ATV access trail traverses the northwestern portion of this wetland.

Wetlands AN14 and AN15 are deciduous forest wetlands dominated by yellow birch and green ash. They are located in hillside seeps created by skidder activity.

Wetland AN16 is a very small deciduous forest wetland dominated by red maple. It is located within an old skidder trail to the north of the transmission ROW.

Wetland AN18 is a wetland complex associated with perennial stream AN17. Six components of this wetland complex were individually identified as wetlands AN18a, b, c, d, e and f. Component AN18a is an area of scrub shrub within the existing transmission corridor; it is dominated by red osier dogwood (*Cornus stolonifera*), green ash, and black willow (*Salix nigra*). Wetlands AN18 b, c, d, e and f are deciduous mixed forested wetlands dominated by green ash, yellow birch, and red maple. Each of these wetlands has been impacted by logging activity.

Wetlands AN20 and AN21 are deciduous scrub shrub wetlands dominated by red maple, meadowsweet (*Spiraea latifolia*), and steeplebush (*Spiraea tomentosa*). They are located within the existing transmission corridor.

Wetlands AN22 and AN23 are deciduous forest wetlands dominated by red maple, yellow birch and green ash. They are located in hillside seeps created by skidder activity.

Wetland AN24 is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. An ATV trail traverses the through the middle of this wetland, from north to south. This wetland also contains Vernal Pool 5.

Wetland AN25 is an evergreen mixed forest wetland dominated by eastern hemlock (*Tsuga canadensis*) and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. This wetland contains Vernal Pool 4.

Wetland AN26 is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. This wetland drains to the northwest.

Wetland AN27 is a deciduous mixed forest wetland dominated by red maple, yellow birch, and black spruce. It is located within the saddle area at the northern base of Willard Mountain. The wetland drains to the southeast and feeds Intermittent Stream AN28 which drains to the southeast.

Wetland AN30 is a very small deciduous forest wetland dominated by red maple. It receives ephemeral flow from wetland AN31 which is located upslope (and within the existing transmission corridor). This wetland has an ephemeral drainage that flows towards intermittent stream AN29 to the north.

Wetlands AN31 and AN32 are deciduous scrub shrub wetlands dominated by red maple, meadowsweet and maleberry (*Lyonia lingustrina*). They are located within the existing transmission corridor. Wetland AN31 ephemerally drains to the north into Wetland AN30.

Wetland AN33 is a very small deciduous forest wetland dominated by red maple. It is located within a hillside seep created by skidder activity.

Wetland AN35 is primarily a forested wetland dominated by red maple, but includes an area of scrub shrub. The scrub shrub component is located within the existing transmission corridor, on the southern portion of the wetland, and is dominated by winterberry (*Ilex verticillata*).

Wetland AN36 is an isolated forested wetland dominated by red maple. This wetland contains organic soils. It is located in a saddle area and is near an ATV trail.

Wetland AN37 is a small isolated deciduous forest wetland dominated by red maple. It has an ephemeral drainage that flows west across an ATV trail that is adjacent to the wetland.

Wetland AN38 is an isolated deciduous forest wetland dominated by red maple, with a thick understory of winterberry shrubs. It has an ephemeral drainage that flows northwest through a steep boulder area. This wetland contains an area which has been identified as a potential vernal pool.

Wetland AN41 is an isolated deciduous forest wetland dominated by red maple with a sparse understory of red maple and yellow birch saplings and a dense herbaceous layer dominated by cinnamon fern. This wetland is located at the base of a long bouldery slope.

Wetland AN1000 is an isolated deciduous forest wetland dominated by red maple with an understory of winterberry shrubs and a patchy herbaceous layer of cinnamon fern and three-seeded sedge. This wetland is located in a concave area that drains to the east, and the soils are saturated to within 10-inches of the surface.

Wetland AN-LD 1 is a deciduous forest wetland dominated by red maple (*Acer rubrum*). It is located within a depression on a terrace located above the North Branch River valley. Soils are saturated and are sandy with a cemented restrictive layer.

Wetland AN-LD 2 is a deciduous forest wetland dominated by red maple with a lesser component of highbush blueberry and meadowsweet. It is located in a flat area on a terrace above the North Branch River valley. An old borrow pit is directly adjacent to the wetland boundary. Soils are saturated and are sandy.

Wetland AN-LD 3 is deciduous forested wetland dominated by red maple. It is located within a depression on a terrace located above the North Branch River valley. Soils are saturated and are sandy. An intermittent stream channel (AN-LD-INT 1) carries surface water and disperses in this wetland area.

Wetland AN-LD 4 is a deciduous scrub-shrub wetland dominated by speckled alder. It is located within an old borrow pit excavation on a terrace above the North Branch River valley. Soils are sandy, saturated and surface water was present at the time of survey.

4.5 Waterbody Descriptions

The following narratives briefly characterize the identified perennial and intermittent watercourses summarized in Table 4-2. Refer to Figure 2 in Attachment A for the location of these watercourses within the project study area.

Table 4-2
Summary of Streams within Project Area

Figure 2 8.5" x 11" Sheet Number	**Stream ID**	**Flow Regime**	**Associated Impact**	**Associated Wetland(s)**
2	AN9	Intermittent	No direct impact	AN8
1	AN17	Perennial	74 linear feet, 4 foot wide channel	AN18a,b,c,d,e,f
1	AN19	Intermittent	No direct impact	Tributary to AN17
4	AN28	Intermittent	No direct impact	AN27

4	AN28a	Intermittent	No direct impact	
1	AN29	Intermittent	156 linear feet, 1 foot wide channel	
1	AN34	Intermittent	No direct impact	Flows into AN17
2	AN40	Intermittent	No direct impact	
2	AN-LD-INT 1	Intermittent	No direct impact	AN_LD 3
TOTAL IMPACT			**230 linear ft./ 452 sq. ft.**	

Stream AN9 is an intermittent stream with a sandy substrate. The average width of the stream is 2 feet and the bank height is less than one foot. There was approximately 1 inch of flowing water in the stream at the time of the wetland delineation survey (in late summer, 2011). The stream channel commences within wetland AN8 and disperses within the same wetland due to slopes and a bouldery landscape, which allows for subsurface flow.

Stream AN17 is perennial stream with a gravel/cobble substrate. The average width of the stream is 4 feet and the bank height averages approximately one foot. There was approximately 5 inches of flowing water at the time of the delineation. The stream flows into the survey area from the south and then out to the north, flowing towards Route 9. Intermittent Streams AN19 and AN34 flow into this stream.

Stream AN19 is an intermittent stream with a sandy substrate. The average width of the stream is approximately 1 foot and the bank height is less than one foot. There was approximately 1 inch of flowing water at the time of the delineation. The stream channel commences in a forested setting, within a seep on a slope, and flows into Stream AN17.

Stream AN28 is an intermittent stream with a gravel/sand substrate. The average width of the stream is approximately 3 feet and the bank height is less than one a foot. There were approximately 4 inches of flowing water at the time of the delineation. The stream channel commences within wetland AN27 and flows to the southeast.

Stream AN28a is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately 2 feet and the bank height averages approximately one foot. There were approximately 2 inches of flowing water at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland as it flows down slope. This dispersal is due to slopes and a bouldery landscape, which allows for subsurface flow.

Stream AN29 is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately one foot, and the bank height is less than one foot. There was no flowing water in the streambed at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland as it flows down slope. This dispersal is due to slopes and a bouldery landscape, which allows for subsurface flow.

Stream AN34 is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately 3 feet and the bank height is less than one foot. There were approximately 4 inches of flowing water at the time of the delineation. The stream channel commences in a forested setting within a seep on a slope and flows into Stream AN17.

Stream AN40 is an intermittent stream with a gravel/cobble substrate. The average width of the stream is 2 feet and the bank height averaged around a foot. There were approximately 2 inches of flowing water at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland downslope due to slopes and a bouldery landscape, which allows for subsurface flow.

Stream AN-LD-INT 1 is an intermittent stream with a sandy substrate that originates in a logging trail upslope and south of the site. The average width of the stream is 1-2 feet and the bank height is less than one foot. The channel was dry at the time of the wetland delineation survey (in July 2012). The stream channel disperses within wetland AN-LD 3.

Table 4-3 Soil Description Summary					
Soil Names	**Symbol**	**% Slopes**	**Hydric (y/n)**	**Parent Material**	**Drainage Class**
Lyman-Tunbridge-Rock outcrop complex	161C	3-15	N	Lyman: Loamy Till Underlain by Schist Bedrock; Tunbridge: Loamy Till Underlain by Granite	Lyman: Somewhat Excessively Drained; Tunbridge: Well Drained
Lyman-Tunbridge-Rock outcrop complex	161D	15-35	N	Lyman: Loamy Till Underlain by Schist Bedrock; Tunbridge: Loamy Till Underlain by Granite	Lyman: Somewhat Excessively Drained; Tunbridge: Well Drained
Tunbridge-Lyman-Monadnock complex, stony	160B	3-8	N	Tunbridge: Loamy Till Underlain by Granite; Lyman: Loamy Till Underlain by Schist Bedrock; Monadnock: Loam Underlain by Sandy Till	Tunbridge: Well Drained; Lyman: Somewhat Excessively Drained; Monadnock: Well Drained
Tunbridge-Lyman-Monadnock complex, stony	160C	8-15	N	Tunbridge: Loamy Till Underlain by Granite; Lyman: Loamy Till Underlain by Schist Bedrock; Monadnock: Loam Underlain by Sandy Till	Tunbridge: Well Drained; Lyman: Somewhat Excessively Drained; Monadnock: Well Drained
Marlow stony loam	77C	8-15	N	Loamy Till	Well Drained
Marlow stony loam	77D	15-35	N	Loamy Till	Well Drained
Rock outcrop	399			Granite	Excessively Drained
Colton Loamy Sand	22C	8-15	N	Sandy and Gavelly Outwash	Excessively Drained

4.6 Natural Resource Conservation Service Soil Series Descriptions

The following are the abbreviated descriptions of each of the relevant soil types taken from the USDA (Natural Resource Conservation Service) Official Soil Series Descriptions Online Soils Database and the Soil Survey Geographic Database (SSURGO) for Hillsborough County, New Hampshire, Western Part (USDA & NRCS 2009). Additional information regarding relevant soil characteristics are also summarized in Table 4-3. Soils mapping of the Project area is in Attachment A, Figure 3.

Tunbridge-Lyman-Monadnock complex, stony

Tunbridge Series: These very moderately deep, well drained soils formed in loamy till of Wisconsin age derived mainly from micaceous schist, gneiss, and phyllite. They are on mountain side slopes, mountain tops, mountain ridges, hill tops, and hill slopes. Slope ranges from 0 to 75 percent. The A horizon is typically very friable dark brown sandy loam, with weak fine granular structure. The B horizon is typically reddish brown to yellowish brown silt loams.

It is friable with subangular blocky structure. Bedrock is usually encountered at 28 inches.

Lyman Series: These shallow, somewhat excessively drained soils formed thin mantle of till and frost fractured rock fragments derived principally from gray, greenish gray, or nearly black mica schist rocks with lesser amounts of phyllite, granite, and gneiss. They are found on rocky hills, mountains and high plateaus. Slopes range from 3 to 35 percent. Ap horizons are typically black and 6 inches or more thick. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam or silt loam in the fine-earth fraction. The E horizon generally is a reddish gray fine sandy loam, with very weak fine granular structure. The B horizon generally is a dark red to brown loam, with very weak fine granular structure. Bedrock is usually encountered at a depth of 18 inches.

Monadnock Series: These very deep, well drained soils formed in a loamy mantle underlain by acid, sandy till of Wisconsin age derived mainly from schist, granite, gneiss, and quartzite. They are on upland hills, plains, and mountain sideslopes. Slope ranges from 0-60 percent. The A horizon is typically very friable brown fine sandy loam. The E horizon generally is a light brownish gray sandy loam with a weak fine granular structure. The B horizon generally is reddish to yellowish brown, 5 to 23 inches deep, very friable with a weak fine granular structure. The C horizon consists of gravelly loamy sand extending to a depth of 65 inches.

Lyman-Tunbridge-Rock outcrop complex

Lyman Series: These shallow, somewhat excessively drained soils formed thin mantle of till and frost fractured rock fragments derived principally from gray, greenish gray, or nearly black mica schist rocks with lesser amounts of phyllite, granite, and gneiss. They are found on rocky hills, mountains and high plateaus. Slopes range from 3 to 35 percent. Ap horizons are typically black and 6 inches or more thick. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam or silt loam in the fine-earth fraction. The E horizon generally is a reddish gray fine sandy loam, with very weak fine granular structure. The B horizon generally is a dark red to brown loam, with very weak fine granular structure. Bedrock is usually encountered at a depth of 18 inches.

Tunbridge Series: These very moderately deep, well drained soils formed in loamy till of Wisconsin age derived mainly from micaceous schist, gneiss, and phyllite. They are on mountain side slopes, mountain tops, mountain ridges, hill tops, and hill slopes. Slope ranges from 0 to 75 percent. The A horizon is typically very friable dark brown sandy loam, with weak fine granular structure. The B horizon is typically reddish brown to yellowish brown silt loams. It is friable with subangular blocky structure. Bedrock is usually encountered at 28 inches.

Marlow Series

These well drained soils formed in dense, loamy till derived mainly from mica schist, granite, and phyllite. They are found on drumlins and glaciated uplands. They are moderately deep to a densic contact and very deep to bedrock. Slope ranges from 0 to 60 percent. Typically, the A horizon is a friable very dark gray fine sandy loam with a moderate fine granular structure. Generally, the E horizon is gray fine sandy loam, with very friable consistence. The B horizon consists of a yellowish red to olive fine sandy loam with a weak fine granular structure. The C horizon is an olive gray fine sandy loam with moderate medium platy structure and is very firm.

Colton Series

These excessively drained soils formed in sandy and gravelly glacial outwash derived mainly from granite till. They are found on outwash terraces, kames, and eskers. Slope ranges from 0 to 50 percent. The solum ranges from 18 to 36 inches in thickness. The content of rock fragments ranges from 10 to 55 percent in the solum and 35 to 70 percent in the C horizon. Some pedons have an A horizon that is dark reddish brown. The E horizon has gray to dark gray. The A and E horizons range from loamy coarse sand to find sandy loam. The B horizon is dark reddish brown to reddish yellow. It ranges from coarse sand to loamy sand. The C horizon is dark reddish gray to reddish yellow.

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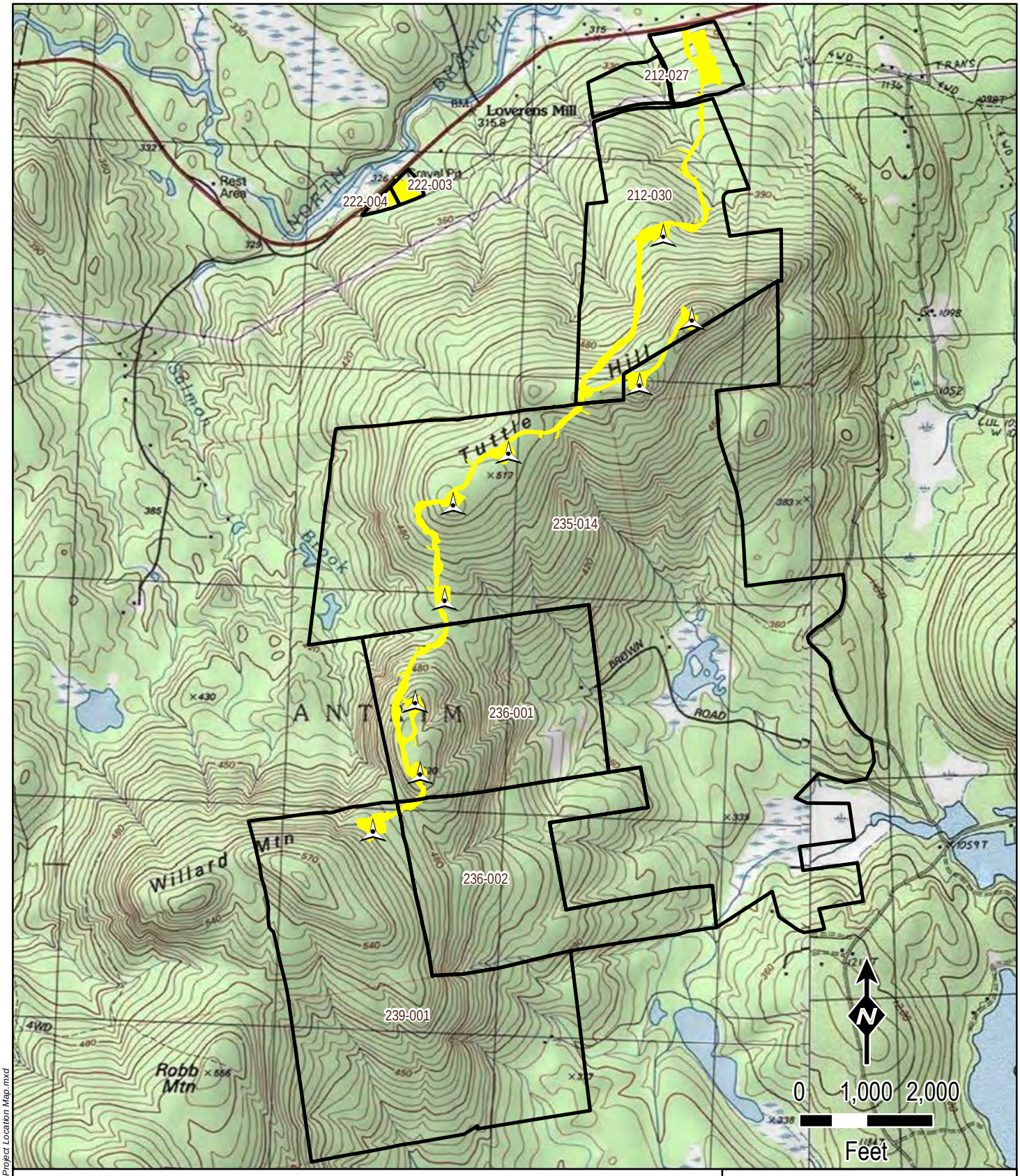
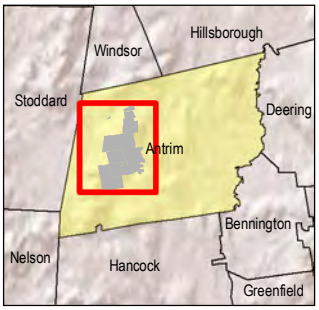
ATTACHMENT A
PROJECT MAPPING





Legend

- Proposed WTG
- Project Footprint
- Project Parcels

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

354 KEENE ROAD, ANTRIM, NH

Figure 1

Project Location Map

Produced by: TRC | 1/29/2015

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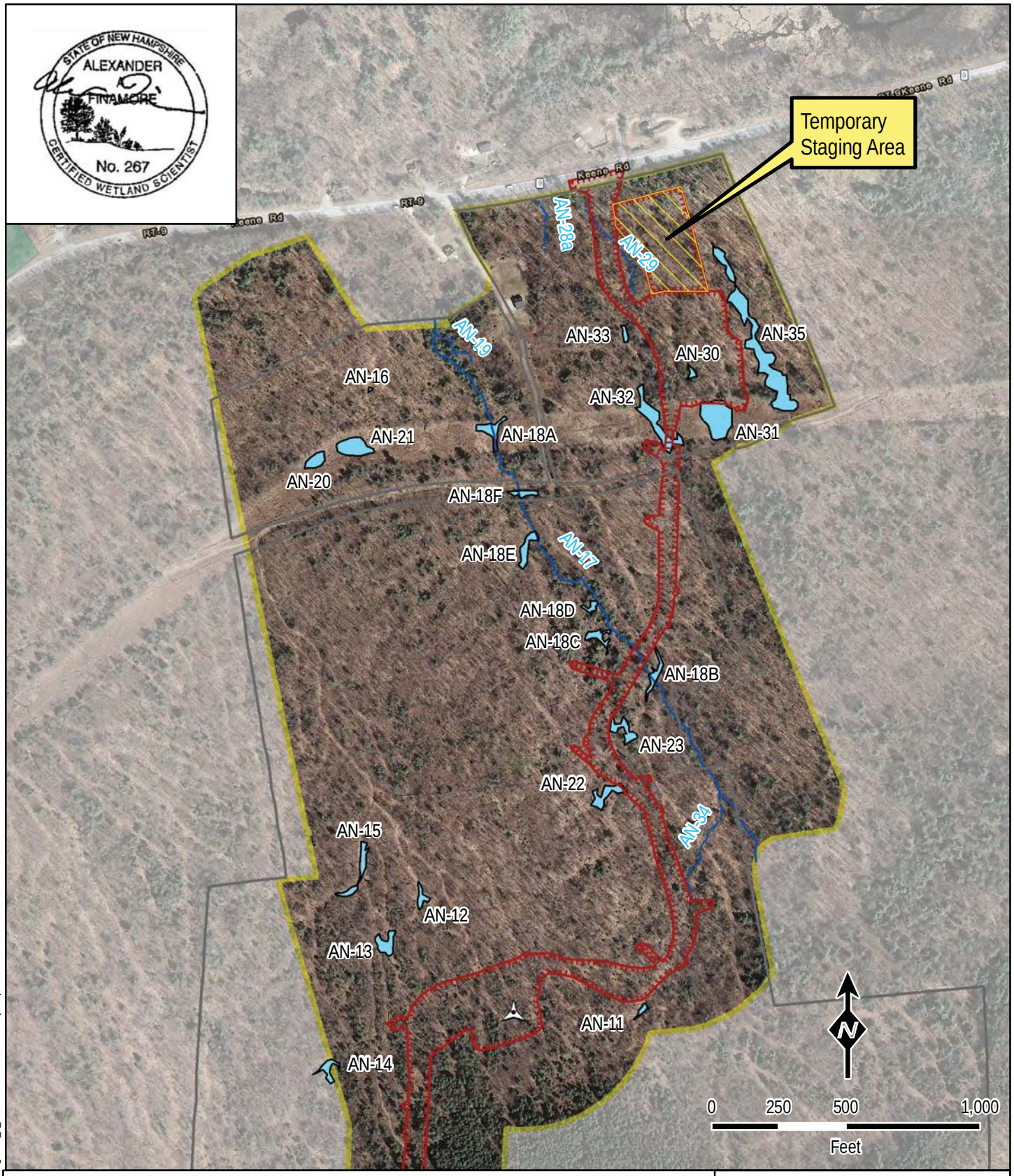
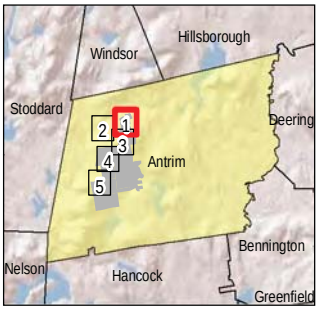


STATE OF NEW HAMPSHIRE
ALEXANDER FINAMORE
No. 267
CERTIFIED WETLAND SCIENTIST



Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Natural Resource Survey Map

Map 1 of 5

Produced by: TRC | 7/6/2015

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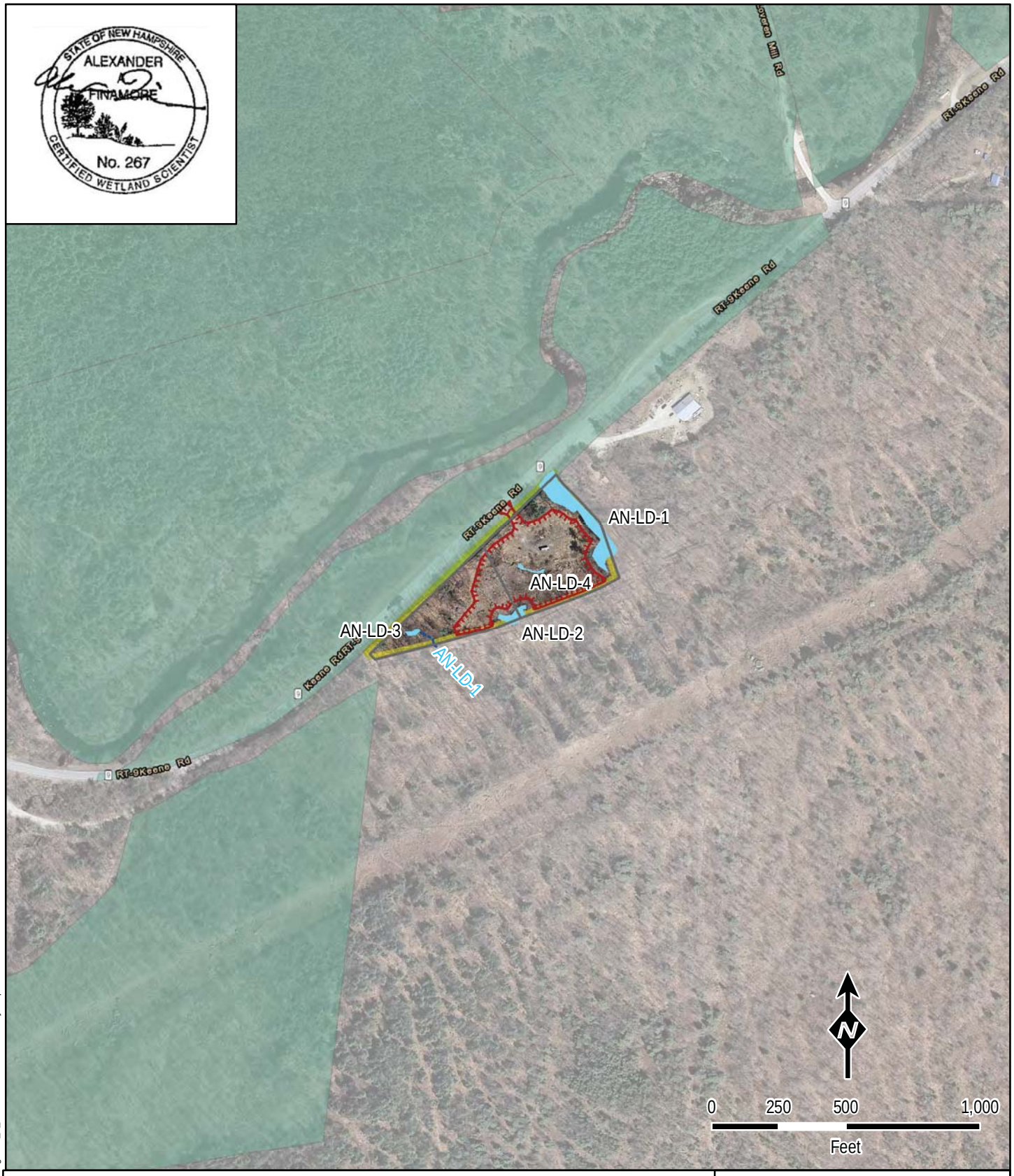

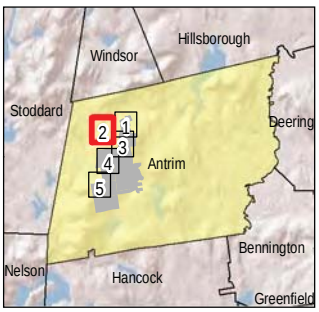

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Natural Resource Survey Map

Map 2 of 5

Produced by: TRC | 7/6/2015

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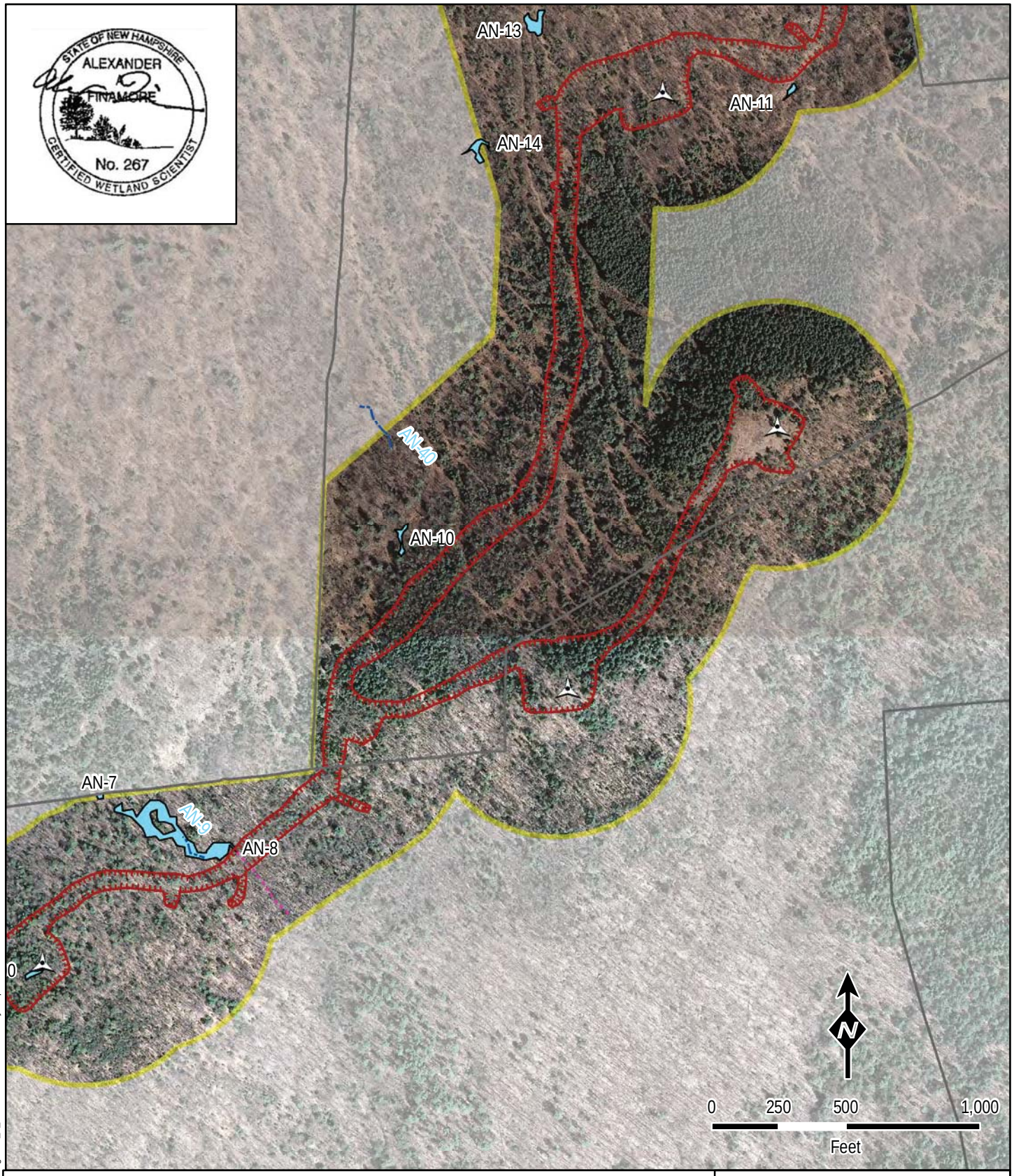

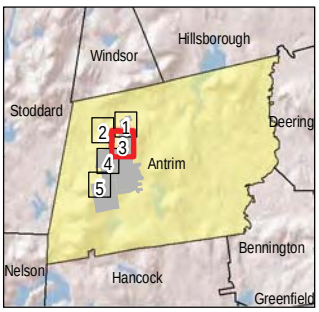

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Natural Resource Survey Map

Map 3 of 5

Produced by: TRC | 7/6/2015

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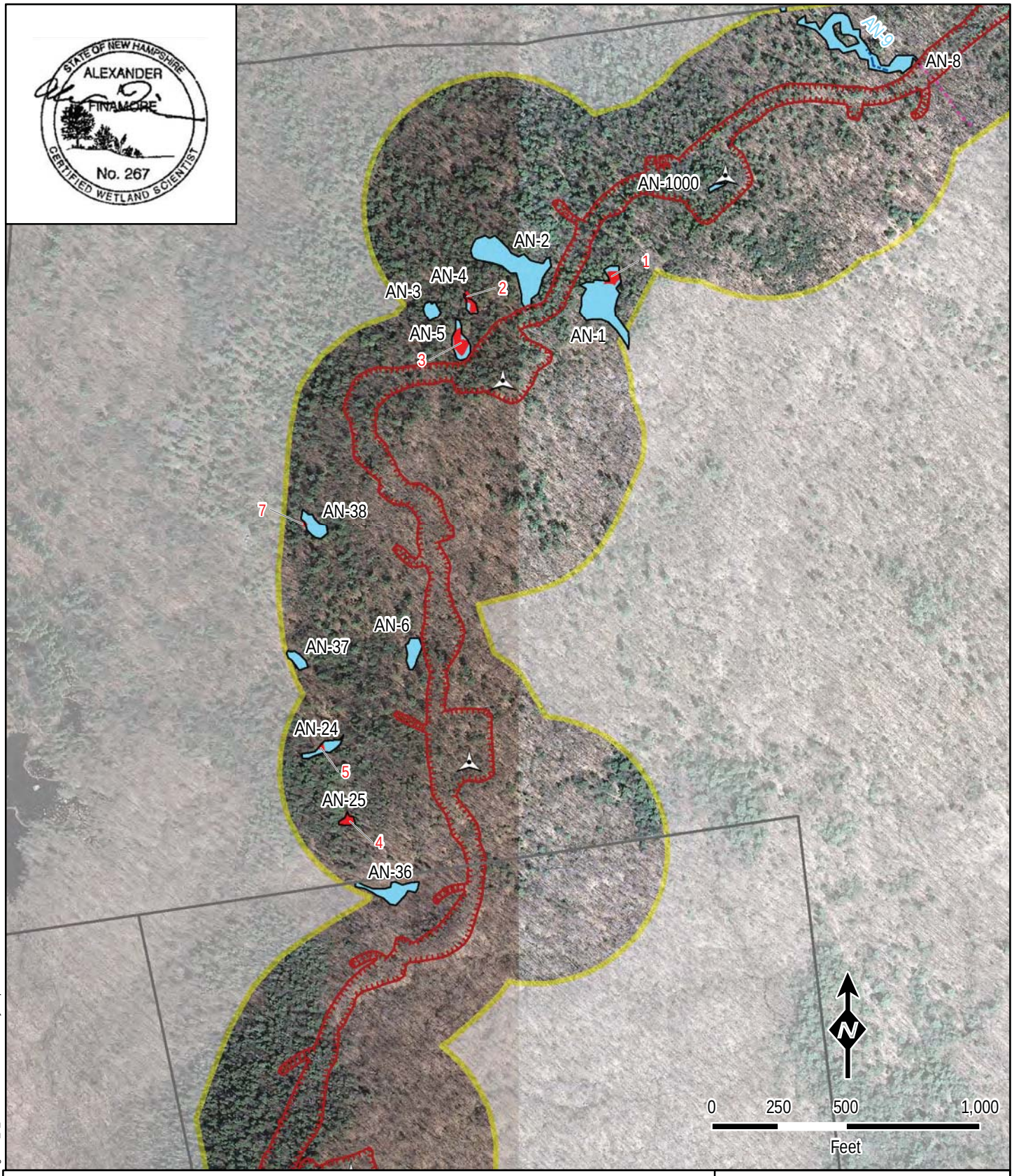

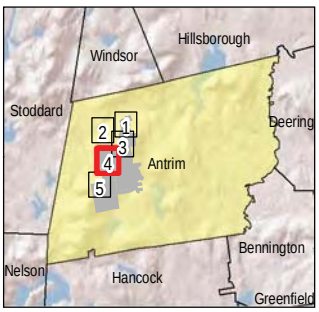

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label

Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Natural Resource Survey Map

Map 4 of 5

Produced by: TRC | 7/6/2015

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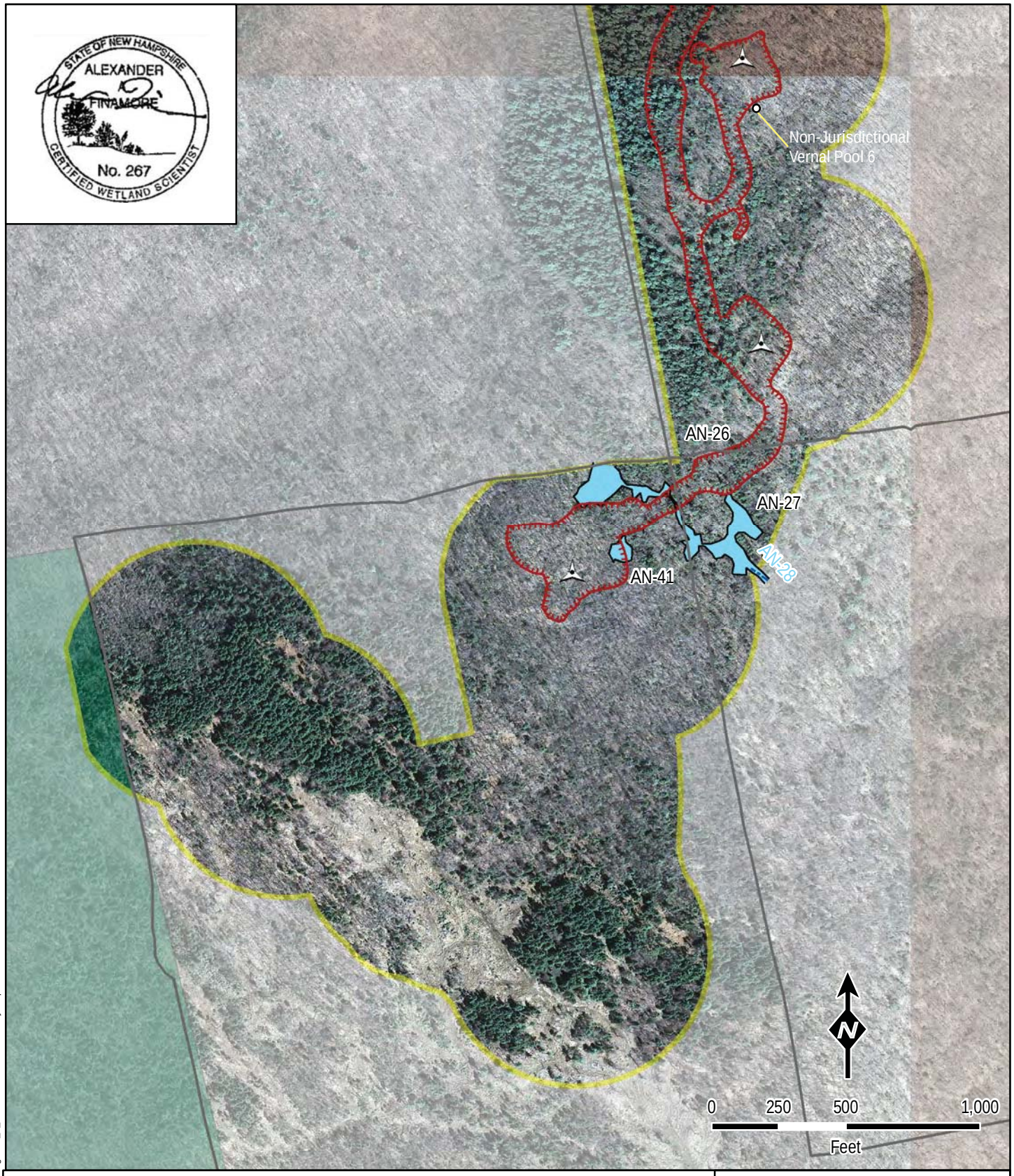

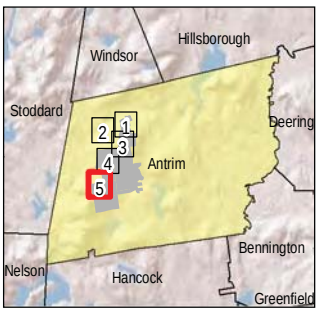

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label

Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Natural Resource Survey Map

Map 5 of 5

Produced by: TRC | 7/6/2015

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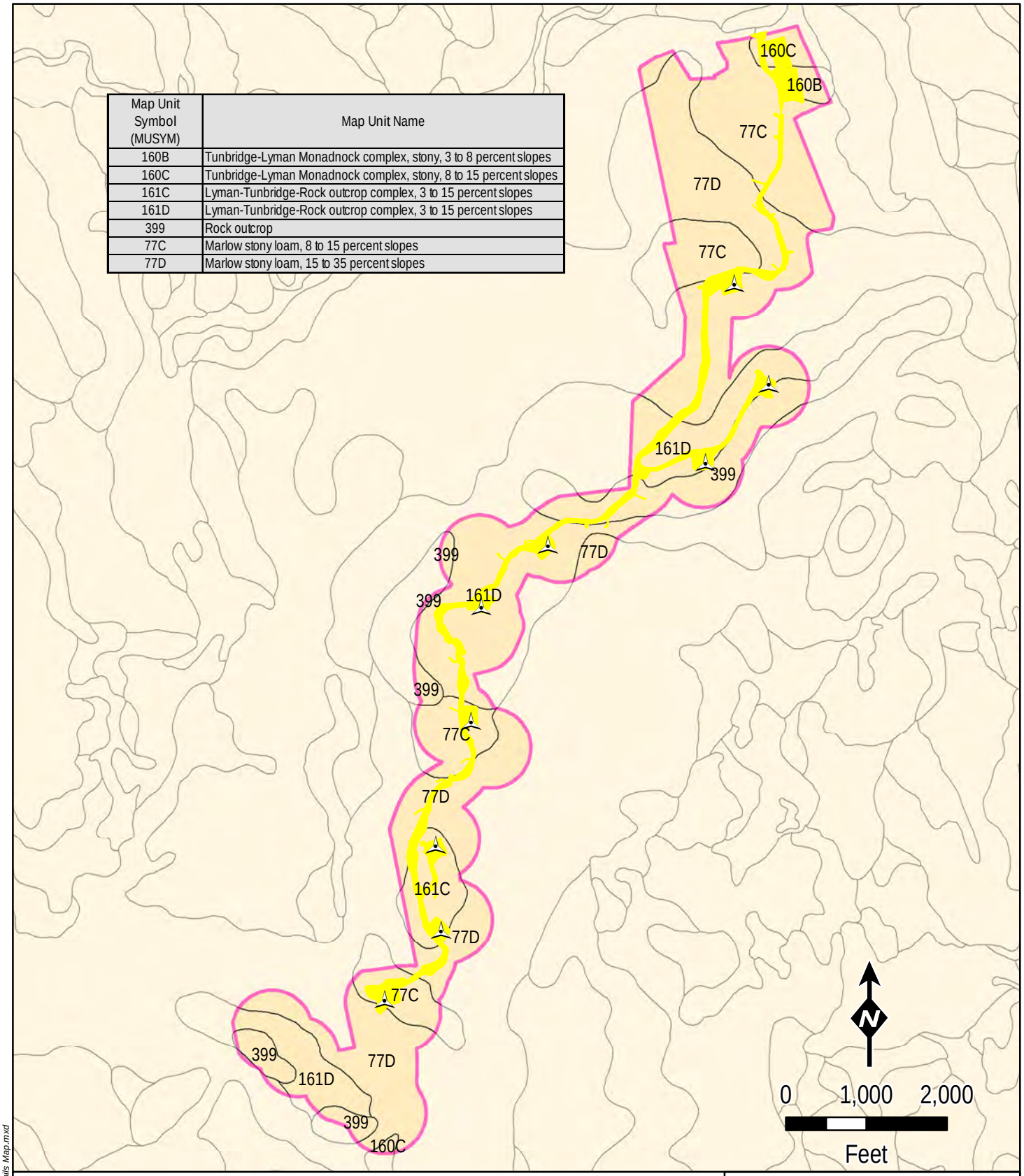
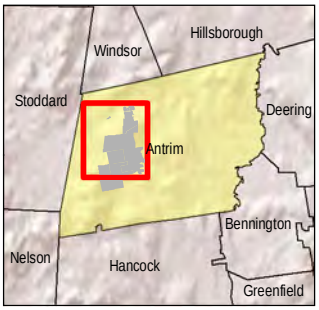
Map Unit Symbol (MUSYM)	Map Unit Name
160B	Tunbridge-Lyman Monadnock complex, stony, 3 to 8 percent slopes
160C	Tunbridge-Lyman Monadnock complex, stony, 8 to 15 percent slopes
161C	Lyman-Tunbridge-Rock outcrop complex, 3 to 15 percent slopes
161D	Lyman-Tunbridge-Rock outcrop complex, 3 to 15 percent slopes
399	Rock outcrop
77C	Marlow stony loam, 8 to 15 percent slopes
77D	Marlow stony loam, 15 to 35 percent slopes





Legend

- Proposed WTG
- Proposed Project Area - 57 Acres
- Resource Survey Area
- MUSYM — NRCS SSURGO Soils

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

354 KEENE ROAD, ANTRIM, NH

Figure 3

NRCS Soil Survey Map

Produced by: TRC | 7/8/2015

V:\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure 3 Soils Map.mxd

ATTACHMENT B
PROFESSIONAL RESUME

ALEXANDER A. FINAMORE

EDUCATION

B.S., Environmental Science and Management, University of Rhode Island, 2004

AREAS OF EXPERTISE

Mr. Finamore has over 7 years experience encompassing

- Federal, State, and Local Environmental Permitting
- Wetland Delineations and Reports
- Subsurface Wastewater Disposal Design
- Vernal Pool Identification and Assessment
- Land Survey
- Preliminary Environmental Site Assessments (PESS)

REPRESENTATIVE EXPERIENCE

Mr. Finamore has completed or managed numerous wetland delineations and vernal pool surveys throughout the northeastern U.S., ranging from single house lots to large linear projects. Mr. Finamore has also completed or managed the permitting process and/or the preparation of technical documents in accordance to State and Federal site location, wetlands, and subsurface wastewater disposal system regulations.

Reunion Energy, Grandpa's Knob Wind Farm, Natural Resource Mapping – VT Wetland Scientist, 2011 Mr. Finamore organized and directed field crews, performed wetland delineations along corridor of proposed 20 wind turbines and collector line, performed vernal pool surveys, attended site walk with client and pertinent state and federal regulators.

Eolian Wind, Antrim Wind Farm, Natural Resource Mapping – NH Wetland Scientist, 2011 Mr. Finamore performed wetland delineations along corridor of proposed 10 wind turbines and collector line, performed vernal pool surveys, attended site walk with client and pertinent state and federal regulators

VELCO, Lines 350 & 370, Natural Resource Mapping – VT Wetland Scientist, 2011 Mr. Finamore organized and directed field crews, performed wetland delineations, wetland function and values assessments, stream classifications, and natural community surveys along existing transmission line right-of-ways

National Grid, 015S, Turtle Sweeps – MA Ecologist, 2011 Mr. Finamore performed Turtle Sweeps for Wood Turtle and Eastern Box Turtle for line restoration work due to tornado damage

National Grid, S9, Natural Resource Mapping – MA Wetland Scientist, 2011 Mr. Finamore performed wetland delineations for reconductoring along the S9 line.

National Grid, Y151, Natural Resource Mapping – MA Wetland Scientist, 2011 Mr. Finamore performed wetland delineations for reconductoring along the A126 line.

Spectra Energy, Wetland Permitting – CT, MA, RI Wetland Scientist, 2011 Mr. Finamore performed local and state wetland permitting for installation of launcher and receiver barrels for pipeline segments throughout Algonquin's distribution system

MBCR, Natural Resource Mapping – Walpole, MA Wetland Scientist, 2010 Mr. Finamore delineated watersheds for culvert sizing using GIS and ground truthing.

Central Maine Power, Co., Natural Resource Mapping and State and Federal Permit Application – ME Wetland Scientist, 2009-Present Mr. Finamore performed wetland delineations along proposed transmission line corridors, performed vernal pool surveys, performed routine stormwater inspections, performed invasive species inventories, field located resources and setbacks for pre-construction, prepared GIS maps and data tables for associated NRPA, Site Location of Development, and Army Corps of Engineers permitting, provided survey assistance on structure location and conductor height over major river crossings.

First Wind & 3Phase, Land Survey – Lincoln, ME Survey Technician, 2010 Mr. Finamore performed structure layout for the collector and transmission line servicing 40 wind turbines.

NSTAR, Natural Resource Mapping – RI Wetland Scientist, 2010 Mr. Finamore performed wetland delineations along an existing transmission line.

Town of Morrisville, FERC Pre-application Document – Morrisville, VT Ecologist, 2010 Mr. Finamore collected existing condition information regarding geologic, soil, wetland, wildlife, botanical, and rare, threatened and endangered species pertinent to FERC relicensing from federal, state, and local agencies for four hydroelectric dams.

Bangor Hydro, Natural Resource Mapping and State and Federal Permit Application, Ellsworth – ME Wetland Scientist, 2009-2010 Mr. Finamore performed wetland delineations along proposed transmission line corridors, assessed potential access roads for viability, prepared GIS maps and data tables for associated NRPA, Site Location of Development, and Army Corps of Engineers permitting.

National Grid, A127, Natural Resource Mapping – MA Wetland Scientist, 2009 Mr. Finamore performed wetland delineations for reconductoring along the A126 line.

VELCO, PV-20, Natural Resource Mapping – VT Wetland Scientist, 2009 Mr. Finamore performed wetland delineations, wetland function and values assessments, stream classifications, and natural community surveys along existing transmission line right-of-ways.

L.L. Bean, Inc., Natural Resource Mapping and Permitting – Freeport, ME Wetland Scientist & Survey Technician, 2005-2008 Mr. Finamore performed wetland delineations, vernal pool surveys, topographic mapping, and prepared Natural

Resource Protection Act applications and assisted with Site Location of Development Act applications.

First Wind, Natural Resource Mapping – ME Wetland Scientist, 2006-2007 Mr. Finamore performed wetland delineations and vernal pool surveys for the First Wind Stetson Wind Farm and associated transmission line corridors.

Bangor Hydro Electric Company, Natural Resource Mapping – Bangor, ME Wetland Scientist, 2008 Mr. Finamore performed wetland delineations and vernal pool surveys for the rebuild of Line 64.

Maine Coast Heritage Trust, Natural Resource Inventory – Stonington, ME Wetland Scientist, 2009 Mr. Finamore performed a Natural Resource inventory of 11 properties managed by MCHT. Inventories included gathering of available GIS data, historical aerial photography, and historical accounts of land use, vegetative inventories, soil evaluations, and wildlife observations.

Zyacorp Cinemagic, Natural Resource Mapping, Environmental Permit Applications, Environmental Site Assessment and Topographic Mapping – Westbrook and Saco, ME Environmental Scientist & Survey Technician, 2005-2009 Mr. Finamore performed wetland delineations, vernal pool surveys, topographic mapping on commercial properties. Mr. Finamore prepared environmental permit applications under Maine's Natural Resource Protection Act and a Preliminary Environmental Assessment on the Saco property.

New England College, Environmental Permit Application – Henniker, NH Wetland Scientist, 2009 Mr. Finamore prepared environmental permit applications under New Hampshire's Fill and Dredge in Wetlands statute for the installation of an athletic field.

Bangor Retirement Community, Wetland Mitigation Design and Monitoring – Bangor, ME Wetland Scientist, 2007-2009 Mr. Finamore assisted with the design of a wetland creation area mitigating over an acre of wetland disturbance. Mr. Finamore performed annual monitoring of the mitigation area and submitted reports to the Maine Department of Environmental Protection.

Town of Wells, Salt Marsh Erosion Monitoring – Wells, ME Wetland Scientist, 2004 Mr. Finamore mapped erosional features within a coastal marsh and inventoried vegetation and wildlife

CERTIFICATIONS AND TRAINING
Certified Wetland Scientist, #267, NH
Licensed Site Evaluator, #391, ME

AFFILIATIONS
Maine Association of Wetland Scientists – Member (Member since 2005)
Maine Association of Site Evaluators – Member (Member since 2005)

ATTACHMENT C
U.S. ARMY CORPS OF ENGINEERS
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN1 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** hummocky **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

VP-1, Isolated, No overland drainage

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 4	
Water Table Present?	Yes ◉ No ○	Depth (inches): 3	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN1 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	50.0%	FAC
2. Picea mariana	20	☑	50.0%	FACW-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	10	☑	25.0%	FAC
2. Picea mariana	15	☑	37.5%	FACW-
3. Vaccinium corymbosum	15	☑	37.5%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Carex intumescens	15	☑	45.5%	FACW+
2. Osmunda cinnamomea	10	☑	30.3%	FACW
3. Coptis trifolia	8	☑	24.2%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	33	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	8	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	83	x 2 =	166	
FAC species	30	x 3 =	90	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	113	(A)	256	(B)

Prevalence Index = B/A = 2.265

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN1 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	2/1	100%					Muck	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Ledge

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN1 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN1 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	25	☑	30.1%	FACU
2. Picea rubens	33	☑	39.8%	FACU
3. Acer rubrum	25	☑	30.1%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	83	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Picea rubens	10	☑	55.6%	FACU
2. Fagus grandifolia	3	☐	16.7%	FACU
3. Vaccinium angustifolium	5	☑	27.8%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	18	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	5	☐	16.1%	FACU
2. Lycopodium obscurum	10	☑	32.3%	FACU
3. Maianthemum canadense	3	☐	9.7%	FAC-
4. trillium spp.	3	☐	9.7%	
5. Trientalis borealis	10	☑	32.3%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	31	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	38	x 3 =	114	
FACU species	91	x 4 =	364	
UPL species	0	x 5 =	0	
Column Totals:	129	(A)	478	(B)

Prevalence Index = B/A = 3.705

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN1 Upland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%					Loam	
6-7	2.5Y	5/3	100%					Fine Loamy Sand	
7-16	10YR	4/3	100%					Fine Sandy Loam	
16+	2.5Y	5/6	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

AN1 Wetland

AN1 Wetland

AN1 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN2 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated Bat Radar location

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 9	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN2 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea mariana	25	☑	55.6%	FACW-
2. Betula alleghaniensis	20	☑	44.4%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Picea mariana	10	☑	33.3%	FACW-
2. Spiraea latifolia	10	☑	33.3%	FAC+
3. Vaccinium corymbosum	10	☑	33.3%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Eriophorum virginicum	100	☑	90.9%	OBL
2. Osmunda cinnamomea	5	☐	4.5%	FACW
3. Rubus hispidoides	5	☐	4.5%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	110	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	100	x 1 =	100	
FACW species	55	x 2 =	110	
FAC species	30	x 3 =	90	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	185	(A)	300	(B)

Prevalence Index = B/A = 1.622

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN2 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1	100%					Muck	
8-15	2.5Y	5/1	100%					Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN2 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** none **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN2 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	35	☑	58.3%	FACU-
2. Pinus strobus	25	☑	41.7%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	10	☑	18.2%	FAC
2. Betula papyrifera	5	☐	9.1%	FACU
3. Fagus grandifolia	10	☑	18.2%	FACU
4. Picea rubens	25	☑	45.5%	FACU
5. Betula alleghaniensis	5	☐	9.1%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	55	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Vaccinium angustifolium	5	☑	50.0%	FACU-
2. Trientalis borealis	5	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	10	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	105	x 4 =	420	
UPL species	0	x 5 =	0	
Column Totals:	125	(A)	480	(B)

Prevalence Index = B/A = 3.840

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN2 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Loam	
4-12	10YR	4/6	100%						Fine Sandy Loam	
12-16	10YR	5/8	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN2 Wetland

AN2 Wetland

AN2 Wetland

AN2 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN3 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** hummocky **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

No outlet, No VP

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN3 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Picea mariana	15	☑	37.5%	FACW-
2. Acer rubrum	5	☐	12.5%	FAC
3. Vaccinium corymbosum	20	☑	50.0%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	15	☑	42.9%	FACW
2. Carex stricta	20	☑	57.1%	OBL
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	35	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	20	x 1 =	20	
FACW species	50	x 2 =	100	
FAC species	25	x 3 =	75	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	95	(A)	195	(B)

Prevalence Index = B/A = 2.053

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN3 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%					Sandy Loam	
5-10	2.5Y	4/2						Loamy Sand	
10+									ledge

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ledge

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN3 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** none **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

bouldery

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN3 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea rubens	66	☑	66.7%	FACU
2. Pinus strobus	33	☑	33.3%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	99	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Picea rubens	10	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	10	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Quercus rubra	3	☑	50.0%	FACU-
2. Vaccinium angustifolium	3	☑	50.0%	FACU-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	6	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	115	x 4 =	460	
UPL species	0	x 5 =	0	
Column Totals:	115	(A)	460	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN3 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%					Loam	
3-5	2.5Y	5/1	100%					Sand	
5-12	10YR	4/4	100%					Loamy Sand	
12+									bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN3 Wetland

AN3 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN4 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** hummocky **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

VP-2

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

sphagum carpet

VEGETATION - Use scientific names of plants

Sampling Point: AN4 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	50	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	15	☑	33.3%	FAC
2. Vaccinium corymbosum	30	☑	66.7%	FACW-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	5	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	5	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	65	x 3 =	195	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	100	(A)	265	(B)

Prevalence Index = B/A = 2.650

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN4 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%					Loam	
6-10	2.5Y	4/1	100%					Fine Sandy Loam	
10+									Bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN4 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN4 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	30	☑	37.5%	FACU-
2. Pinus strobus	25	☑	31.3%	FACU
3. Picea rubens	25	☑	31.3%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula papyrifera	5	☐	10.0%	FACU
2. Picea rubens	15	☑	30.0%	FACU
3. Vaccinium angustifolium	25	☑	50.0%	FACU-
4. Fagus grandifolia	5	☐	10.0%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Lycopodium obscurum	5	☑	50.0%	FACU
2. Abies balsamea	5	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	10	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	14.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	135	x 4 =	540	
UPL species	0	x 5 =	0	
Column Totals:	140	(A)	555	(B)

Prevalence Index = B/A = 3.964

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN4 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%					Loam	
3-4	2.5Y	5/1	100%					Fine Sand	
4-12	10YR	4/6	100%					Sandy Loam	
12+									Ledge

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Ledge

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN4 Wetland

AN4 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN5 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** hummocky **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated, VP-3

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sphagum carpet

VEGETATION - Use scientific names of plants

Sampling Point: AN5 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	15	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	15	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Vaccinium corymbosum	25	☑	62.5%	FACW-
2. Picea mariana	5	☐	12.5%	FACW-
3. Spiraea latifolia	10	☑	25.0%	FAC+
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Scirpus cyperinus	66	☑	100.0%	FACW+
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	66	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	96	x 2 =	192	
FAC species	25	x 3 =	75	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	121	(A)	267	(B)

Prevalence Index = B/A = 2.207

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN5 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-27	10YR	2/1						Peaty Muck	
27+									bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR R, MLRA 149B)
- [ ] Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- [ ] Thin Dark Surface (S9) (LRR R, MLRA 149B)
- [ ] Loamy Mucky Mineral (F1) LRR K, L)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 27

Hydric Soil Present? Yes (●) No ( )

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN5 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** hummocky **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN5 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea rubens	33	☑	39.8%	FACU
2. Pinus strobus	50	☑	60.2%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	83	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Vaccinium corymbosum	5	☑	100.0%	FACW-
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	5	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Gaultheria procumbens	3	☑	27.3%	FACU
2. Vaccinium angustifolium	5	☑	45.5%	FACU-
3. Quercus rubra	3	☑	27.3%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	11	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	0	x 3 =	0	
FACU species	94	x 4 =	376	
UPL species	0	x 5 =	0	
Column Totals:	99	(A)	386	(B)

Prevalence Index = B/A = 3.899

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN5 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/3						Loam	
4-10	2.5Y	5/1						Fine Loamy Sand	
10-16	10YR	4/4						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN5 Upland

AN5 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN6 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

sphagum carpet

VEGETATION - Use scientific names of plants

Sampling Point: AN6 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	25	☑	50.0%	FAC
2. Betula alleghaniensis	25	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Vaccinium corymbosum	20	☑	36.4%	FACW-
2. Acer rubrum	10	☐	18.2%	FAC
3. Picea mariana	25	☑	45.5%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	55	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Iris versicolor	15	☐	14.9%	OBL
2. Coptis trifolia	33	☑	32.7%	FACW
3. Cornus canadensis	20	☐	19.8%	FAC-
4. Osmunda cinnamomea	33	☑	32.7%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	101	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	15	x 1 =	15	
FACW species	111	x 2 =	222	
FAC species	80	x 3 =	240	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	206	(A)	477	(B)

Prevalence Index = B/A = 2.316

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN6 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%					Loam	
4-8	2.5Y	4/1	100%					Sandy Loam	
8-9	2.5Y	6/1	100%					Loamy Sand	
9+									Bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 9

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 10-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN6 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN6 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	45	☑	56.3%	FACU-
2. Acer rubrum	25	☑	31.3%	FAC
3. Tsuga canadensis	10	☐	12.5%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	8	☑	61.5%	FACU
2. Picea rubens	5	☑	38.5%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	13	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Trientalis borealis	5	☑	33.3%	FAC
2. Medeola virginiana	5	☑	33.3%	UPL
3. Vaccinium angustifolium	3	☑	20.0%	FACU-
4. Aralia nudicaulis	2	☐	13.3%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	15	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	73	x 4 =	292	
UPL species	5	x 5 =	25	
Column Totals:	108	(A)	407	(B)

Prevalence Index = B/A = 3.769

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN6 Upland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Loam	
4-6	2.5Y	5/1	100%						Sandy Loam	
6-15	10YR	4/6	100%						Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

AN6 Wetland

AN6 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN7 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** hummocky **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated, extends past rock wall, ledge pocket

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN7 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	25	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Vaccinium corymbosum	50	☑	33.1%	FACW-
2. Acer rubrum	25	☐	16.6%	FAC
3. Spiraea latifolia	10	☐	6.6%	FAC+
4.	66	☑	43.7%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	151	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	66	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	66	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	116	x 2 =	232	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	176	(A)	412	(B)

Prevalence Index = B/A = 2.341

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%					Loam	
6-7	2.5Y	5/1	100%					Fine Loamy Sand	
7-9	2.5Y	4/2	100%					Very Fine Sandy Loam	
9+									bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 9

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN7 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Ridgetop **Local relief (concave, convex, none):** concave **Slope:** 12.5 % / 7.1 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉		
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN7 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Betula papyrifera	15	☑	20.5%	FACU
2. Quercus rubra	33	☑	45.2%	FACU-
3. Acer rubrum	25	☑	34.2%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	73	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	33	☑	76.7%	FACU
2. Picea rubens	10	☑	23.3%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	43	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Vaccinium angustifolium	25	☑	71.4%	FACU-
2. Lycopodium obscurum	5	☐	14.3%	FACU
3. Polygonatum pubescens	5	☐	14.3%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	35	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	25	x 3 =	75	
FACU species	121	x 4 =	484	
UPL species	5	x 5 =	25	
Column Totals:	151	(A)	584	(B)

Prevalence Index = B/A = 3.868

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN7 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-2	10YR	3/2						Loam	
2-4	2.5YR	5/1						Fine Loamy Sand	
4-9	10YR	4/4						Fine Sandy Loam	
9+									bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 9

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN7 Wetland

AN7 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN8 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Narrow PFO drainage through boulder field into overland ephemoral drainages to south with upland species

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN8 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Betula alleghaniensis	25	☑	50.0%	FAC
2. Acer rubrum	25	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Vaccinium corymbosum	5	☑	23.8%	FACW-
2. Spiraea latifolia	10	☑	47.6%	FAC+
3. Picea rubens	3	☐	14.3%	FACU
4. Betula alleghaniensis	3	☐	14.3%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	21	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Impatiens capensis	75	☑	82.4%	FACW
2. Osmunda cinnamomea	5	☐	5.5%	FACW
3. Onoclea sensibilis	3	☐	3.3%	FACW
4. Carex intumescens	3	☐	3.3%	FACW+
5. violet spp.	5	☐	5.5%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	91	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	91	x 2 =	182	
FAC species	63	x 3 =	189	
FACU species	3	x 4 =	12	
UPL species	0	x 5 =	0	
Column Totals:	157	(A)	383	(B)

Prevalence Index = B/A = 2.439

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN8 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	2.5YR	2/1	100%						Loam	
8-10	2.5Y	5/1	100%						Fine Sand	
10-20	2.5Y	4/2	95%	2.5Y	6/1	5%	D	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN8 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 7.0 % / 4.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN8 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	25	☑	28.4%	FACU-
2. Pinus strobus	33	☑	37.5%	FACU
3. Betula papyrifera	10	☐	11.4%	FACU
4. Acer rubrum	20	☑	22.7%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	88		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	40	☑	80.0%	FACU
2. Picea rubens	10	☑	20.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	1	☐	3.7%	FACU
2. Medeola virginiana	1	☐	3.7%	UPL
3. Polygonatum pubescens	25	☑	92.6%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	27		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	119	x 4 =	476	
UPL species	26	x 5 =	130	
Column Totals:	165	(A)	666	(B)

Prevalence Index = B/A = 4.036

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN8 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%					Loam	
4-6	2.5Y	5/1	100%					Loamy Sand	
6-8	10YR	4/4	100%					Very Fine Sandy Loam	
8+									Bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 8

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN8 Upland

AN8 Wetland

AN8 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN10 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks: (Explain alternative procedures here or in a separate report.)

Small isolated PFO seep into skidder trail

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 1

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

drainage patterns saturated to surface, 1" flowing water near seep

VEGETATION - Use scientific names of plants

Sampling Point: AN10 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Betula alleghaniensis	15	☑	50.0%	FAC
2. Fraxinus pennsylvanica	15	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	50	☑	76.9%	FACU
2. Betula alleghaniensis	15	☑	23.1%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	65	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	33	☑	42.3%	FACW
2. Impatiens capensis	40	☑	51.3%	FACW
3. Carex lurida	5	☐	6.4%	OBL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	78	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	88	x 2 =	176	
FAC species	30	x 3 =	90	
FACU species	50	x 4 =	200	
UPL species	0	x 5 =	0	
Column Totals:	173	(A)	471	(B)

Prevalence Index = B/A = 2.723

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN10 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Sandy Loam	
6-10	2.5Y	4/2	90%	10YR	5/8	10%	C	M	Fine Sandy Loam	
10+										bouldery

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bouldery

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 11-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN10 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN10 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Tsuga canadensis	40	☑	42.1%	FACU
2. Betula papyrifera	25	☑	26.3%	FACU
3. Fraxinus pennsylvanica	15	☐	15.8%	FACW
4. Picea rubens	15	☐	15.8%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	95	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	50	☑	76.9%	FAC
2. Picea rubens	15	☑	23.1%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	65	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Trientalis borealis	20	☑	25.0%	FAC
2. Aralia nudicaulis	50	☑	62.5%	FACU
3. Dryopteris intermedia	10	☐	12.5%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	80	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	70	x 3 =	210	
FACU species	155	x 4 =	620	
UPL species	0	x 5 =	0	
Column Totals:	240	(A)	860	(B)

Prevalence Index = B/A = 3.583

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN10 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%					Loam	
5-7	2.5Y	5/1	100%					Fine Loamy Sand	
7-13	10YR	4/3	100%					Very Fine Loamy Sand	
13+									bouldery

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bouldery

Depth (inches): 13

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN10 Upland

AN10 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN11 Wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 7.0 % / 4.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

skiddered PSS below moose wallow

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN11 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.		☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Spiraea tomentosa	15	☑	75.0%	FACW
2. Betula alleghaniensis	5	☑	25.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Onoclea sensibilis	20	☑	27.4%	FACW
2. Scirpus cyperinus	20	☑	27.4%	FACW+
3. Carex crinita	25	☑	34.2%	OBL
4. Osmunda cinnamomea	5	☐	6.8%	FACW
5. Calamagrostis canadensis	3	☐	4.1%	FACW+
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	73		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	25	x 1 =	25	
FACW species	63	x 2 =	126	
FAC species	5	x 3 =	15	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	93	(A)	166	(B)

Prevalence Index = B/A = 1.785

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN11 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Loam	
6-7	2.5Y	4/1	100%						Fine Sandy Loam	
7-9	2.5Y	4/2	90%	10YR	4/6	10%	C		Fine Sandy Loam	
9+										rocky

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rocks

Depth (inches): 9

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN11 Up**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 20.0 % / 11.3 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN11 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	20	☑	22.2%	FACU
2. Acer saccharum	60	☑	66.7%	FACU-
3. Quercus rubra	10	☐	11.1%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	90	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Quercus rubra	20	☑	23.5%	FACU-
2. Picea rubens	20	☑	23.5%	FACU
3. Betula alleghaniensis	15	☐	17.6%	FAC
4. Acer saccharum	10	☐	11.8%	FACU-
5. Ostrya virginiana	20	☑	23.5%	FACU-
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	85	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	10	☑	76.9%	UPL
2. Trientalis borealis	3	☑	23.1%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	13	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	14.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	18	x 3 =	54	
FACU species	160	x 4 =	640	
UPL species	10	x 5 =	50	
Column Totals:	188	(A)	744	(B)

Prevalence Index = B/A = 3.957

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN11 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Loam	
4-5	2.5Y	4/1	100%						Fine Sandy Loam	
5-9	10YR	4/3	100%						Very Fine Sandy Loam	
9-15	10YR	4/6	100%						Very Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 15+

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN11 Upland

AN11 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an12 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Skiddered PSS

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 3	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an12 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Spiraea alba	25	☑	33.3%	FACW+
2. Spiraea tomentosa	50	☑	66.7%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	75		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Carex crinita	15	☑	23.1%	OBL
2. Onoclea sensibilis	25	☑	38.5%	FACW
3. Scirpus cyperinus	5	☐	7.7%	FACW+
4. Rubus hispidus	20	☑	30.8%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	65		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	15	x 1 =	15	
FACW species	125	x 2 =	250	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	140	(A)	265	(B)

Prevalence Index = B/A = 1.893

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an12 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%						Loam	
3-12	2.5Y	4/2	95%	10YR	4/6	5%	C	PL	Fine Sandy Loam	
12-16	2.5Y	4/1	95%	10YR	4/6	5%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an12 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉		
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

recently cut

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an12 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	15	☑	60.0%	FACU-
2. Tsuga canadensis	10	☑	40.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	20	☑	44.4%	FACU
2. Betula alleghaniensis	10	☑	22.2%	FAC
3. Acer saccharum	15	☑	33.3%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	90	☑	76.3%	UPL
2. Solidago canadensis	10	☐	8.5%	FACU
3. Rubus alumnus	10	☐	8.5%	FACU-
4. Dryopteris intermedia	5	☐	4.2%	FACU
5. Aralia nudicaulis	3	☐	2.5%	FACU
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	118	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	88	x 4 =	352	
UPL species	90	x 5 =	450	
Column Totals:	188	(A)	832	(B)

Prevalence Index = B/A = 4.426

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an12 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Loam	
4-5	2.5Y	5/1	100%						Fine Sandy Loam	
5-12	10YR	4/3	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

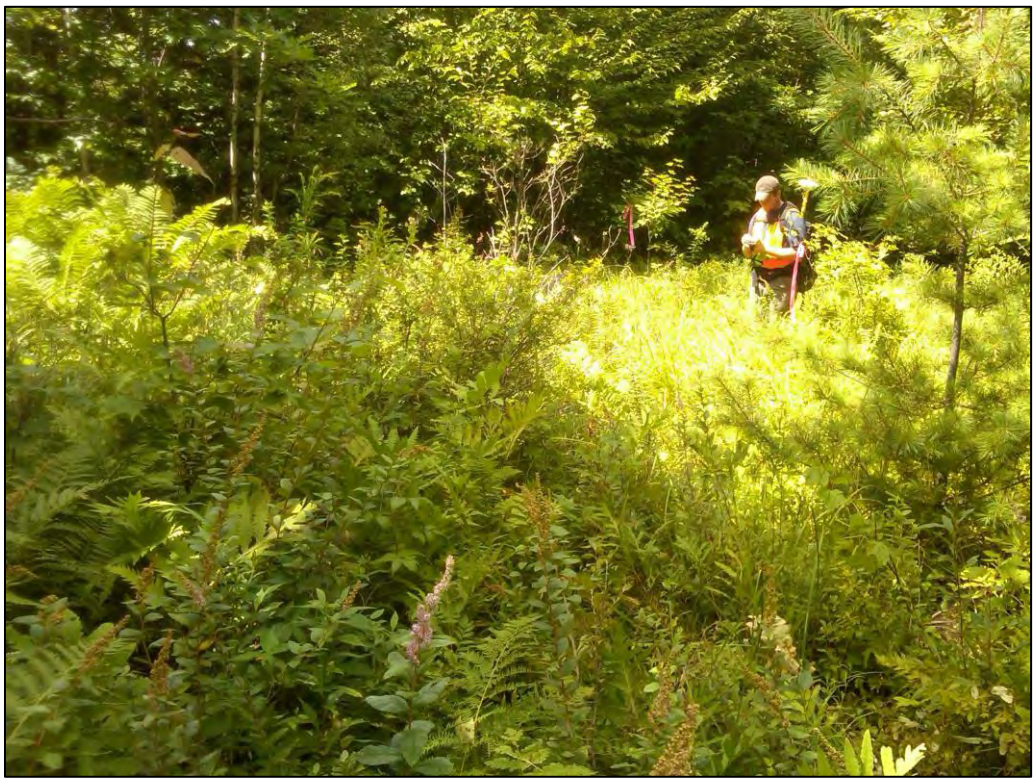
Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN12 Upland



AN12 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an13 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated lay down yard wetland adjacent to ATV trail

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 3	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an13 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Spiraea tomentosa	66	☑	72.5%	FACW
2. Acer rubrum	10	☐	11.0%	FAC
3. Spiraea alba	15	☐	16.5%	FACW+
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	91		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Carex lurida	8	☐	10.1%	OBL
2. Onoclea sensibilis	5	☐	6.3%	FACW
3. Eupatorium perfoliatum	3	☐	3.8%	FACW+
4. Rubus hispidus	15	☐	19.0%	FACW
5. Carex crinita	25	☑	31.6%	OBL
6. Scirpus cyperinus	3	☐	3.8%	FACW+
7. Carex trisperma	20	☑	25.3%	OBL
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	79		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	53	x 1 =	53	
FACW species	107	x 2 =	214	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	170	(A)	297	(B)

Prevalence Index = B/A = 1.747

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an13 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Loam	
5-6	2.5Y	4/1	100%						Fine Sandy Loam	
6-16	2.5Y	4/2	90%	10YR	5/8	10%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: boulders

Depth (inches): 16

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 12-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an13 upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 4.0 % / 2.3 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an13 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	10	☑	66.7%	FACU-
2. Picea rubens	5	☑	33.3%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	15	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	33	☑	32.0%	FACU
2. Prunus serotina	10	☐	9.7%	FACU
3. Acer saccharum	50	☑	48.5%	FACU-
4. Populus tremula	10	☐	9.7%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	103	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	75	☑	75.0%	FACU
2. Rubus hispidus	20	☑	20.0%	FACW
3. Dennstaedtia punctilobula	5	☐	5.0%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	100	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	0	x 3 =	0	
FACU species	193	x 4 =	772	
UPL species	5	x 5 =	25	
Column Totals:	218	(A)	837	(B)

Prevalence Index = B/A = 3.839

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an13 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Loam	
6-7	2.5Y	5/1	100%						Fine Loamy Sand	
7-17	10YR	4/3	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN13 Upland

AN13 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an14 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS within skidder trail

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

sphagnum 25% cover

VEGETATION - Use scientific names of plants

Sampling Point: an14 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Spiraea tomentosa	20	☑	57.1%	FACW
2. Acer rubrum	10	☑	28.6%	FAC
3. Fraxinus pennsylvanica	5	☐	14.3%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	35		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	40	☑	46.5%	FACW
2. Osmunda cinnamomea	10	☐	11.6%	FACW
3. Eupatoriadelphus maculatus	8	☐	9.3%	FACW
4. Scirpus cyperinus	5	☐	5.8%	FACW+
5. Carex lurida	15	☑	17.4%	OBL
6. Rubus idaeus	8	☐	9.3%	FAC-
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	86		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	15	x 1 =	15	
FACW species	88	x 2 =	176	
FAC species	18	x 3 =	54	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	121	(A)	245	(B)

Prevalence Index = B/A = 2.025

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an14 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Sandy Loam	
8-11	2.5Y	5/1	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bouldery

Depth (inches): 11

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN14 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

logged upland

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN14 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea rubens	20	☑	50.0%	FACU
2. Populus tremula	20	☑	50.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	40	☑	83.3%	FACU
2. Acer saccharum	8	☐	16.7%	FACU-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	48	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Thelypteris noveboracensis	25	☑	71.4%	FAC
2. Aralia nudicaulis	5	☐	14.3%	FACU
3. Trientalis borealis	5	☐	14.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	35	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	93	x 4 =	372	
UPL species	0	x 5 =	0	
Column Totals:	123	(A)	462	(B)

Prevalence Index = B/A = 3.756

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN14 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%					Sandy Loam	
5-10	2.5Y	5/3	100%					Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN14 Wetland

AN14 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an15 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** concave **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS within skidder trail

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 5	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an15 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Spiraea tomentosa	66	☑	81.5%	FACW
2. Acer rubrum	10	☐	12.3%	FAC
3. Fraxinus pennsylvanica	5	☐	6.2%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	81		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Carex lurida	20	☑	32.8%	OBL
2. Eupatoriadelphus dubius	5	☐	8.2%	FACW
3. Scirpus cyperinus	3	☐	4.9%	FACW+
4. Onoclea sensibilis	25	☑	41.0%	FACW
5. Carex crinita	8	☐	13.1%	OBL
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	61		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	28	x 1 =	28	
FACW species	104	x 2 =	208	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	142	(A)	266	(B)

Prevalence Index = B/A = 1.873

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an15 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-12	2.5Y	4/1	90%	10YR	4/6	10%	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Refusal

Depth (inches): 12

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an15 upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an15 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	25	☑	41.7%	FACU
2. Fraxinus americana	25	☑	41.7%	FACU
3. Betula alleghaniensis	10	☐	16.7%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	50	☑	83.3%	FACU
2. Fagus grandifolia	5	☐	8.3%	FACU
3. Picea rubens	5	☐	8.3%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Fraxinus americana	1	☐	12.5%	FACU
2. Acer saccharum	1	☐	12.5%	FACU-
3. Maianthemum canadense	5	☑	62.5%	FAC-
4. Polygonatum pubescens	1	☐	12.5%	UPL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	8	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	112	x 4 =	448	
UPL species	1	x 5 =	5	
Column Totals:	128	(A)	498	(B)

Prevalence Index = B/A = 3.891

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an15 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Loam	
8-16	10YR	4/3	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Refusal

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN15 Wetland

AN15 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an16 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Very small PEM wetland within wetland disturbance. Upslope of a small spring feature.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an16 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Spiraea alba	15	☑	50.0%	FACW+
2. Spiraea tomentosa	15	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Carex crinita	50	☑	60.2%	OBL
2. Scirpus cyperinus	5	☐	6.0%	FACW+
3. Scirpus atrovirens	5	☐	6.0%	OBL
4. Onoclea sensibilis	20	☑	24.1%	FACW
5. Impatiens capensis	3	☐	3.6%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	83		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	55	x 1 =	55	
FACW species	58	x 2 =	116	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	113	(A)	171	(B)

Prevalence Index = B/A = 1.513

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an16 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%						Loam	
7-16	2.5Y	4/2	95%	10YR	4/6	5%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** **Sampling Point:** **an16 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an16 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	20	☑	66.7%	FACU
2. Betula papyrifera	10	☑	33.3%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Pinus strobus	10	☐	19.6%	FACU
2. Fagus grandifolia	33	☑	64.7%	FACU
3. Viburnum lentago	5	☐	9.8%	FAC
4. Picea rubens	3	☐	5.9%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	51	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Rubus alumnus	10	☐	9.1%	FACU-
2. Dennstaedtia punctilobula	80	☑	72.7%	UPL
3. Acer saccharum	5	☐	4.5%	FACU-
4. Solidago canadensis	15	☐	13.6%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	110	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	106	x 4 =	424	
UPL species	80	x 5 =	400	
Column Totals:	191	(A)	839	(B)

Prevalence Index = B/A = 4.393

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an16 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%					Loam	
4-6	10YR	5/8	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stone refusal

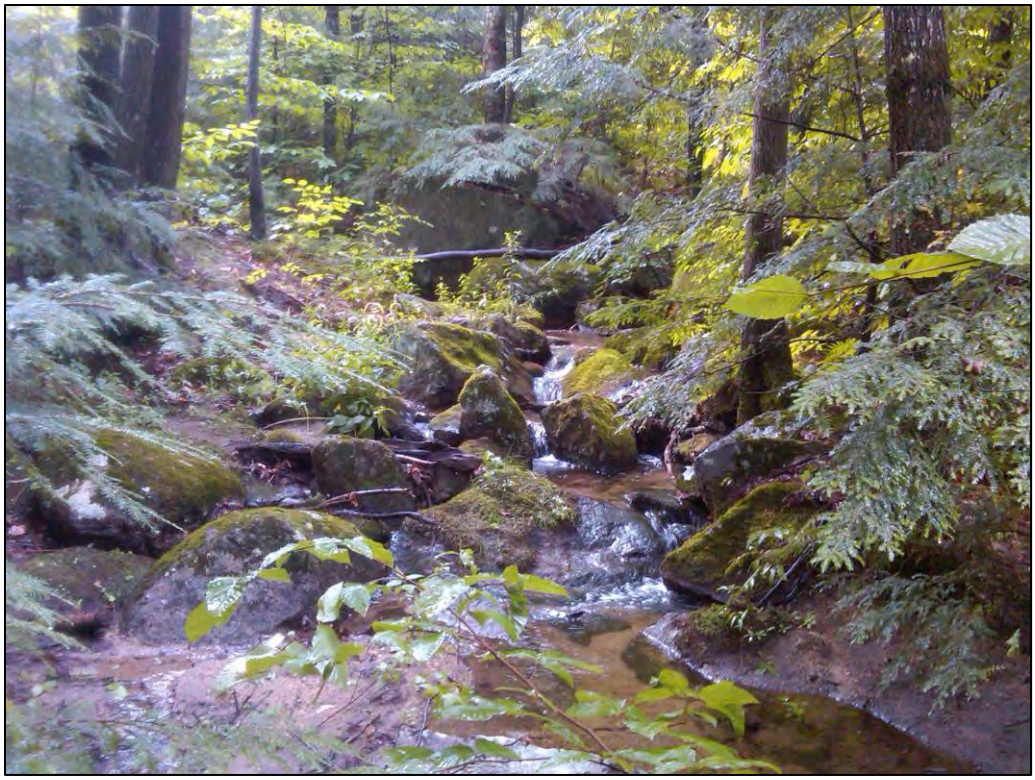
Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN16 Wetland

AN16 Wetland



AN17 Stream (associated with AN18 Wetland)

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an18a wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Gulch or Gully **Local relief (concave, convex, none):** concave **Slope:** 12.0 % / 6.8 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS wetland entirely within ROW associated with stream AN17. Stream flowing with 4-6 inches of water.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 7	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an18a wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Salix nigra	10	☑	76.9%	FACW+
2. Fraxinus pennsylvanica	0	☐	0.0%	FACW
3. Cornus stolonifera	3	☑	23.1%	FACW+
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	13		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Eupatoriadelphus dubius	0	☐	0.0%	FACW
2. Onoclea sensibilis	33	☑	38.4%	FACW
3. Scirpus cyperinus	8	☐	9.3%	FACW+
4. Carex crinita	10	☐	11.6%	OBL
5. Osmunda cinnamomea	25	☑	29.1%	FACW
6. Carex lurida	10	☐	11.6%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	86		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	20	x 1 =	20	
FACW species	79	x 2 =	158	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	99	(A)	178	(B)

Prevalence Index = B/A = 1.798

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an18a wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100%					Sandy Loam	
10-20	2.5Y	4/1	100%					gravelly sand	alluvial soils

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an18a upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 20.0 % / 11.3 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Maintained ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an18a upland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Phalaris arundinacea	50	☑	46.3%	FACW+
2. Dennstaedtia punctilobula	50	☑	46.3%	UPL
3. Solidago canadensis	8	☐	7.4%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	108		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	50	x 2 =	100	
FAC species	0	x 3 =	0	
FACU species	8	x 4 =	32	
UPL species	50	x 5 =	250	
Column Totals:	108	(A)	382	(B)

Prevalence Index = B/A = 3.537

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an18a upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100%					Sandy Loam	
10-20	10YR	4/4	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN18a Wetland

AN18a Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an18b wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS wetland within skidder trail crossing stream AN17. Courdory matting over stream

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an18b wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Spiraea tomentosa	33	☑	68.8%	FACW
2. Fraxinus pennsylvanica	15	☑	31.3%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	48		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	20	☐	14.8%	FACW
2. Osmunda cinnamomea	5	☐	3.7%	FACW
3. Carex trisperma	15	☐	11.1%	OBL
4. Carex lurida	20	☐	14.8%	OBL
5. Rubus hispidus	50	☑	37.0%	FACW
6. Aster umbellatus	25	☑	18.5%	FACW
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	135		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	35	x 1 =	35	
FACW species	148	x 2 =	296	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	183	(A)	331	(B)

Prevalence Index = B/A = 1.809

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an18b wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2							Fine Sandy Loam	
9-13	2.5Y	4/2	85%	10YR	5/8	15%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony refuse

Depth (inches): 13

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an18b upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉		
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an18b upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	25	☑	41.7%	FACU
2. Tsuga canadensis	25	☑	41.7%	FACU
3. Abies balsamea	10	☐	16.7%	FAC
4. Quercus rubra	0	☐	0.0%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	25	☑	45.5%	FAC
2. Acer saccharum	25	☑	45.5%	FACU-
3. Pinus strobus	5	☐	9.1%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	55	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	33	☑	33.7%	FACU
2. Thelypteris noveboracensis	60	☑	61.2%	FAC
3. Polygonatum pubescens	5	☐	5.1%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	98	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	95	x 3 =	285	
FACU species	113	x 4 =	452	
UPL species	5	x 5 =	25	
Column Totals:	213	(A)	762	(B)

Prevalence Index = B/A = 3.577

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an18b upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%					Loam	
7-14	10YR	4/3	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bouldery

Depth (inches): 14

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN18b Upland

AN18b Wetland

AN18 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18c wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS/PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated skidder disturbed wetland adjacent to Stream AN17. Boulders throughout wetland.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18c wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	5	☑	50.0%	FAC
2. Fraxinus pennsylvanica	5	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	10		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Carex crinita	25	☑	28.1%	OBL
2. Phalaris arundinacea	33	☑	37.1%	FACW+
3. Onoclea sensibilis	15	☐	16.9%	FACW
4. Carex lurida	8	☐	9.0%	OBL
5. Scirpus cyperinus	5	☐	5.6%	FACW+
6. Carex trisperma	3	☐	3.4%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	89		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	36	x 1 =	36	
FACW species	58	x 2 =	116	
FAC species	5	x 3 =	15	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	99	(A)	167	(B)

Prevalence Index = B/A = 1.687

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN18c wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Fine Sandy Loam	
6-14	2.5Y	4/1	90%	10YR	4/4	10%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 14

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18c upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

logged upland

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18c upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	15	☑	33.3%	FAC
2. Betula alleghaniensis	10	☑	22.2%	FAC
3. Picea rubens	10	☑	22.2%	FACU
4. Tsuga canadensis	10	☑	22.2%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer pensylvanicum	20	☑	44.4%	FACU
2. Quercus rubra	10	☑	22.2%	FACU-
3. Fagus grandifolia	5	☐	11.1%	FACU
4. Betula papyrifera	10	☑	22.2%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	50	☑	79.4%	UPL
2. Solidago canadensis	8	☐	12.7%	FACU
3. Rubus alumnus	5	☐	7.9%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	63	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	25	x 3 =	75	
FACU species	78	x 4 =	312	
UPL species	50	x 5 =	250	
Column Totals:	153	(A)	637	(B)

Prevalence Index = B/A = 4.163

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN18c upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Fine Sandy Loam	
6-10	2.5Y	5/1	100%						Fine Sandy Loam	
10-14	10YR	4/3	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 14

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN18c Wetland

AN18c Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18d wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** concave **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS associated with Stream AN17

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18d wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus pennsylvanica	15	☑	60.0%	FACW
2. Betula alleghaniensis	10	☑	40.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Onoclea sensibilis	80	☑	81.6%	FACW
2. Eupatoriadelphus dubius	5	☐	5.1%	FACW
3. Fraxinus pennsylvanica	3	☐	3.1%	FACW
4. Osmunda cinnamomea	10	☐	10.2%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	98		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	113	x 2 =	226	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	123	(A)	256	(B)

Prevalence Index = B/A = 2.081

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN18d wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%						Fine Sandy Loam	
7-11	2.5Y	4/2	90%	10YR	5/8	10%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an18d upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

logged upland

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an18d upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Tsuga canadensis	33	☑	43.4%	FACU
2. Populus tremula	10	☐	13.2%	FACU
3. Fraxinus pennsylvanica	33	☑	43.4%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	76	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	25	☑	33.3%	FAC
2. Fagus grandifolia	15	☑	20.0%	FACU
3. Pinus strobus	25	☑	33.3%	FACU
4. Betula papyrifera	10	☐	13.3%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	75	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Solidago canadensis	8	☐	18.6%	FACU
2. Rubus alumnus	5	☐	11.6%	FACU-
3. Dennstaedtia punctilobula	25	☑	58.1%	UPL
4. Trientalis borealis	5	☐	11.6%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	43	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	33	x 2 =	66	
FAC species	30	x 3 =	90	
FACU species	106	x 4 =	424	
UPL species	25	x 5 =	125	
Column Totals:	194	(A)	705	(B)

Prevalence Index = B/A = 3.634

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an18d upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Loam	
6-10	2.5Y	5/1	100%						Fine Loamy Sand	
10-16	10YR	4/3	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks:

Spodosol

AN18d Upland

AN18d Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18e Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** concave **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO adjacent to Stream AN17.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18e Wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus pennsylvanica	15	☑	30.0%	FACW
2. Acer rubrum	20	☑	40.0%	FAC
3. Betula alleghaniensis	15	☑	30.0%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	50	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	33	☑	27.3%	FACW
2. Onoclea sensibilis	33	☑	27.3%	FACW
3. Eupatoriadelphus dubius	20	☐	16.5%	FACW
4. Impatiens capensis	20	☐	16.5%	FACW
5. Coptis trifolia	15	☐	12.4%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	121	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	136	x 2 =	272	
FAC species	85	x 3 =	255	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	221	(A)	527	(B)

Prevalence Index = B/A = 2.385

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN18e Wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1	100%						Muck	
8-11	2.5Y	4/1	75%	10YR	4/6	25%	C	M	mucky sand	
11-13	10YR	3/2							Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18e upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Very Bouldery.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18e upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	33	☑	43.4%	FACU
2. Tsuga canadensis	33	☑	43.4%	FACU
3. Betula papyrifera	10	☐	13.2%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	76	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	40	☑	53.3%	FACU
2. Acer pensylvanicum	20	☑	26.7%	FACU
3. Betula alleghaniensis	15	☑	20.0%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	75	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Thelypteris noveboracensis	15	☑	75.0%	FAC
2. Quercus rubra	5	☑	25.0%	FACU-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	20	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	141	x 4 =	564	
UPL species	0	x 5 =	0	
Column Totals:	171	(A)	654	(B)

Prevalence Index = B/A = 3.825

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN18e upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Loam	
5-7	2.5Y	4/8	100%						Fine Sand	
7-16	10YR	4/3	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks:

Spodosol

AN18e Wetland

AN18e Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18f wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO adjacent to Stream AN17. Drains through rock culvert and old ditching associated with old road bed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 4	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18f wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Betula alleghaniensis	33	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	33	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	25	☑	55.6%	FAC
2. Acer rubrum	10	☑	22.2%	FAC
3. Fraxinus pennsylvanica	10	☑	22.2%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	33	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	33	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	43	x 2 =	86	
FAC species	68	x 3 =	204	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	111	(A)	290	(B)

Prevalence Index = B/A = 2.613

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN18f wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Sandy Loam	
8-16	2.5Y	5/2	80%	10YR	4/6	20%	C	M	Gravelly Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

Alluvial Soils

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN18f Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** convex **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN18f Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	40	☑	50.0%	FAC
2. Fraxinus pennsylvanica	40	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Ostrya virginiana	25	☑	31.3%	FACU-
2. Pinus strobus	10	☐	12.5%	FACU
3. Betula alleghaniensis	10	☐	12.5%	FAC
4. Fagus grandifolia	15	☐	18.8%	FACU
5. Acer pensylvanicum	20	☑	25.0%	FACU
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Maianthemum canadense	20	☑	80.0%	FAC-
2. Polygonatum pubescens	5	☑	20.0%	UPL
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	25	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	40	x 2 =	80	
FAC species	70	x 3 =	210	
FACU species	70	x 4 =	280	
UPL species	5	x 5 =	25	
Column Totals:	185	(A)	595	(B)

Prevalence Index = B/A = 3.216

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN18f Upland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Fine Sandy Loam	
8-14	10YR	3/4	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 14

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

AN18f Wetland

AN18f Upland

AN18f Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an20 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PEM entirely within ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	2
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an20 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	45	☑	39.8%	FACW
2. Impatiens capensis	10	☐	8.8%	FACW
3. Osmunda cinnamomea	33	☑	29.2%	FACW
4. Carex crinita	10	☐	8.8%	OBL
5. Phalaris arundinacea	15	☐	13.3%	FACW+
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	113		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	103	x 2 =	206	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	113	(A)	216	(B)

Prevalence Index = B/A = 1.912

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an20 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-11	2.5Y	4/2	95%	10YR	4/6	5%	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bouldery

Depth (inches): 11

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an20 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉		
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Maintained ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an20 upland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Rhus copallinum	25	☑	100.0%	NI
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	95	☑	90.5%	UPL
2. Rubus alumnus	10	☐	9.5%	FACU-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	105		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	10	x 4 =	40	
UPL species	95	x 5 =	475	
Column Totals:	105	(A)	515	(B)

Prevalence Index = B/A = 4.905

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an20 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Fine Sandy Loam	
5-10	10YR	4/4	100%						Fine Sandy Loam	
10-18	10YR	5/8	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN20 Wetland

AN20 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an21 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PEM entirely within ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 3	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an21 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Spiraea tomentosa	5	☑	33.3%	FACW
2. Acer rubrum	5	☑	33.3%	FAC
3. Spiraea alba	5	☑	33.3%	FACW+
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	15		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	5	☐	4.6%	FACW
2. Scirpus cyperinus	8	☐	7.3%	FACW+
3. Carex scoparia	1	☐	0.9%	FACW
4. Carex crinita	50	☑	45.9%	OBL
5. Onoclea sensibilis	20	☐	18.3%	FACW
6. Equisetum fluviatile	25	☑	22.9%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	109		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	75	x 1 =	75	
FACW species	44	x 2 =	88	
FAC species	5	x 3 =	15	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	124	(A)	178	(B)

Prevalence Index = B/A = 1.435

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an21 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2	100%						Loam	
9-14	2.5Y	4/2	95%	10YR	4/6	5%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: boulders

Depth (inches): 14

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 16-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an21 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 18.0 % / 10.2 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Maintained ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an21 upland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	5	☑	20.0%	FAC
2. Gaylussacia baccata	5	☑	20.0%	FACU
3. Acer saccharum	5	☑	20.0%	FACU-
4. Fagus grandifolia	5	☑	20.0%	FACU
5. Quercus rubra	5	☑	20.0%	FACU-
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	95	☑	89.6%	UPL
2. Trientalis borealis	3	☐	2.8%	FAC
3. Solidago canadensis	8	☐	7.5%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	106		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	8	x 3 =	24	
FACU species	28	x 4 =	112	
UPL species	95	x 5 =	475	
Column Totals:	131	(A)	611	(B)

Prevalence Index = B/A = 4.664

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an21 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%					Fine Sandy Loam	
4-9	10YR	4/6	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN21 Wetland

AN21 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an22 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS with moose wallow on southern end of wetland.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an22 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus pennsylvanica	10	☑	20.8%	FACW
2. Acer rubrum	25	☑	52.1%	FAC
3. Spiraea tomentosa	5	☐	10.4%	FACW
4. Viburnum lentago	8	☐	16.7%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	48		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Onoclea sensibilis	25	☑	49.0%	FACW
2. Osmunda cinnamomea	15	☑	29.4%	FACW
3. Carex crinita	8	☐	15.7%	OBL
4. Equisetum arvense	3	☐	5.9%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	51		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	8	x 1 =	8	
FACW species	55	x 2 =	110	
FAC species	36	x 3 =	108	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	99	(A)	226	(B)

Prevalence Index = B/A = 2.283

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an22 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-15	2.5Y	4/2	90%	10YR	5/8	10%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony

Depth (inches): 15

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN22 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 12.0 % / 6.8 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN22 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Tsuga canadensis	20	☑	33.3%	FACU
2. Betula papyrifera	10	☐	16.7%	FACU
3. Fagus grandifolia	20	☑	33.3%	FACU
4. Acer rubrum	10	☐	16.7%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	25	☑	50.0%	FAC
2. Acer pensylvanicum	15	☑	30.0%	FACU
3. Fagus grandifolia	10	☑	20.0%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Trientalis borealis	10	☐	11.0%	FAC
2. Dennstaedtia punctilobula	66	☑	72.5%	UPL
3. Aralia nudicaulis	15	☐	16.5%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	91	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	90	x 4 =	360	
UPL species	66	x 5 =	330	
Column Totals:	201	(A)	825	(B)

Prevalence Index = B/A = 4.104

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN22 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2	100%					Loam	
9-13	2.5Y	5/3	100%					Very Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: boulders

Depth (inches): 13

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN22 Wetland

AN22 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN23 Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** concave **Slope:** 12.0 % / 6.8 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO/PSS hillside seep disturbed by Skidder activity.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN23 Wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus pennsylvanica	33	☑	40.7%	FACW
2. Acer rubrum	33	☑	40.7%	FAC
3. Betula alleghaniensis	15	☐	18.5%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	81	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fraxinus pennsylvanica	8	☑	28.6%	FACW
2. Spiraea tomentosa	15	☑	53.6%	FACW
3. Pinus strobus	5	☐	17.9%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	28	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	75	☑	78.1%	FACW
2. Osmunda cinnamomea	8	☐	8.3%	FACW
3. Equisetum arvense	8	☐	8.3%	FAC
4. Carex lurida	5	☐	5.2%	OBL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	96	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	139	x 2 =	278	
FAC species	56	x 3 =	168	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column Totals:	205	(A)	471	(B)

Prevalence Index = B/A = 2.298

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN23 Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%					Loam	
7-15	2.5Y	4/1	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony

Depth (inches): 15

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 17-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an23 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an23 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	25	☑	29.4%	FACU-
2. Fagus grandifolia	25	☑	29.4%	FACU
3. Betula alleghaniensis	25	☑	29.4%	FAC
4. Tsuga canadensis	10	☐	11.8%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	85	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	20	☑	50.0%	FAC
2. Pinus strobus	10	☑	25.0%	FACU
3. Fraxinus americana	5	☐	12.5%	FACU
4. Quercus rubra	5	☐	12.5%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	33	☑	80.5%	FACU
2. Trientalis borealis	5	☐	12.2%	FAC
3. Polygonatum pubescens	3	☐	7.3%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	41	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	50	x 3 =	150	
FACU species	113	x 4 =	452	
UPL species	3	x 5 =	15	
Column Totals:	166	(A)	617	(B)

Prevalence Index = B/A = 3.717

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an23 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2	100%					Loam	
9-12	10YR	4/3	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN23 Upland

AN23 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN24 wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO with ATV trail through west side of wetland. Contains VP-5.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 2	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sphagnum 50% cover.

VEGETATION - Use scientific names of plants

Sampling Point: AN24 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	33	☑	76.7%	FAC
2. Betula alleghaniensis	10	☑	23.3%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	43	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Hamamelis virginiana	10	☑	66.7%	FAC-
2. Betula alleghaniensis	5	☑	33.3%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	15	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	25	☑	71.4%	FACW
2. Rubus hispidus	10	☑	28.6%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	35	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	58	x 3 =	174	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	93	(A)	244	(B)

Prevalence Index = B/A = 2.624

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN24 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1	100%					Muck	sapric
8-12	10YR	2/1	100%					Very Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Refusal

Depth (inches): 12

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN24 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN24 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea rubens	10	☐	16.7%	FACU
2. Tsuga canadensis	25	☑	41.7%	FACU
3. Betula papyrifera	10	☐	16.7%	FACU
4. Quercus rubra	15	☑	25.0%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	5	☑	20.0%	FACU
2. Picea rubens	5	☑	20.0%	FACU
3. Hamamelis virginiana	5	☑	20.0%	FAC-
4. Viburnum lentago	10	☑	40.0%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	8	☑	36.4%	FACU
2. Lycopodium obscurum	3	☐	13.6%	FACU
3. Pteridium aquilinum	3	☐	13.6%	FACU
4. Polygonatum pubescens	5	☑	22.7%	UPL
5. Trientalis borealis	3	☐	13.6%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	22	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	18	x 3 =	54	
FACU species	84	x 4 =	336	
UPL species	5	x 5 =	25	
Column Totals:	107	(A)	415	(B)

Prevalence Index = B/A = 3.879

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN24 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%					Loam	
4-8	10YR	4/3	100%					Fine Sandy Loam	
8-10	10YR	5/8	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Refusal

Depth (inches): 10

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN24 Wetland

AN24 Upland

AN24 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN25 Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO in pocket of ledge. Contains VP-4. Adjacent to ATV trail.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☑ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	6
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Contained up to 2 feet of standing water in May.

VEGETATION - Use scientific names of plants

Sampling Point: AN25 Wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	50	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Ilex verticillata	3	☑	100.0%	FACW+
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	3	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda regalis	5	☑	21.7%	OBL
2. Scirpus cyperinus	10	☑	43.5%	FACW+
3. Osmunda cinnamomea	5	☑	21.7%	FACW
4. Carex intumescens	3	☐	13.0%	FACW+
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	23	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	5	x 1 =	5	
FACW species	21	x 2 =	42	
FAC species	50	x 3 =	150	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	76	(A)	197	(B)

Prevalence Index = B/A = 2.592

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN25 Wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1							Muck	
8-16	2.5Y	5/1	70%	10YR	5/6	25%	C	M	Fine Loamy Sand	
				2.5Y	6/1	5%	D	M		

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN25 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Undulating **Local relief (concave, convex, none):** convex **Slope:** 20.0 % / 11.3 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

ATV trail nearby

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN25 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea rubens	15	☐	14.2%	FACU
2. Tsuga canadensis	25	☑	23.6%	FACU
3. Quercus rubra	66	☑	62.3%	FACU-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	106	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Picea rubens	10	☑	33.3%	FACU
2. Fagus grandifolia	15	☑	50.0%	FACU
3. Tsuga canadensis	5	☐	16.7%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Maianthemum canadense	10	☐	9.5%	FAC-
2. Pteridium aquilinum	50	☑	47.6%	FACU
3. Medeola virginiana	5	☐	4.8%	UPL
4. Gaultheria procumbens	15	☑	14.3%	FACU
5. Polygonatum pubescens	5	☐	4.8%	UPL
6. Cornus canadensis	5	☐	4.8%	FAC-
7. Aralia nudicaulis	15	☑	14.3%	FACU
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	105	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	216	x 4 =	864	
UPL species	10	x 5 =	50	
Column Totals:	241	(A)	959	(B)

Prevalence Index = B/A = 3.979

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN25 upland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	2/1	100%					Loam	
5-6	2.5Y	5/1	100%					Fine Loamy Sand	
6-16	5YR	4/4	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

Spodosol

AN25 Wetland

AN25 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN26 Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Wetland within saddle continues off site.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 2	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN26 Wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	57.1%	FAC
2. Betula alleghaniensis	15	☑	42.9%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	35	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fraxinus pennsylvanica	5	☑	25.0%	FACW
2. Acer rubrum	10	☑	50.0%	FAC
3. Picea mariana	5	☑	25.0%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	8	☐	14.3%	FACW
2. Osmunda claytoniana	15	☑	26.8%	FAC
3. Osmunda regalis	3	☐	5.4%	OBL
4. Impatiens capensis	20	☑	35.7%	FACW
5. Coptis trifolia	10	☐	17.9%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	56	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	3	x 1 =	3	
FACW species	48	x 2 =	96	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	111	(A)	279	(B)

Prevalence Index = B/A = 2.514

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN26 Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1	100%					Muck	sapric
8-9	2.5Y	6/1	100%					Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony

Depth (inches): 9

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN26 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** flat **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN26 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	15	☐	16.7%	FACU
2. Picea rubens	50	☑	55.6%	FACU
3. Betula papyrifera	15	☐	16.7%	FACU
4. Betula alleghaniensis	10	☐	11.1%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	90	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	10	☑	23.3%	FACU
2. Acer pensylvanicum	33	☑	76.7%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	43	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	20	☑	69.0%	FACU
2. Maianthemum canadense	3	☐	10.3%	FAC-
3. Trientalis borealis	1	☐	3.4%	FAC
4. Polygonatum pubescens	5	☐	17.2%	UPL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	29	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	14	x 3 =	42	
FACU species	143	x 4 =	572	
UPL species	5	x 5 =	25	
Column Totals:	162	(A)	639	(B)

Prevalence Index = B/A = 3.944

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN26 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%					Loam	
5-16	10YR	4/6	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN26 Wetland

AN26 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN27 wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Saddle **Local relief (concave, convex, none):** undulating **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 1	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN27 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Picea mariana	50	☑	45.5%	FACW-
2. Acer rubrum	50	☑	45.5%	FAC
3. Betula alleghaniensis	10	☐	9.1%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	110	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	5	☑	50.0%	FAC
2. Picea mariana	5	☑	50.0%	FACW-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	10	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	50	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	50	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	105	x 2 =	210	
FAC species	65	x 3 =	195	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	170	(A)	405	(B)

Prevalence Index = B/A = 2.382

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN27 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-36	10YR	2/1						Mucky Peat	nemic

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR R, MLRA 149B)
- [ ] Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- [ ] Thin Dark Surface (S9) (LRR R, MLRA 149B)
- [ ] Loamy Mucky Mineral (F1) LRR K, L)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 18-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN27 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 20.0 % / 11.3 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN27 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	20	☑	28.6%	FACU
2. Quercus rubra	15	☑	21.4%	FACU-
3. Betula papyrifera	20	☑	28.6%	FACU
4. Picea rubens	15	☑	21.4%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	70		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	20	☑	80.0%	FACU
2. Betula papyrifera	5	☑	20.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Acer rubrum	2	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	2		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	14.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	2	x 3 =	6	
FACU species	95	x 4 =	380	
UPL species	0	x 5 =	0	
Column Totals:	97	(A)	386	(B)

Prevalence Index = B/A = 3.979

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN27 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Loam	
4-6	10YR	4/3	100%						Fine Sandy Loam	
6-11	10YR	5/6	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony

Depth (inches): 11

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN27 Upland

AN27 Wetland

AN27 Wetland

AN27 Wetland

AN27 Wetland

AN27 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN30 wetland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO with ephemeral inlet and outlet towards intermittant stream AN29.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN30 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Betula alleghaniensis	10	☑	50.0%	FAC
2. Fraxinus pennsylvanica	10	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	25	☑	50.0%	FACW
2. Polygonatum pubescens	25	☑	50.0%	UPL
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	50		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	25	x 5 =	125	
Column Totals:	70	(A)	225	(B)

Prevalence Index = B/A = 3.214

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN30 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Loam	
8-16	2.5Y	5/1	100%					Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN30 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN30 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Tsuga canadensis	25	☑	31.3%	FACU
2. Quercus rubra	15	☐	18.8%	FACU-
3. Acer saccharum	25	☑	31.3%	FACU-
4. Betula alleghaniensis	15	☐	18.8%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	10	☑	40.0%	FACU
2. Pinus strobus	5	☑	20.0%	FACU
3. Quercus rubra	5	☑	20.0%	FACU-
4. Acer pensylvanicum	5	☑	20.0%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Maianthemum canadense	10	☑	29.4%	FAC-
2. Aralia nudicaulis	15	☑	44.1%	FACU
3. Tsuga canadensis	3	☐	8.8%	FACU
4. Lycopodium obscurum	1	☐	2.9%	FACU
5. Trientalis borealis	5	☐	14.7%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	34	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	12.5%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	109	x 4 =	436	
UPL species	0	x 5 =	0	
Column Totals:	139	(A)	526	(B)

Prevalence Index = B/A = 3.784

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN30 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Loam	
8-12	10YR	4/3	100%					Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bouldery

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN30 Wetland

AN30 Upland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN31 Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS wetland entirely within maintained transmission line ROW.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 2	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN31 Wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	10	☑	25.0%	FAC
2. Lyonia ligustrina	5	☐	12.5%	FACW
3. Spiraea alba	25	☑	62.5%	FACW+
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Scirpus cyperinus	8	☐	8.8%	FACW+
2. Onoclea sensibilis	25	☑	27.5%	FACW
3. Carex crinita	5	☐	5.5%	OBL
4. Carex lurida	5	☐	5.5%	OBL
5. Scirpus atrovirens	8	☐	8.8%	OBL
6. Solidago canadensis	15	☐	16.5%	FACU
7. Rubus hispidus	25	☑	27.5%	FACW
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	91		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	18	x 1 =	18	
FACW species	88	x 2 =	176	
FAC species	10	x 3 =	30	
FACU species	15	x 4 =	60	
UPL species	0	x 5 =	0	
Column Totals:	131	(A)	284	(B)

Prevalence Index = B/A = 2.168

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN31 Wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2							Loam	
8-16	2.5Y	4/1	90%	10YR	5/8	10%	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN31 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Undulating **Local relief (concave, convex, none):** undulating **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Transmission line maintained ROW

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN31 Upland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Populus tremula	10	☑	47.6%	FACU
2. Prunus serotina	3	☐	14.3%	FACU
3. Acer saccharum	5	☑	23.8%	FACU-
4. Quercus rubra	3	☐	14.3%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	21		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Rubus alumnus	15	☐	14.6%	FACU-
2. Solidago canadensis	50	☑	48.5%	FACU
3. Onoclea sensibilis	33	☑	32.0%	FACW
4. Spiraea alba	5	☐	4.9%	FACW+
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	103		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	38	x 2 =	76	
FAC species	0	x 3 =	0	
FACU species	86	x 4 =	344	
UPL species	0	x 5 =	0	
Column Totals:	124	(A)	420	(B)

Prevalence Index = B/A = 3.387

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN31 Upland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%					Loam	
7-12	10YR	4/3	100%					Sandy Loam	
12-16	2.5Y	5/1	100%					Medium Sand	
16-24	10YR	4/6	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

AN31 Wetland

AN31 Upland

AN31 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN32 wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○		
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS wetland entirely within maintained transmission line ROW.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 2	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN32 wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Spiraea alba	50	☑	83.3%	FACW+
2. Acer rubrum	10	☐	16.7%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60		= Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Carex crinita	12	☐	12.6%	OBL
2. Onoclea sensibilis	33	☑	34.7%	FACW
3. Carex intumescens	25	☑	26.3%	FACW+
4. Rubus hispidus	0	☐	0.0%	FACW
5. Solidago canadensis	25	☑	26.3%	FACU
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	95		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	12	x 1 =	12	
FACW species	108	x 2 =	216	
FAC species	10	x 3 =	30	
FACU species	25	x 4 =	100	
UPL species	0	x 5 =	0	
Column Totals:	155	(A)	358	(B)

Prevalence Index = B/A = 2.310

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN32 wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-18	10YR	3/2	100%						Loam	
18-24	2.5Y	4/2	95%	10YR	5/8	5%	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN32 upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Undulating **Local relief (concave, convex, none):** undulating **Slope:** 8.0 % / 4.6 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

bouldery

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN32 upland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Rhus copallinum	50	☑	76.9%	NI
2. Pinus strobus	5	☐	7.7%	FACU
3. Prunus serotina	5	☐	7.7%	FACU
4. Acer rubrum	5	☐	7.7%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	65		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Pteridium aquilinum	20	☐	17.2%	FACU
2. Rubus idaeus	10	☐	8.6%	FAC-
3. Rubus allegheniensis	10	☐	8.6%	FACU-
4. Solidago canadensis	33	☑	28.4%	FACU
5. Phalaris arundinacea	33	☑	28.4%	FACW+
6. Carex crinita	10	☐	8.6%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	116		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	33	x 2 =	66	
FAC species	15	x 3 =	45	
FACU species	73	x 4 =	292	
UPL species	0	x 5 =	0	
Column Totals:	131	(A)	413	(B)

Prevalence Index = B/A = 3.153

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN32 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/3	100%					Loam	
8-13	10YR	4/3	100%					Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN32 Upland

AN32 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN33 Wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PSS wetland within skidder trail.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN33 Wetland

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')				
1. Cornus stolonifera	5	☑	50.0%	FACW+
2. Viburnum dentatum	5	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	10		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	40	☑	29.9%	FACW
2. Solidago canadensis	33	☑	24.6%	FACU
3. Carex crinita	33	☑	24.6%	OBL
4. Rubus hispidus	25	☐	18.7%	FACW
5. Osmunda regalis	3	☐	2.2%	OBL
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	134		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	80.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	36	x 1 =	36	
FACW species	70	x 2 =	140	
FAC species	5	x 3 =	15	
FACU species	33	x 4 =	132	
UPL species	0	x 5 =	0	
Column Totals:	144	(A)	323	(B)

Prevalence Index = B/A = 2.243

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: **AN33 Wetland**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-14	10YR	3/2	100%						Loam	
14-20	2.5Y	5/2	90%	2.5Y	5/1	10%	D	M	Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 22-Aug-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN33 Upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN33 Upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fagus grandifolia	10	☑	33.3%	FACU
2. Acer saccharum	10	☑	33.3%	FACU-
3. Tsuga canadensis	10	☑	33.3%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	25	☑	41.7%	FACU
2. Populus tremula	15	☑	25.0%	FACU
3. Pinus strobus	5	☐	8.3%	FACU
4. Fraxinus pennsylvanica	10	☐	16.7%	FACW
5. Quercus rubra	5	☐	8.3%	FACU-
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Dennstaedtia punctilobula	75	☑	96.2%	UPL
2. Maianthemum canadense	3	☐	3.8%	FAC-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	78	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	3	x 3 =	9	
FACU species	80	x 4 =	320	
UPL species	75	x 5 =	375	
Column Totals:	168	(A)	724	(B)

Prevalence Index = B/A = 4.310

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN33 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/3	100%					Loam	
8-15	2.5Y	5/3	100%					Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Boulders

Depth (inches): 15

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN33 Wetland

AN33 Upland

AN33 Wetland

AN33 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 26-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN35 wetland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Wetland partially within Transmission ROW and extends downslope to the North.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 2	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN35 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	15	☑	27.3%	FAC
2. Betula alleghaniensis	15	☑	27.3%	FAC
3. Fraxinus pennsylvanica	25	☑	45.5%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	55	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fraxinus pennsylvanica	20	☑	66.7%	FACW
2. Ilex verticillata	10	☑	33.3%	FACW+
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	30	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Onoclea sensibilis	50	☑	83.3%	FACW
2. Osmunda cinnamomea	10	☐	16.7%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	60	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	115	x 2 =	230	
FAC species	30	x 3 =	90	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	145	(A)	320	(B)

Prevalence Index = B/A = 2.207

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN35 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-14	2.5Y	4/2	95%	10YR	4/6	5%	C	M	Fine Sandy Loam	
14+										Bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 26-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an35 upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** flat **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an35 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	33	☑	46.5%	FACU-
2. Fagus grandifolia	20	☑	28.2%	FACU
3. Pinus strobus	8	☐	11.3%	FACU
4. Acer saccharum	10	☐	14.1%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	71	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	15	☑	60.0%	FACU
2. Fraxinus pennsylvanica	10	☑	40.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Trientalis borealis	15	☑	30.0%	FAC
2. Aralia nudicaulis	25	☑	50.0%	FACU
3. Dennstaedtia punctilobula	10	☑	20.0%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	50	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	15	x 3 =	45	
FACU species	111	x 4 =	444	
UPL species	10	x 5 =	50	
Column Totals:	146	(A)	559	(B)

Prevalence Index = B/A = 3.829

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an35 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Loam	
6-11	10YR	4/6	100%						Fine Sandy Loam	
11-16	10YR	4/4	100%						Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN35 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an36 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Saddle **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Saddle PFO between ridgline near ATV trail. Drains west through boulders

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 1	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an36 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	20	☑	34.5%	FAC
2. Betula alleghaniensis	20	☑	34.5%	FAC
3. Fraxinus pennsylvanica	8	☐	13.8%	FACW
4. Viburnum lantanoides	10	☐	17.2%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	58	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Betula alleghaniensis	15	☑	45.5%	FAC
2. Osmunda regalis	3	☐	9.1%	OBL
3. Osmunda cinnamomea	15	☑	45.5%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	33	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	3	x 1 =	3	
FACW species	23	x 2 =	46	
FAC species	85	x 3 =	255	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	111	(A)	304	(B)

Prevalence Index = B/A = 2.739

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an36 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-22	10YR	2/1	100%					Peat	
22+	2.5Y	5/1	100%					Gravelly Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR R, MLRA 149B)
- [ ] Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- [ ] Thin Dark Surface (S9) (LRR R, MLRA 149B)
- [ ] Loamy Mucky Mineral (F1) LRR K, L)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **an36 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Saddle **Local relief (concave, convex, none):** convex **Slope:** 15.0 % / 8.5 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an36 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	15	☑	33.3%	FACU-
2. Fagus grandifolia	15	☑	33.3%	FACU
3. Betula alleghaniensis	15	☑	33.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	8	☑	30.8%	FACU
2. Picea rubens	18	☑	69.2%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	26	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	5	☑	33.3%	FACU
2. Fagus grandifolia	5	☑	33.3%	FACU
3. Trientalis borealis	5	☑	33.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	15	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	66	x 4 =	264	
UPL species	0	x 5 =	0	
Column Totals:	86	(A)	324	(B)

Prevalence Index = B/A = 3.767

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an36 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Loam	
6-9	10YR	4/4	100%						Sandy Loam	
9-13	10YR	4/6	100%						Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN36 Wetand

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an37 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 1	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an37 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	10	☑	28.6%	FAC
2. Betula alleghaniensis	20	☑	57.1%	FAC
3. Vaccinium corymbosum	5	☐	14.3%	FACW-
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	35	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	5	☑	62.5%	FACW
2. Carex lurida	3	☑	37.5%	OBL
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	8	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	3	x 1 =	3	
FACW species	10	x 2 =	20	
FAC species	50	x 3 =	150	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	63	(A)	173	(B)

Prevalence Index = B/A = 2.746

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an37 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100%					Muck	
10-15	2.5Y	4/2	100%					Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** **Sampling Point:** **an37 upland**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 25.0 % / 14.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an37 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus rubra	50	☑	60.2%	FACU-
2. Tsuga canadensis	33	☑	39.8%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	83	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	10	☑	25.0%	FAC
2. Acer pensylvanicum	15	☑	37.5%	FACU
3. Viburnum lantanoides	15	☑	37.5%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Aralia nudicaulis	5	☑	33.3%	FACU
2. Quercus rubra	10	☑	66.7%	FACU-
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	15	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	28.6%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	25	x 3 =	75	
FACU species	113	x 4 =	452	
UPL species	0	x 5 =	0	
Column Totals:	138	(A)	527	(B)

Prevalence Index = B/A = 3.819

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an37 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%					Loam	
8-16	10YR	4/4	100%					Sandy Loam	
16+									Bedrock

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN37 Wetand

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** an38 wetland

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Potential Vernal Pool. Wetland in ledge pocket on West side of ridgeline.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 12	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: an38 wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Ilex verticillata	50	☑	100.0%	FACW+
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	10	☑	35.7%	FACW
2. Iris versicolor	3	☐	10.7%	OBL
3. Coptis trifolia	15	☑	53.6%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	28	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	3	x 1 =	3	
FACW species	75	x 2 =	150	
FAC species	20	x 3 =	60	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	98	(A)	213	(B)

Prevalence Index = B/A = 2.173

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: an38 wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-12	2.5Y	2/1	100%					Muck	
12+	2.5Y	5/1	100%					Gravelly Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 27-Sep-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN38 upland**

Investigator(s): AF JG **Section, Township, Range: S.** ____ **T.** ____ **R.** ____

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 25.0 % / 14.0 °

Subregion (LRR or MLRA): ____ **Lat.:** ____ **Long.:** ____ **Datum:** ____

Soil Map Unit Name: ____ **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉		
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches): ____	
Water Table Present?	Yes ○ No ◉	Depth (inches): ____	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN38 upland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Pinus strobus	33	☑	34.4%	FACU
2. Fagus grandifolia	33	☑	34.4%	FACU
3. Quercus rubra	15	☐	15.6%	FACU-
4. Tsuga canadensis	15	☐	15.6%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	96	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	25	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Quercus rubra	1	☑	50.0%	FACU-
2. Fagus grandifolia	1	☑	50.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	2	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	123	x 4 =	492	
UPL species	0	x 5 =	0	
Column Totals:	123	(A)	492	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN38 upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Loam	
5-7	2.5Y	6/1	100%						Fine Sandy Loam	
7-14	10YR	4/4	100%						Sandy Loam	
14-20	10YR	4/6	100%						Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

AN38 Wetland

AN38 Upland

AN38 Wetland

AN38 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 30-Nov-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN41up**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: AN41up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	33.3%	FAC
2. Fagus grandifolia	15	☑	25.0%	FACU
3. Picea rubens	10	☐	16.7%	FACU
4. Quercus rubra	15	☑	25.0%	FACU-
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Fagus grandifolia	10	☑	40.0%	FACU
2. Picea rubens	10	☑	40.0%	FACU
3. Pinus strobus	5	☑	20.0%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Dryopteris intermedia	15	☑	20.3%	FACU
2. Gaultheria procumbens	15	☑	20.3%	FACU
3. Thelypteris noveboracensis	19	☑	25.7%	FAC
4. Lycopodium obscurum	25	☑	33.8%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	74	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	10	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	20.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	39	x 3 =	117	
FACU species	120	x 4 =	480	
UPL species	0	x 5 =	0	
Column Totals:	159	(A)	597	(B)

Prevalence Index = B/A = 3.755

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN41up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Loam	
5-12	10YR	4/3	100%						Sandy Loam	
12-15	2.5Y	5/2	95%	10YR	4/6	5%	C	M	Sandy Loam	
15+										stony refusal

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bouldery

Depth (inches): 15

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project **City/County:** Antrim **Sampling Date:** 30-Nov-11

Applicant/Owner: Eolian Renewable Energy, LLC **State:** NH **Sampling Point:** **AN41wet**

Investigator(s): AF JG **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: **NWI classification:** PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Isolated PFO at toe of slope in a basin formation.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sphagnum 50% cover.

VEGETATION - Use scientific names of plants

Sampling Point: AN41wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	33	☑	76.7%	FAC
2. Fraxinus pennsylvanica	10	☑	23.3%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	43	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')				
1. Acer rubrum	10	☑	55.6%	FAC
2. Betula alleghaniensis	8	☑	44.4%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	18	= Total Cover		

Herb Stratum (Plot size: 5')				
1. Osmunda cinnamomea	50	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	50	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	60	x 2 =	120	
FAC species	51	x 3 =	153	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	111	(A)	273	(B)

Prevalence Index = B/A = 2.459

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: AN41wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-9	2.5Y	2/1	100%					sapric	muck
9+	10YR	2/2	100%					Sandy Loam	organic streaking

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

AN41 Wetland

EXHIBIT 6

VERNAL POOL REPORT

VERNAL POOL REPORT

For
Antrim Wind Energy Project
Town of Antrim
Hillsborough County, New Hampshire

Prepared for:

Antrim Wind Energy, LLC
155 Fleet Street
Portsmouth, NH 03801

Prepared by:

TRC ENVIRONMENTAL CORPORATION
10 Maxwell Drive, Suite 200
Clifton Park, New York 12065

January 2012
Revised July 2015

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1.0 INTRODUCTION

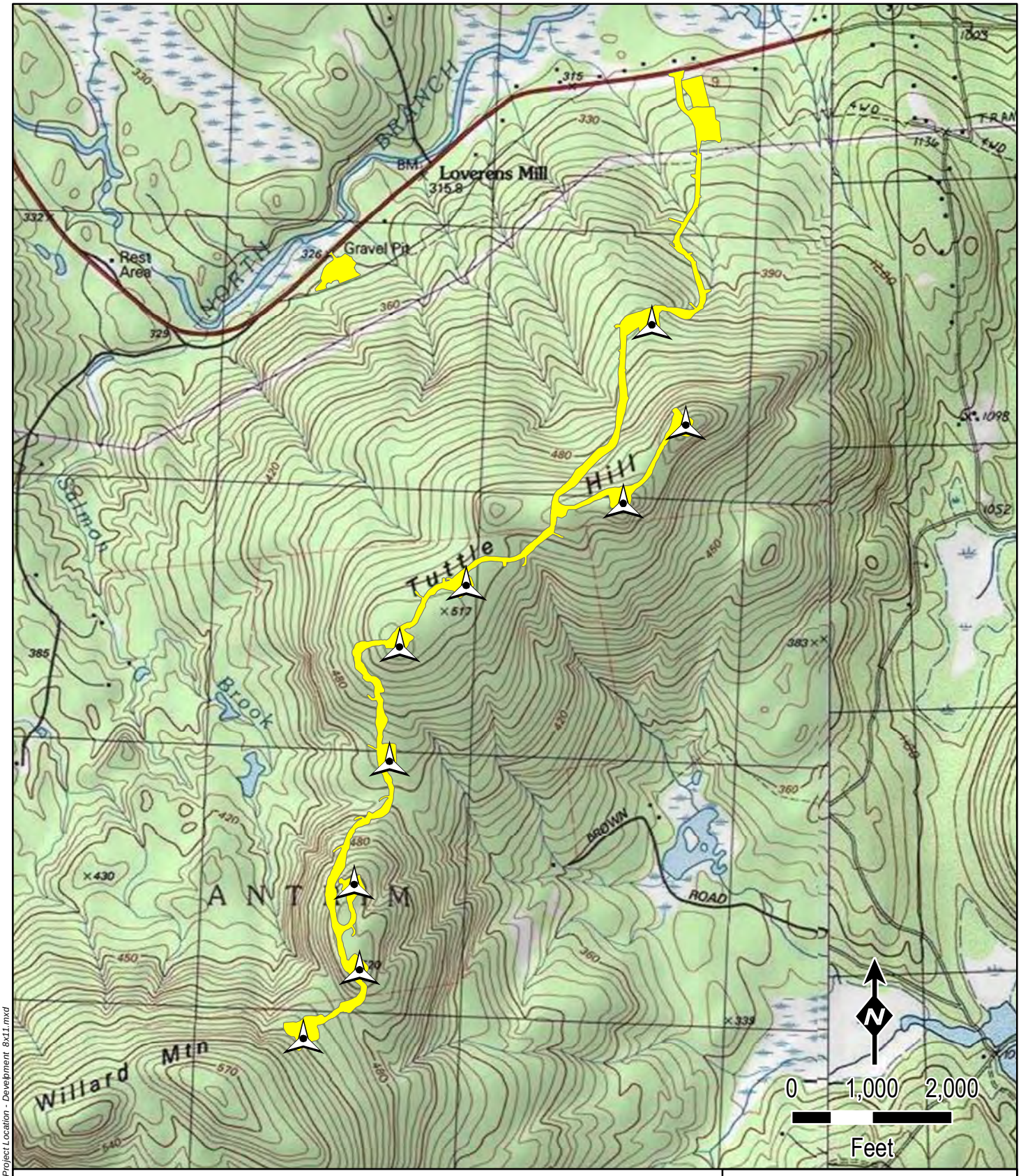
This vernal pool report has been prepared by TRC for Antrim Wind Energy, LLC (AWE) in support of state and federal environmental permit applications. Antrim Wind Energy LLC (AWE) is proposing to construct the Antrim Wind Energy Project (Project) on Tuttle Hill and Willard Mountain in the Town of Antrim, Hillsborough Country, New Hampshire. The proposed Project is sited entirely on privately owned land that is leased by AWE. The proposed Antrim Wind Energy Project involves the construction of 9 wind turbines, an electrical collection system and interconnection substation, approximately 3.6 miles of new access road, and an operations and maintenance building. There will be no new electrical transmission lines, other than collector system lines, constructed as part of this Project. The total direct impact for the access roads, the turbine pads, and electrical collector system will be approximately 57.1 acres.

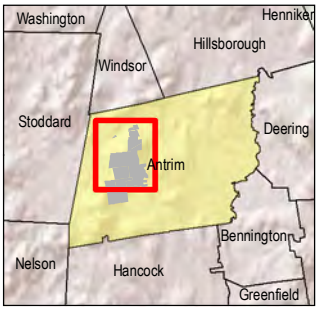
The proposed project is sited on the ridges of Tuttle Hill and Willard Mountain which are oriented east-northeast to west-southwest. The ridges are approximately parallel to NH Route 9, which is about ¾ of a mile to the north. Between the ridgeline and Route 9 is an existing transmission corridor containing both an 115kV transmission line and a 34.5kV distribution circuit; the proposed Project will interconnect with the existing 115kV line. See Figure 1 on the following page for a map of the Project area and Project elements.

TRC Environmental Corporation (TRC) was retained by AWE to identify and delineate vernal pools within the project area to support the design, or layout, of the proposed facilities. TRC has prepared this vernal pool report on behalf of AWE to support the submittal of a Joint Application for a Permit (a U.S. Army Corps of Engineers (ACOE) and New Hampshire State wetlands permit).

TRC conducted vernal pool surveys within an approximately 409 acre survey area during May 2nd, 5th and 9th of 2011. Follow up visits were made to each pool during early June to confirm their condition (i.e., watered or dry). Additional survey was also performed during September in approximately 53 acres added to the Project survey area in several discreet sections to provide for expanded project design options. An additional potential vernal pool was identified in this area, and follow-up surveys in spring 2015 confirmed this feature as a vernal pool.

The following sections describe the vernal pool field survey methodology utilized.





Legend

Proposed WTG Location

Proposed Disturbance Area

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 1

Layout of Development

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2.0 VERNAL POOL SURVEY METHODOLOGY

For the purposes of the field effort, TRC adopted the vernal pool definitions as described by the USACE Programmatic General Permit (PGP) for the State of New Hampshire and the NHDES Administrative Rules Env-Wt 101.99 for identifying vernal pools and vernal pool habitat along the Project corridor. With the exception of minor differences, each agency has a similar definition of what constitutes a vernal pool. Each respective definition is provided below.

According to the ACOE NHPGP, vernal pools and vernal pool habitat consists of:

> *"VPs are confined basin depressions with water for two or more continuous months in the spring and/or summer, for which evidence of one of more of the following indicator vernal pools species: wood frogs (Rana sylvatica), mole salamanders (Ambystoma spp), and fairy shrimp (Eubranchipus spp) has been documented* ***OR*** *for which evidence of two or more of the following facultative organisms: caddisfly (Trichoptera) larvae casings, fingernail clams (Sphaeriidae), or amphibious snails (Basammatophora) and evidence that the pool does not contain an established reproducing fish population has been documented. Vernal pool habitat is the seasonal pool depression, seasonal pool envelope (100 FT radius from the VP edge) and seasonal pool terrestrial habitat (750 FT radius from the VP edge). The Corps will determine on a case-by-case basis which vernal pools are within their jurisdiction."*

The NHDES wetlands Bureau defines a vernal pool in their Administrative Rules Env-Wt 101.106 as:

> *"a surface water or wetland, including an area intentionally created for purposes of compensatory mitigation, which provides breeding habitat for amphibians and invertebrates that have adapted to the unique environments provided by such pools and which:*
>
> *(a) Is not the result of on-going anthropogenic activities that are not intended to provide compensatory mitigation, including but not limited to:*
>
> *(1) Gravel pit operations in a pit that has been mined at least every other year; and*
>
> *(2) Logging and agricultural operations conducted in accordance with all applicable New Hampshire statutes and rules; and*
>
> *(b) Typically has the following characteristics:*
>
> *(1) Cycles annually from flooded to dry conditions, although the hydroperiod, size, and shape of the pool might vary from year to year;*
>
> *(2) Forms in a shallow depression or basin;*
>
> *(3) Has no permanently flowing outlet;*
>
> *(4) Holds water for at least 2 continuous months following spring ice-out;*
>
> *(5) Lacks a viable fish population; and*
>
> *(6) Supports one or more primary vernal pool indicators, or 3 or more secondary vernal pool indicators."*

Primary vernal pool indicators in NH include wood frogs, mole salamanders and fairy shrimp. Secondary indicators include species of aquatic insects including the larvae of caddisfly, dragonfly, and damselfly; fingernail clams and certain aquatic beetles; and other specific species that inhabit vernal pools.

TRC utilized a comprehensive vernal pool survey protocol and field data forms found in the document "Identification and Documentation of Vernal Pools in New Hampshire", published by the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Program (NHFGD 1997). In general, field surveys were conducted during the recommended timeframes for identifying amphibian egg masses and tabulating egg mass abundance. Peak breeding for wood frogs is generally earlier in the season, typically mid to late April, than that of the spotted and blue-spotted salamanders (ambystomid salamanders), typically in early May (Hunter & Calhoun 1999). Seasonal and weather conditions were also considered when applying these recommended survey timeframes as amphibian breeding can vary based on springtime conditions. For example, experiencing a cold spring versus a warm, wet spring could delay amphibian breeding for as much as two weeks and vice versa. Therefore, TRC attempted to conduct the surveys in early May of 2011 to capture the overlap of peak breeding of both the wood frogs and spotted salamanders.

2.1 General Field Survey Approach

Field surveys were conducted by a team of two qualified biologists familiar with vernal pool resources within New England. The team completed visual meanders surveys throughout the entire Project area. Each field crew was outfitted with the necessary field equipment to conduct a detailed survey and to thoroughly document each pool that was inventoried. Typical equipment consisted of hip/chest waders, polarized sunglasses, view tubes, dipnet, thermometer, fairy shrimp sampling equipment, and digital camera. For each pool, a standardized vernal pool determination field data form was completed, the vernal pool area was photo-documented, and the pool basin was located in the field using a global positioning system (GPS) unit. GPS data was specifically collected at the approximate perceived boundary of the highwater mark for all vernal pools exceeding approximately 10 feet in diameter.

2.2 Vernal Pool Species Observations

Egg mass surveys were conducted during the day time hours, preferably when the sun was out, between the hours of 9:00am to 3:00pm to the extent possible to maximize viewing opportunity within the pools. Two biologists began at one end of the pool and thoroughly searched the entire area simultaneously wading along the pool margin. The entire pool was searched (including the center) in this manner to ensure that all egg masses were tabulated. To reduce the possibility of overlooking or misidentifying egg masses, the field biologists worked together to observe, identify, and count egg masses. When agreement was reached regarding the species and number of egg masses within an individual pool, a data form and all other necessary pool documentation was completed (see Natural Resource Survey Map in Appendix A). As described in Section 2.0 above, each pool was examined twice during the survey period to document all vernal pool species utilizing the resource.

As with the egg mass surveys, surveys to document the presence/absence of fairy shrimp were also conducted concurrently. When optimal daytime conditions were not available or for pools with dark tannin stained water, field crews used dip nets and view tubes to search for fairy shrimp. When possible, sampling efforts were focused on sunny patches along the pool, as fairy shrimp often congregate in these areas.

Vernal pools were classified into one of three categories: (1) natural vernal pools; (2) potential vernal pools; and (3) non-jurisdictional features. The natural vernal pools were those pools as defined in Section 2.0 above that met the state criteria under the Administrative Rules. The potential pools were those pools that were identified outside of the indicator species breeding season as the scope of the project had changed after the initial vernal pool survey was performed. These pools had the abiotic characteristics as described in the state and federal definitions, but would require a visit in breeding season to confirm the presence of the indicator species use. The "non-jurisdictional feature" category included all other areas where amphibian breeding was documented but did not meet the state and federal definition of a vernal pool described in Section 2.0.

3.0 VERNAL POOL FIELD SURVEY RESULTS

Vernal pool surveys were conducted within the Project area on May 2nd, 5th and 9th of 2011, with additional survey conducted in extra project area performed in September 2011. A total of 7 features were identified within the Project area. Of these, 5 were identified as Natural Vernal pools, 1 as a potential vernal pool (located in September), and 1 feature was designated as a non-jurisdictional amphibian breeding area. Follow-up site visit in the spring 2015 confirmed the potential vernal pool as a natural vernal pool. Mapping of the pools is provided on the Natural Resource Survey Map in Appendix A, and the field data forms and site photographs for each feature are provided in Appendix B. An abbreviated summary of the vernal pool data is provided in Table 1 below.

TABLE 1: SUMMARY OF VERNAL POOLS WITHIN ANTRIM WINDPARK

Pool Type	No. of Features Within the Project Survey Corridor
Natural Vernal Pool	6
Non-jurisdictional Feature	1
TOTAL	**7**

A summary of the vernal pool characteristics for each pool is provided in Table 2 below. In summary, only VP4 contained significant numbers of egg masses. Vernal Pool Data Sheets are included in Appendix B.

TABLE 2: VERNAL POOL CHARACTERISTICS

Pool ID	Date Surveyed	Natural Setting (y/n)	Indicator Species Observed	Facultative Species Observed	Holds Water For At Least Two Months (y/n)	Associated Wetland
VP1	5/2/2011	Y	Spotted Salamander – 8 egg masses Wood Frog – 5 egg masses Green Frog - Vocalization	Green frog - Vocalization	Y	AN1
VP2	5/5/2011	Y	Spotted Salamander – 16 egg masses Wood Frog – 1 egg mass		Y	AN4
VP3	5/5/2011	Y	Spotted Salamander – 9 egg masses Wood Frog – 5 egg masses	Red-spotted newt - 1 adult	Y	AN5
VP4	5/5/2011	Y	Spotted Salamander – 55 egg masses Wood Frog – 4 egg masses		Y	AN25
VP5	5/9/2011	Y	Spotted Salamander – 10 egg masses		Y	AN24
VP6	5/9/2011	N	Spotted Salamander – 9 egg masses		N	Upland
VP7	9/27/2011 ; 5/5/2015	Y	Spotted Salamander – 5 egg masses		Y	AN38

Six of the pools observed occurred in natural isolated basins without an inlet or an outlet and no populations of predatory fish. Vernal Pools 1-5 and 7 are within isolated palustrine forested wetlands along the Tuttle Hill ridgeline and are located in depressions within the regional bedrock.

Vernal Pool 6 is located within a depression in an old woods road and is a man-made feature. This pool was also observed to be completely dry on June 6, 2011. No hydrophytic vegetation was observed in the vicinity of the pool depression and as a result is not a jurisdictional wetland. Therefore, the pool is considered a non-jurisdictional feature.

During the siting phase of the Project, several routing options were evaluated that were later rejected due to landowner or environmental concerns. During the spring and summer of 2011 when these particular route options were still under consideration, additional surveys for vernal pools were completed. As a result, one other feature Vernal Pool 7 (VP7) was identified within the current Project area. VP7 is located within an isolated forested wetland (Wetland AN38) west of proposed turbines 5 and 6. The wetland was observed to have an area of standing water approximately 1 foot deep and contained an abundance of shrubby vegetation, conducive of supporting egg attachment sites for pool breeding amphibians. An ephemeral outlet was observed draining to the northwest through a gap in the regional bedrock, but did not meet the criteria for a stream or wetland and did not have the necessary characteristics to support predatory fish populations. Follow-up survey of this pool in spring 2015 confirmed this feature as a natural vernal pool.

Although intensively surveyed for, no fairy shrimp were found or documented within any of the vernal pools. Furthermore, no rare or state-listed threatened or endangered species known to use vernal pools for at least one critical life stage were documented in any of the vernal pools found within the Project area. The field data forms and site photographs for these seven areas are provided in Appendix B.

4.0 VERNAL POOL IMPACTS

There are no impacts to vernal pool depressions. Impacts to vernal pools are indirect and are from road and turbine construction in areas adjacent to the pools. The indirect impacts to the 6 natural vernal pools (VP1-VP5 and VP7) were all assessed. In discussions with Mark Kern from the U.S. Environmental Protection Agency and David Keddell from the Army Corps (during a site visit to the vernal pools December 13, 2011), the assessment of impacts should consider the project footprint within 250 feet of the pools, and the area within 100 feet of the vernal pool depression. The upland and wetland area within 250 feet and adjacent to the vernal pool is defined as vernal pool "terrestrial habitat", and the area within 100 feet of the pool is the vernal pool "envelope" (Calhoun and Klemens 2002; Calhoun and deMaynadier 2004). See Figure 2 for detailed maps of the vernal pools and the terrestrial habitat areas.

The vernal pools found on this site are in three distinct areas. Vernal pools 1, 2 and 3 are close to each other, and their terrestrial habitats overlap ("Habitat A"). Vernal pools 4 and 5 are also close to each other and their respective terrestrial habitat areas also overlap ("Habitat C"). Vernal pool VP7 terrestrial habitat does not overlap with any other vernal pool habitat ("Habitat B").

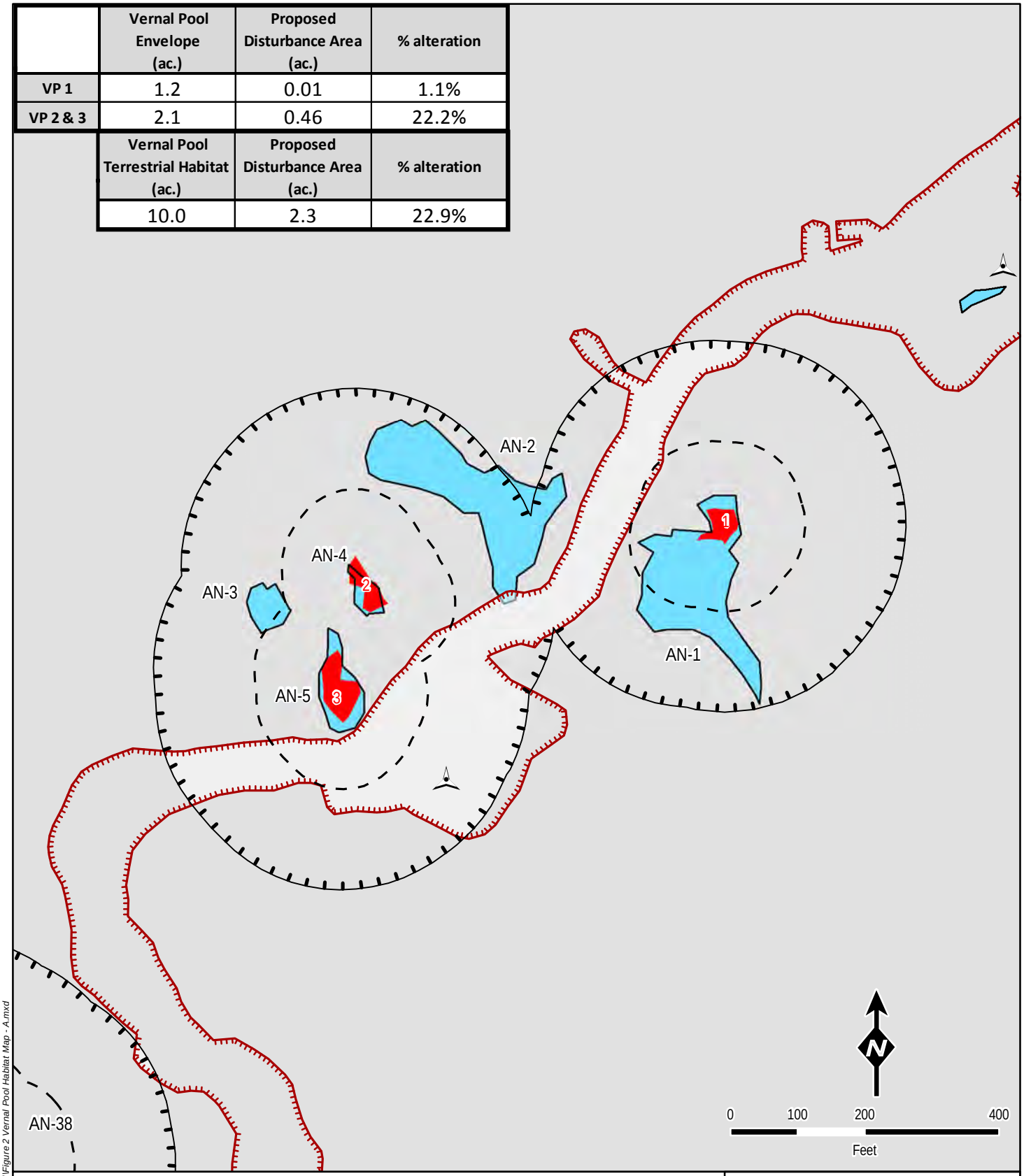
There are no state regulations in New Hampshire, other than wetland protection rules, to regulate development within and adjacent to vernal pools. The Army Corps does regulate impacts to vernal pools as a type of special wetland through Section 404 of the Clean Water Act. The Army Corps Programmatic General Permit No: NAE-2007-461 (PGP) for the State of New Hampshire states that applicants must minimize surrounding upland impacts to the greatest extent practicable, with the effort to minimize impacts being commensurate with the value of the VP. The Army Corps PGP also recommends that impacts should be excluded from the vernal pool envelope and that certain guidelines for vernal pool management are followed, which suggest that the developed area (such as gravel surfaces) is kept to less than 25% of the terrestrial habitat area (Calhoun and Klemens 2002).

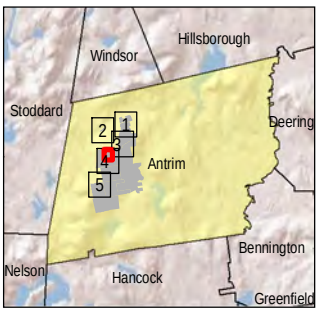
A gravel road and turbine pad is found within vernal pool Habitat A and a small portion of road is found within Habitat B. Analysis demonstrates that the impact to Habitat A terrestrial habitat is 2.3 acres of the 10 acre terrestrial habitat area, or 22.9% of the total terrestrial habitat area. Vernal pool 1 envelope impact is .01 acre of a 1.2 acre envelope area, or 1.1% of the envelope. Vernal pools 2 and 3 envelope impact is 0.46 acres to a 2.1 acre envelope area, or 22.2% of the envelope. Impact to Habitat B is approximately 0.02 acres of the 4.9 acre terrestrial habitat area, or 0.4% of the total terrestrial habitat area. There is no impact to Habitat B (VP7) vernal pool envelope. There is no impact to the terrestrial habitat or envelope of Habitat C.

The level of impact to the terrestrial habitat areas is below the recommended 25% developed area threshold. There is, however some impact to the vernal pool envelope area. These impacts are mitigated by the gravel road not being open to public vehicle traffic and as such will have a very limited volume of traffic and a very low potential to impact any vernal pool species crossing the road. Narrow gravel roads are also not significant barriers to amphibians, and will not hinder movement of the animals through the area. It is anticipated that the proposed development of this area will have no impact on the productivity of these vernal pools.

	Vernal Pool Envelope (ac.)	Proposed Disturbance Area (ac.)	% alteration
VP 1	1.2	0.01	1.1%
VP 2 & 3	2.1	0.46	22.2%

Vernal Pool Terrestrial Habitat (ac.)	Proposed Disturbance Area (ac.)	% alteration
10.0	2.3	22.9%





Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Vernal Pool Envelope (100')
- Vernal Pool Terrestrial Habitat (250')
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label Wetland Label

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Vernal Pool Habitat Map

Habitat A

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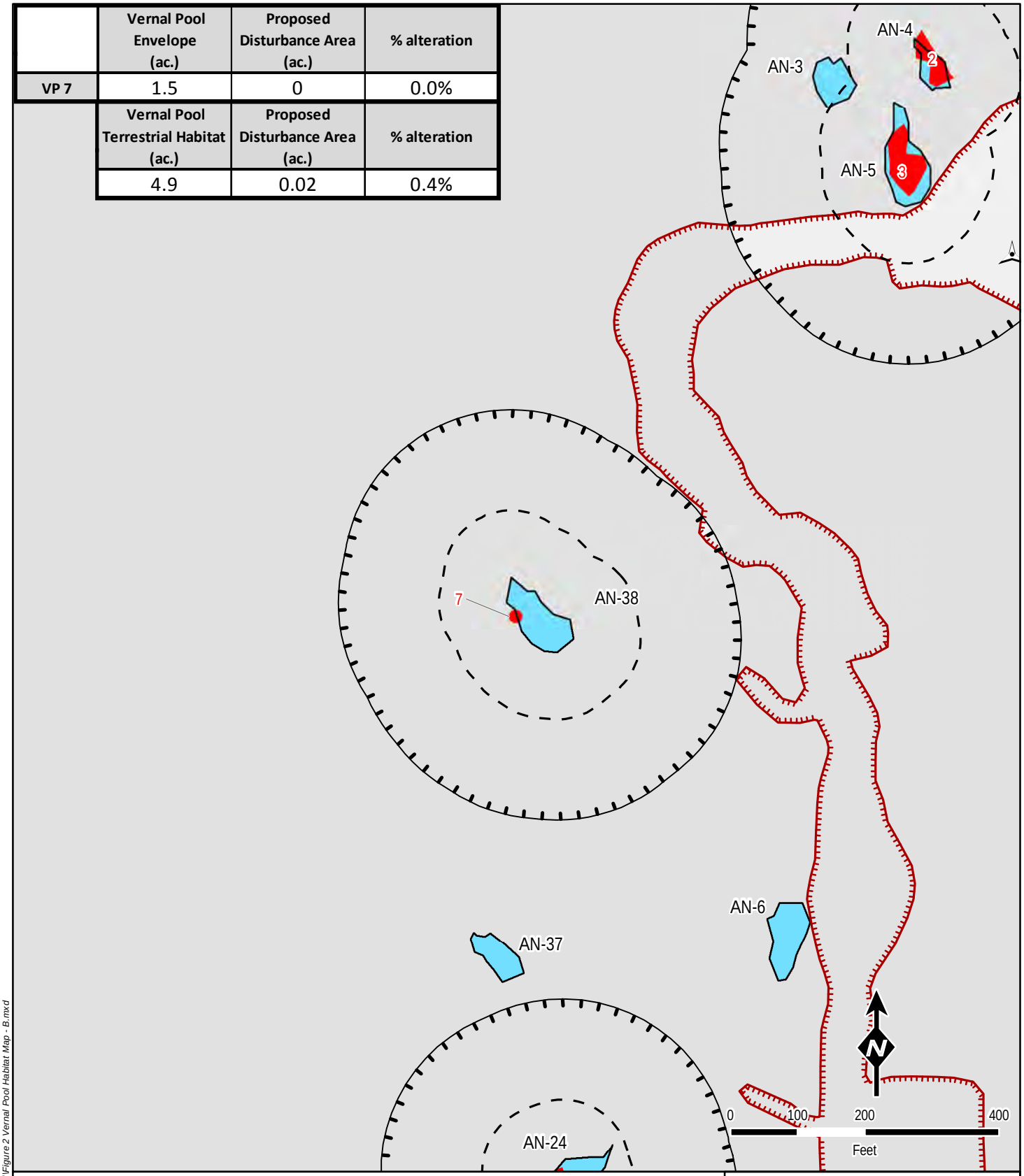
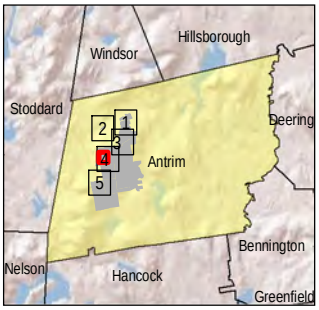
\\appsrit\GIS\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure 2 Vernal Pool Habitat Map - A.mxd

	Vernal Pool Envelope (ac.)	Proposed Disturbance Area (ac.)	% alteration
VP 7	1.5	0	0.0%

Vernal Pool Terrestrial Habitat (ac.)	Proposed Disturbance Area (ac.)	% alteration
4.9	0.02	0.4%





Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Vernal Pool Envelope (100')
- Vernal Pool Terrestrial Habitat (250')
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label Wetland Label

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Vernal Pool Habitat Map

Habitat B

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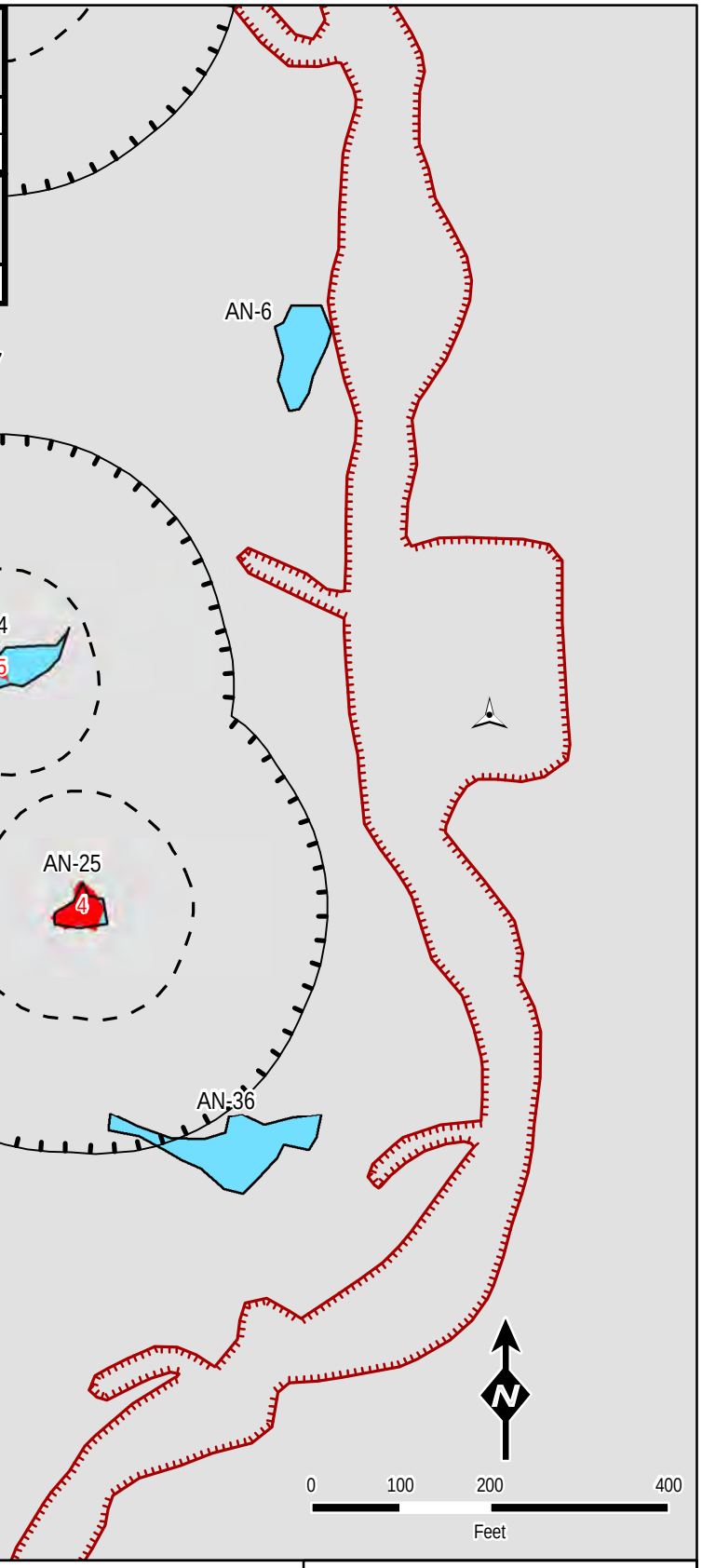
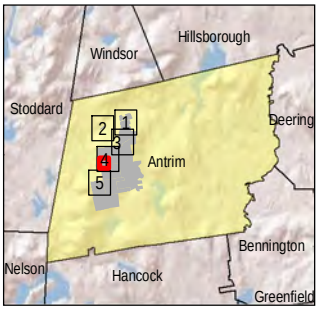
\\appsrit\GIS\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure 2 Vernal Pool Habitat Map - B.mxd

	Vernal Pool Envelope (ac.)	Proposed Disturbance Area (ac.)	% alteration
VP 4	1.1	0	0.0%
VP 5	0.9	0	0.0%

Vernal Pool Terrestrial Habitat (ac.)	Proposed Disturbance Area (ac.)	% alteration
6.5	0	0.0%





Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Vernal Pool Envelope (100')
- Vernal Pool Terrestrial Habitat (250')
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label Wetland Label

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Figure 2

Vernal Pool Habitat Map

Habitat C

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5.0 REFERENCES

Calhoun, A. J. K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

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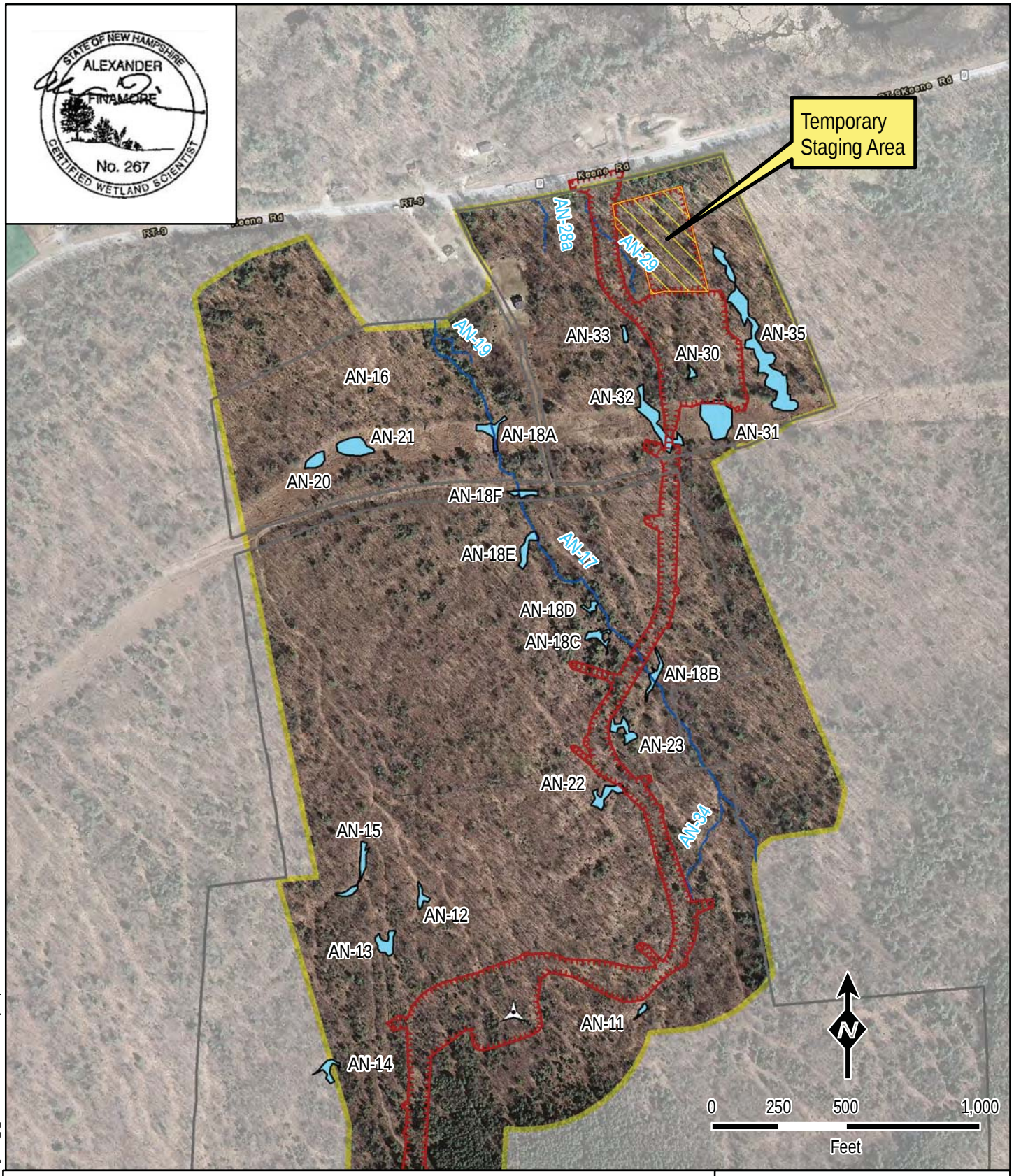
Identification and Documentation of Vernal Pools in New Hamphire. Anne Tappan, Ed. NH Fish & Game Department, Nongame and Endangered Wildlife Program. 1997.

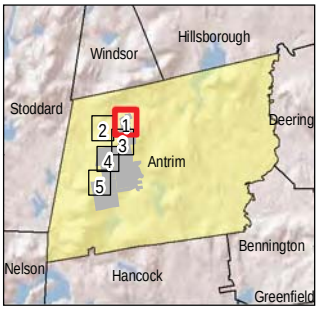
Maine Amphibians and Reptiles. Malcolm J. Hunter, Aram J.K. Calhoun, & Mark McCollough, Ed. University of Maine Press. 1999.

APPENDIX A

Natural Resource Survey Map



STATE OF NEW HAMPSHIRE
ALEXANDER FINAMORE
No. 267
CERTIFIED WETLAND SCIENTIST



Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT
ANTRIM, NH

Natural Resource Survey Map
Map 1 of 5

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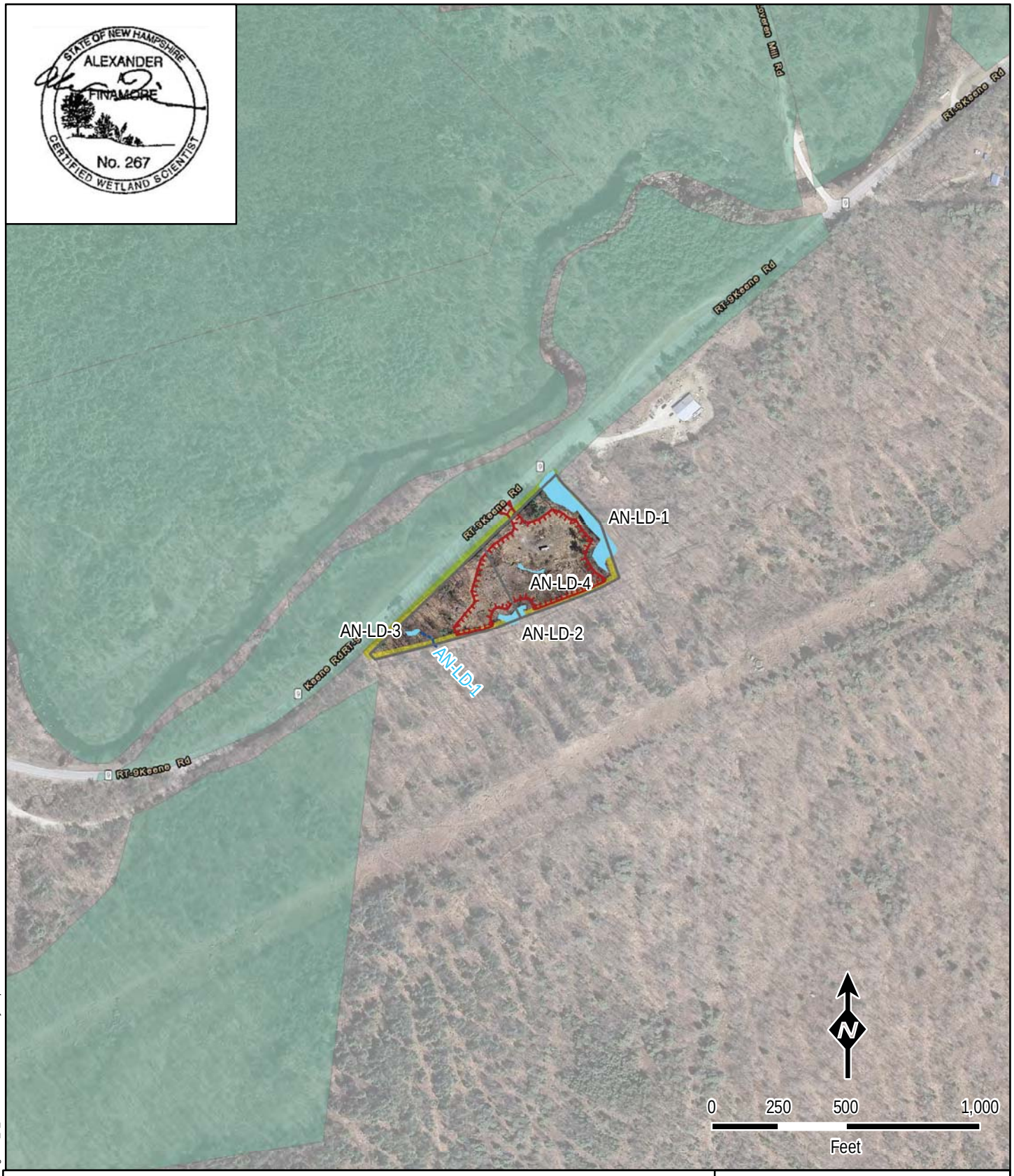

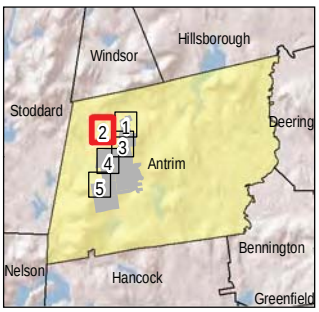

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT
ANTRIM, NH

Natural Resource Survey Map
Map 2 of 5

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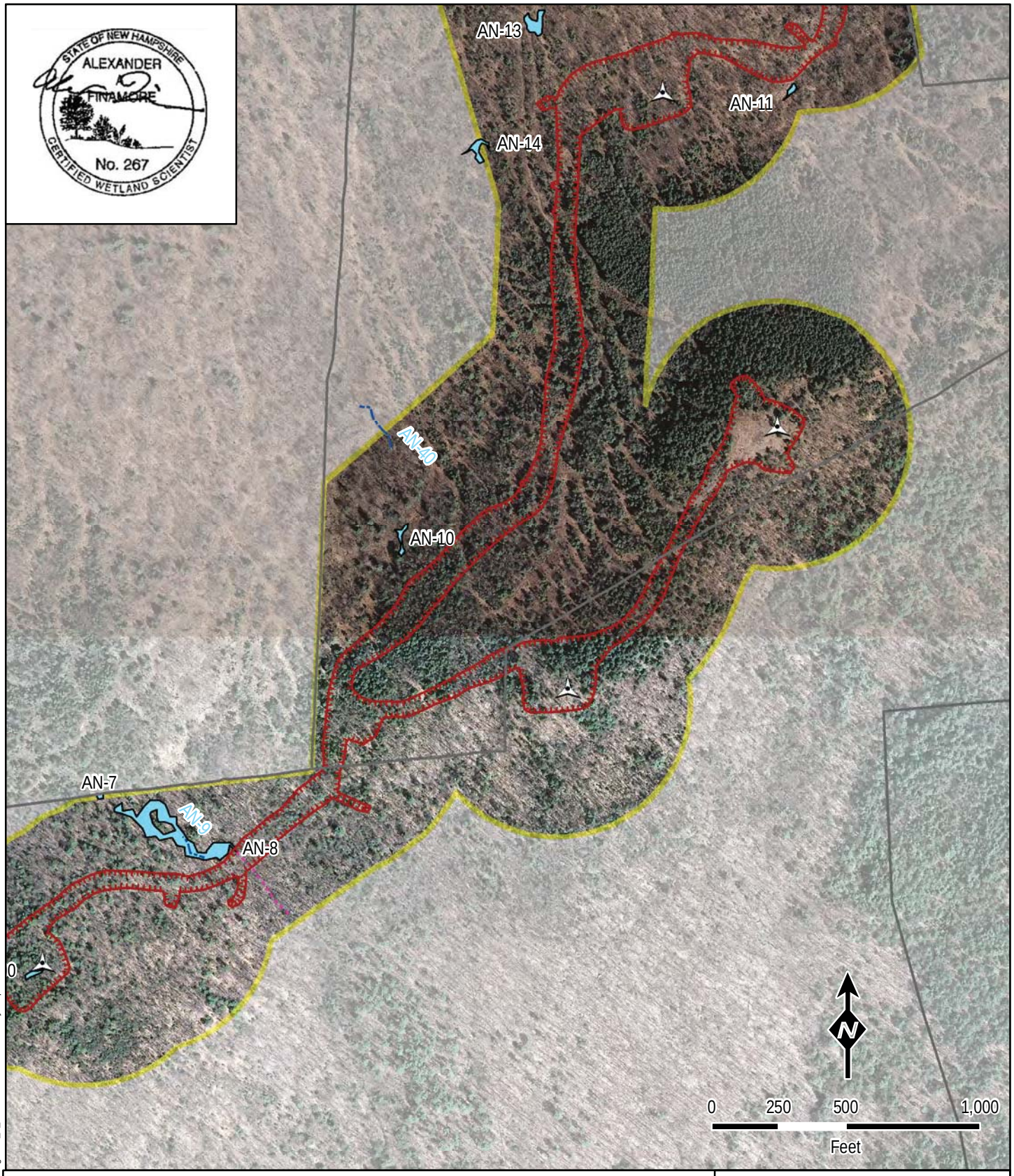

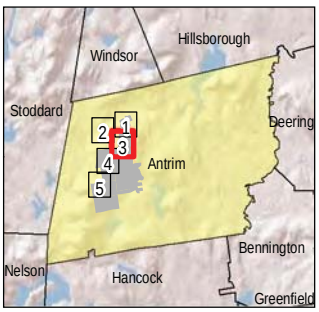

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label

Wetland Label

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ANTRIM, NH

Natural Resource Survey Map

Map 3 of 5

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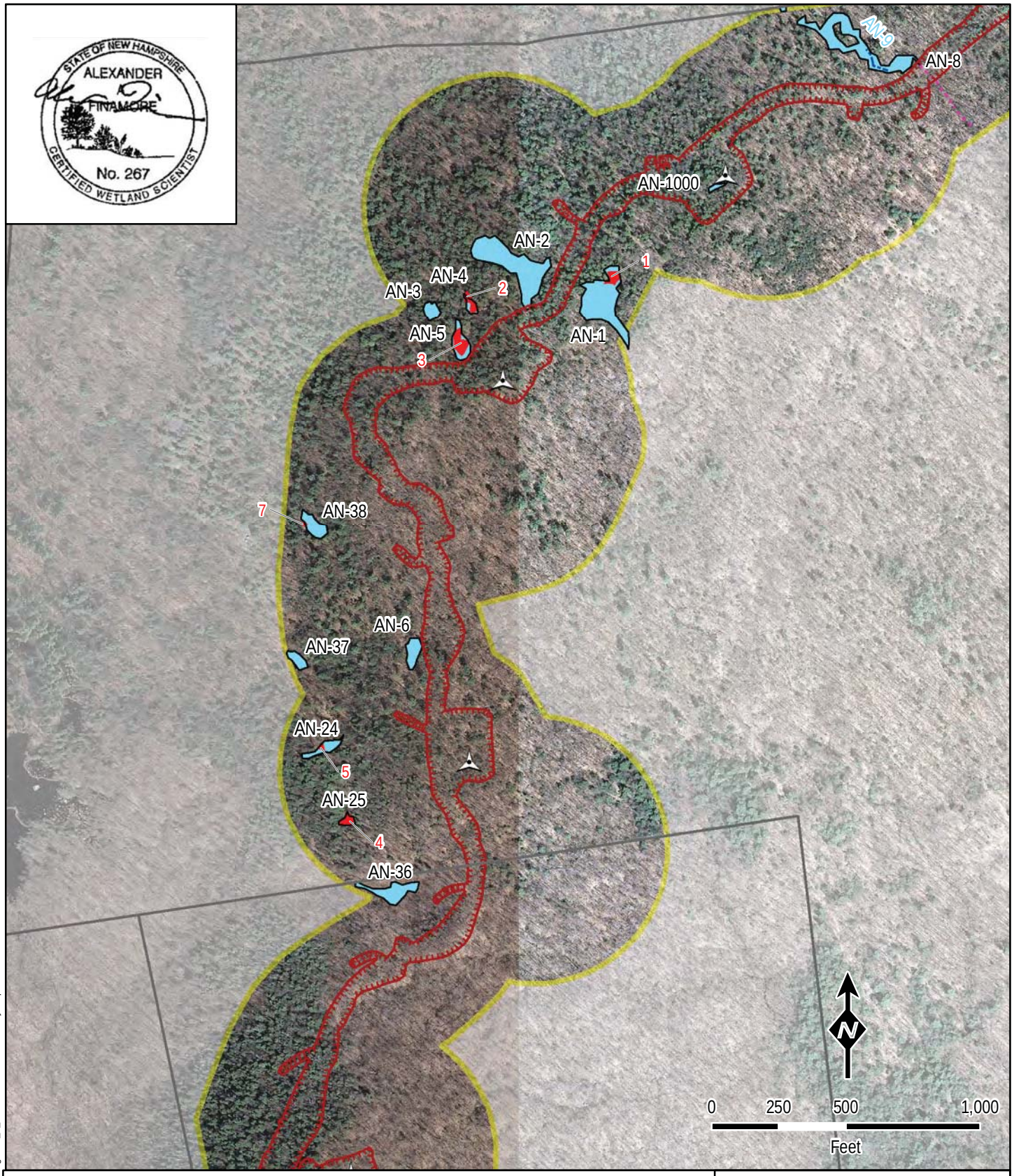

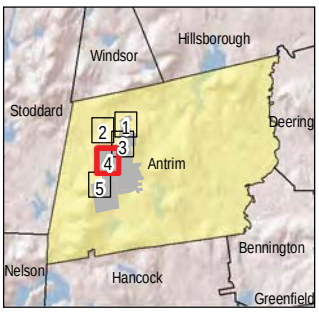

Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage
- Stream Label
- Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT
ANTRIM, NH

Natural Resource Survey Map
Map 4 of 5

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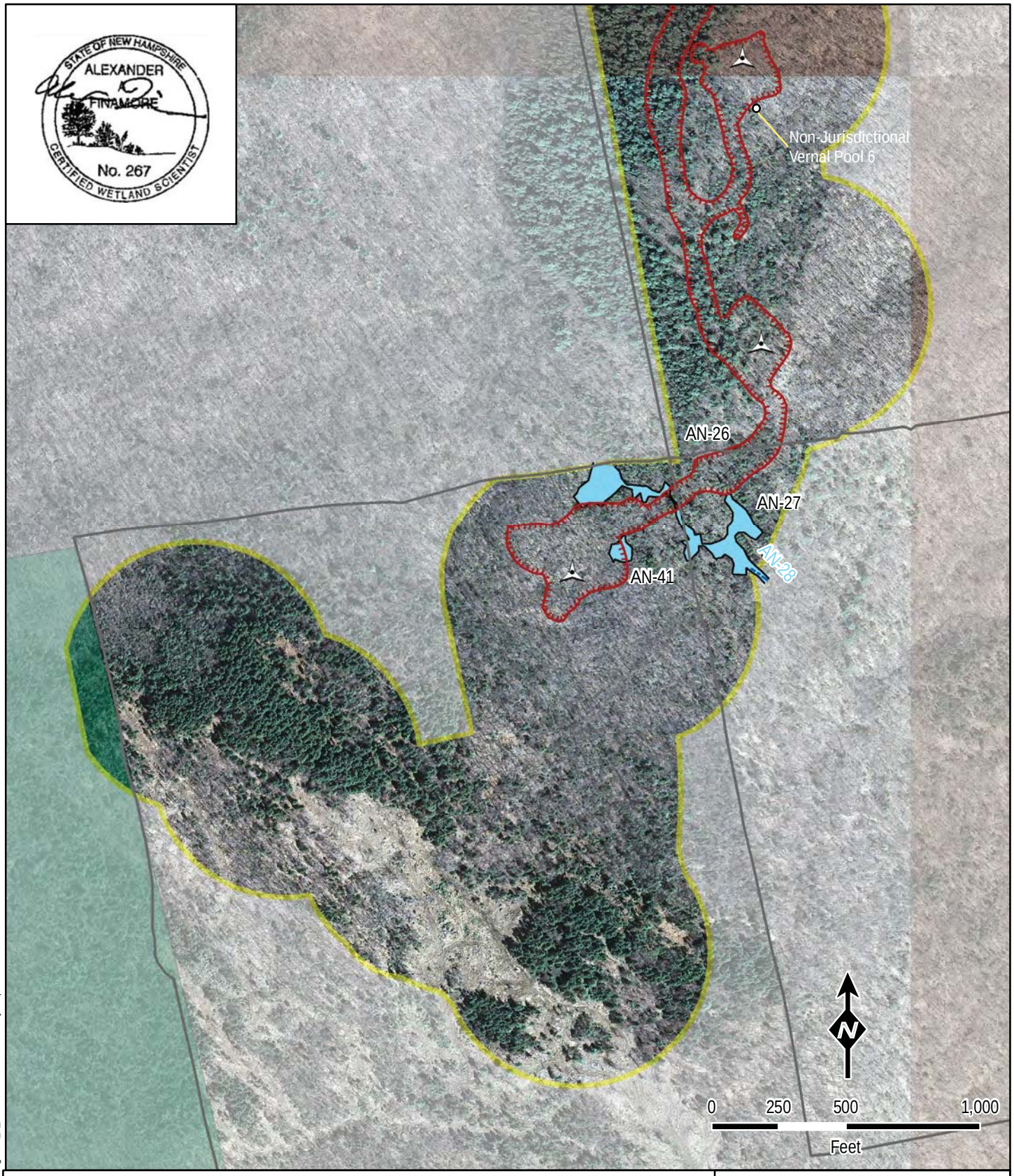
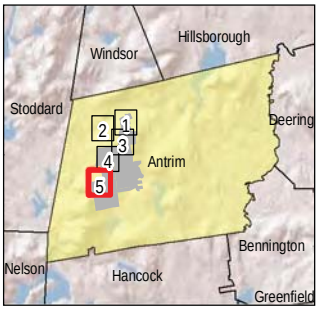
\\appesrit\GIS\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure 1_5_b Natural Resource Survey Map.mxd





Legend

- Proposed WTG Location
- Proposed Disturbance Area
- Vernal Pool
- Project Parcels
- Existing Conserved Lands
- Resource Survey Area
- Wetlands
- Wetland Boundary
- Perennial Stream
- Intermittent Stream
- Drainage

Stream Label

Wetland Label

Antrim Wind Energy

ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

Natural Resource Survey Map

Map 5 of 5

Produced by: TRC | 7/6/2015

\\appesrit\GIS\PROJECTS\AUGUSTA\Eolian\ANTRIM\Figure 1_5_b Natural Resource Survey Map.mxd

APPENDIX B

Vernal Pool Field Data Forms
&
Vernal Pool Site Photographs

VP-1

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name Jim Baldus & Alex Freeman Phone number (207) 879-1930 EXT 143

Address 400 Southborough Drive South Portland, ME

Location of pool Tuttle Hill Antrim, NH

GPS (if available): Latitude N 43°03.454 Longitude W072°01.082 Datum _____

Photos attached 2 pool 1 animals

Date: 5/2/11 Time start 2:10 Time end 2:45

Weather Overcast 60°F Pool size 20 x 50' Water depth 2-8

Pool: 14°C ❑ measured ☒ estimated

SPECIES	Spotted Salam	wood frog	Green frog				
adult							
vocalization			1				
amplexus							
courtship							
spermatophores							
eggs	8 masses	5 masses					
tadpoles/larvae							
juveniles							

Comments: _____

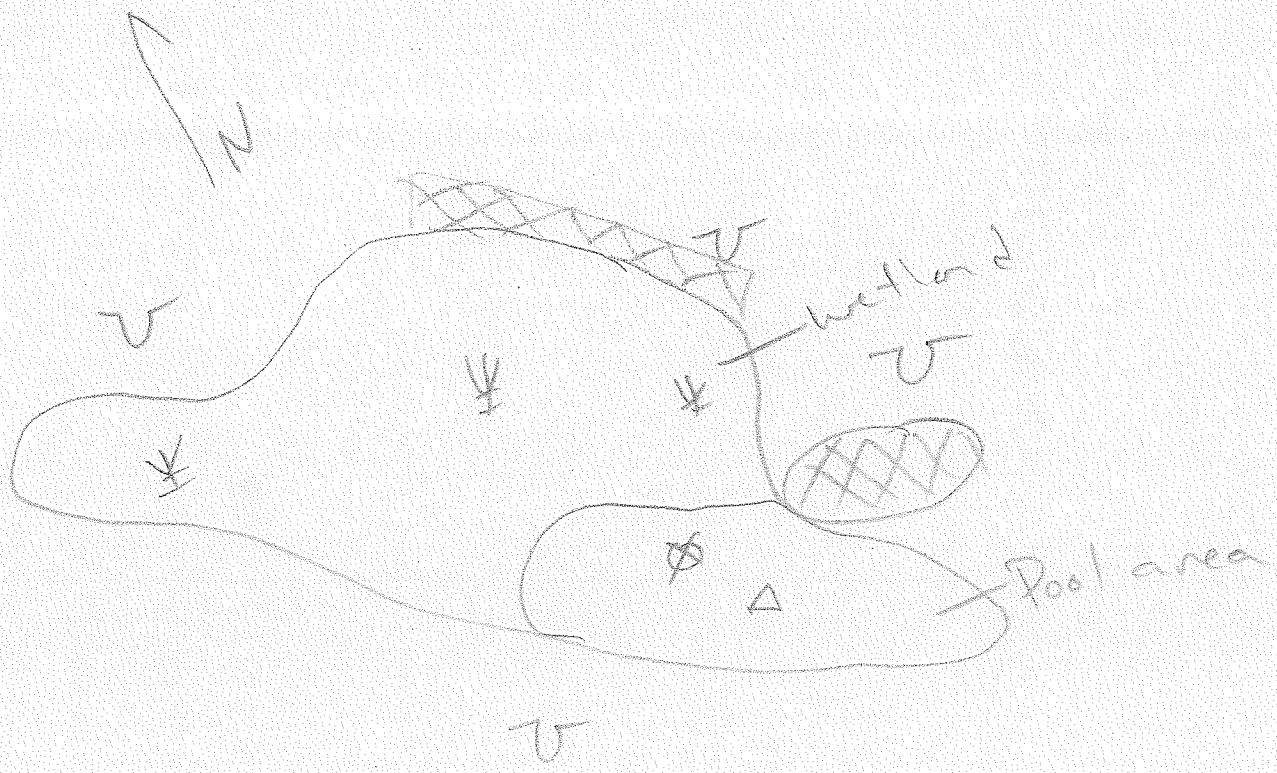
Date: _____ Time start _____ Time end _____

Weather _____ Pool size _____ Water depth _____

SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

Comments: _____

Use the back of the sheet for sketch/field map of the pool.



⊗ - ~~SS~~ WF

△ - SS

⬭ - ledge

VP-1

VP-1

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Tuttle Hill, Antrim, NH **Observer** JB + AF

SITE/ TYPE:

- ____ upland-isolated (pool not associated with a wetland)
- ____ bottomland-isolated (pool in a floodplain, not in a wetland)
- ✓ wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)

HABITAT: (estimate % of type)

- 50% woodland (specify type) ____ deciduous ____ coniferous ✓ mixed
- ____ agriculture or open fields
- ____ gravel pit
- ____ residential
- ____ roadside
- ____ other____

OVERSTORY:

- ✓ heavy overstory, >50% shrubs and/or trees
- ____ moderate overstory, <50% shrubs and/or trees
- ____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type).

- 20% shrubs
- ____ emergent vegetation (i.e. grass, cattails)
- few branches, twigs (in pool or overhanging into water)
- ____ submergent vegetation
- 80% sphagnum moss
- ____ other____

BOTTOM: (estimate % of types composing bottom surface)

- ____ sand
- ____ mud/soft sediment
- ✓ leaf litter 90%
- ____ submergent vegetation
- ____ emergent vegetation

DOMINANT PLANTS, LIST: (optional) Ace rub, vac cor, Black Spruce Sphagnum, car sp., Osm cin

COMMENTS: Pit + mound surrounded by mossy wetland WF eggs mature

Attach location documentation.

Photo 1 - South
Photo 2 - West
Photo 3 - Spotted
Photo 4 - wood frog

VP-1

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
- ____ photos included

____ dry, drying pool visit
- ____ photos included

✓ field map of pool

____ written directions to pool

____ USGS map, photo copy

____ ONE of the following, indicating pool location:
- ____ tax assessors map
- ____ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
- ____ fairy shrimp
- ✓ wood frog
  - ____ chorus
  - ____ amplexus
  - ✓ egg mass
  - ____ tadpoles
- ✓ salamander (spotted, Jefferson, blue-spotted)
  - ____ courtship
  - ✓ spermatophores
  - ____ egg mass
  - ____ larvae

✓ Photos of indicator species

✓ Documentation forms and maps submitted to <u>both</u>:
- ____ town conservation commission
- ____ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name Jim Boldue + Alex Finamore

Address 400 Southborough Drive
South Portland, ME 04106

Phone number (207) 879-1930 EXT 143

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP1

VP1 wood frog eggs

VP1 spotted salamander eggs

VP1

VP1 second visit June 2011

VP1 second visit June 2011

VP-2

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name JB + AF Phone number

Address

Location of pool Tattle Hill Antrim

~~NAD83~~ GPS (if available): Latitude 43 03.436 Longitude 72 01.200 Datum NAD83

Photos attached 2 pool 2 animals

Date: 5-5-2011 Time start 11:30 Time end

Weather Scattered Showers Pool size 20 x 40 Water depth 9"

☐ measured ☑ estimated

Water temp 9°C

SPECIES	WF	SS					
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs	1	16					
tadpoles/larvae							
juveniles							

Comments:

Date: Time start Time end

Weather Pool size Water depth

SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

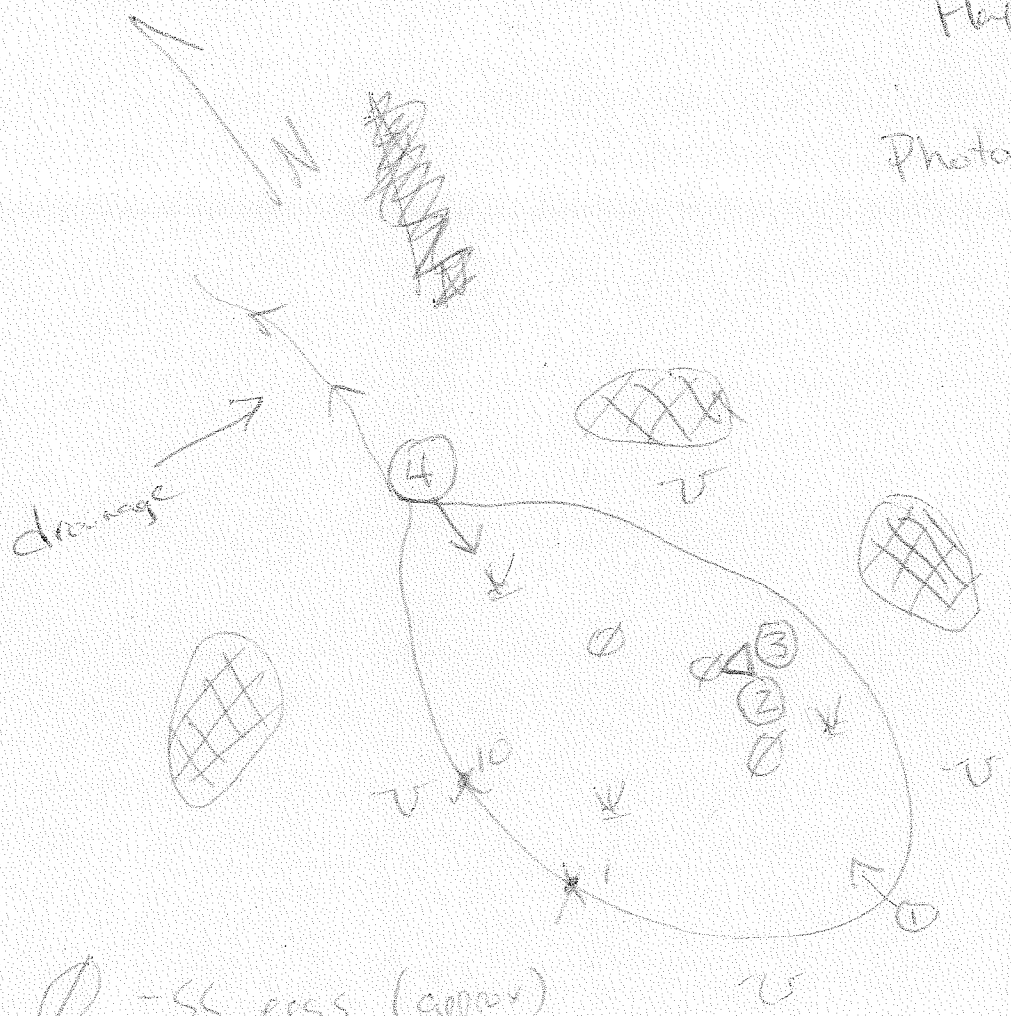
Comments:

Use the back of the sheet for sketch/field map of the pool.

VP-2

Flags 1-10

Photos = 4



∅ - 55 eggs (approx)

△ - WF egg

▨ - edge cover

⩡ - wetland

⩔ - upland

① - Photo location

VP-2

VP-2

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Tuttle Hill, Antrim **Observer** JB + AF

SITE/ TYPE:

____ upland-isolated (pool not associated with a wetland)
____ bottomland-isolated (pool in a floodplain, not in a wetland)
✓ wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)
Isolated Red maple Swamp (very Small)

HABITAT: (estimate % of type)

100 woodland (specify type) ____ deciduous ____ coniferous ✓ mixed
____ agriculture or open fields
____ gravel pit
____ residential
____ roadside
____ other____

OVERSTORY:

✓ heavy overstory, >50% shrubs and/or trees
____ moderate overstory, <50% shrubs and/or trees
____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type).

15 shrubs
____ emergent vegetation (i.e. grass, cattails)
25 branches, twigs (in pool or overhanging into water)
____ submergent vegetation
20 sphagnum moss
____ other____

BOTTOM: (estimate % of types composing bottom surface)

____ sand
____ mud/soft sediment
100 leaf litter
____ submergent vegetation
____ emergent vegetation

DOMINANT PLANTS, LIST: (optional) Ace rub, Vac cor, Spi lat

COMMENTS: Isolated pool in pocket of ledge near Top of mnt.

Attach location documentation.

VP-2

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
- ____ photos included

____ dry, drying pool visit
- ____ photos included

✓ field map of pool

____ written directions to pool

____ USGS map, photo copy

____ ONE of the following, indicating pool location:
- ____ tax assessors map
- ____ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
- ____ fairy shrimp
- ✓ wood frog
  - ____ chorus
  - ____ amplexus
  - ✓ egg mass
  - ____ tadpoles
- ✓ salamander (spotted, Jefferson, blue-spotted)
  - ____ courtship
  - ____ spermatophores
  - ✓ egg mass
  - ____ larvae

✓ Photos of indicator species (4)

____ Documentation forms and maps submitted to <u>both</u>:
- ____ town conservation commission
- ____ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name Jim Bolduc + Alex Finamore

Address _____

_____

Phone number _____

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP2 wood frog eggs

VP2 spotted salamander eggs

VP2

VP2

VP2 second visit June 2011

VP-3

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name JB + AF Phone number

Address

Location of pool Tuttle Hill - Antrim

GPS (if available): Latitude 43° 03.414 Longitude 72° 01.202 Datum NAD 83

12 flags

Photos attached 2 pool 2 animals

Date: 5-5-2011 Time start 12:00 Time end 12:40

Weather Scattered Showers 55° Pool size 40 x 50 ☐ measured ☑ estimated Water depth 8"

water temp 10°C

SPECIES	WF	SS	Red Newt				
adult			1				
vocalization							
amplexus							
courtship							
spermatophores							
eggs	5	9					
tadpoles/larvae							
juveniles							

Comments:

Date: Time start Time end

Weather Pool size Water depth

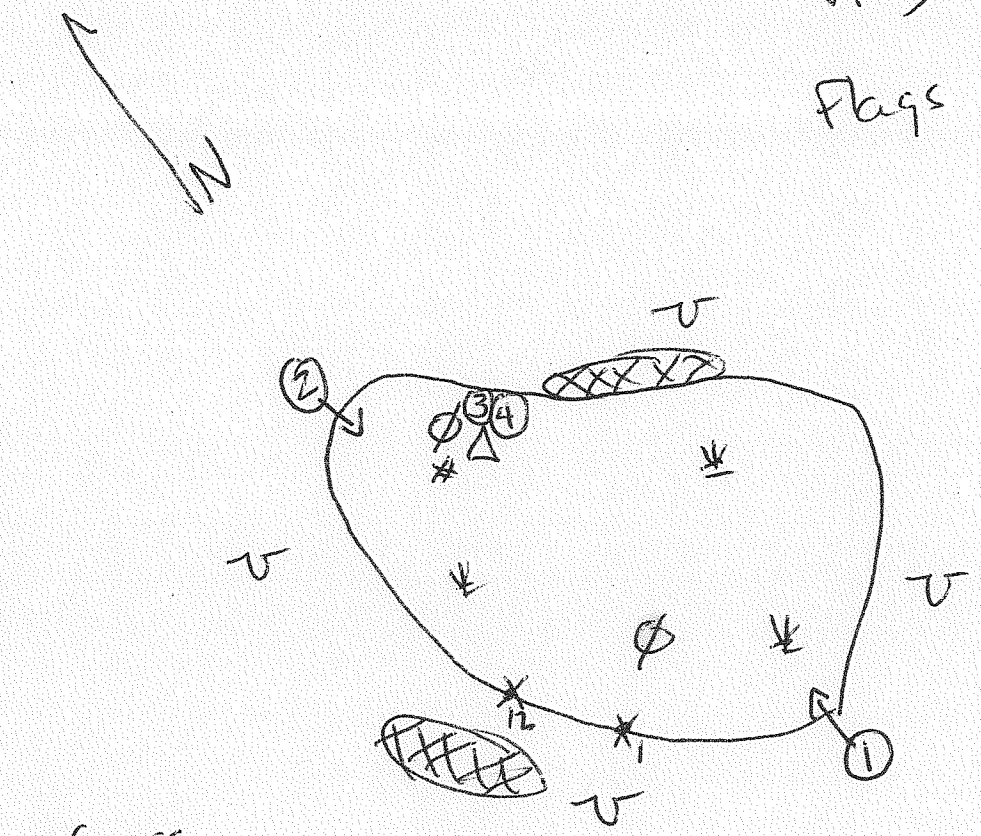
SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

Comments:

Use the back of the sheet for sketch/field map of the pool.

VP-3

Flags 1-12



Ø = SS

△ = WF

- Red Nest

= ledge outcrop

① Photo location (+ direction)

VP-3

VP-3

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Tuttle Hill - Antrim **Observer** JB + AF

SITE/ TYPE:

____ upland-isolated (pool not associated with a wetland)
____ bottomland-isolated (pool in a floodplain, not in a wetland)
✓ wetland complex (~~pool within~~ or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)
isolated + small

HABITAT: (estimate % of type)

100 woodland (specify type) ____ deciduous ____ coniferous ✓ mixed
____ agriculture or open fields
____ gravel pit
____ residential
____ roadside
____ other____

OVERSTORY:

✓ heavy overstory, >50% shrubs and/or trees
____ moderate overstory, <50% shrubs and/or trees
____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing aryae (estimate % of type).

15 shrubs
50 emergent vegetation (i.e. grass, cattails)
10 branches, twigs (in pool or overhanging into water)
____ submergent vegetation
20 sphagnum moss
____ other____

BOTTOM: (estimate % of types composing bottom surface)

____ sand
____ mud/soft sediment
50 leaf litter
____ submergent vegetation
50 emergent vegetation

DOMINANT PLANTS, LIST: (optional)

COMMENTS: Isolated pool in ledge pocket near summit (Turbine 4)

Attach location documentation (Ace rub, Sci cyp, Sphagnum, Sp. lat, Car sp. Vac cor)

VP-3

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
- ✓ photos included

___ dry, drying pool visit
- ___ photos included

___ field map of pool

___ written directions to pool

___ USGS map, photo copy

___ ONE of the following, indicating pool location:
- ___ tax assessors map
- ___ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
- ___ fairy shrimp
- ✓ wood frog
  - ___ chorus
  - ___ amplexus
  - ✓ egg mass
  - ___ tadpoles
- ✓ salamander (spotted, Jefferson, blue-spotted)
  - ___ courtship
  - ___ spermatophores
  - ✓ egg mass
  - ___ larvae

✓ Photos of indicator species

___ Documentation forms and maps submitted to both:
- ___ town conservation commission
- ___ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name Jim Bolduc + Alex Finamore

Address _____

_____

Phone number _____

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP3 wood frog eggs

VP3 spotted salamander eggs

VP3

VP3

VP3 second visit June 2011

VP-4

Flags 1-10

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name JR + AF Phone number

Address

Location of pool Between Tuttle Hill + Willard Mnt. - Antrim

GPS (if available): Latitude 43° 03.127 Longitude 72° 01.310 Datum NAD83

Photos attached 2 pool 2 animals

Date: 5-5 Time start ~~2~~ 1:50 Time end 2:15

Weather Partly Cloudy 55° Pool size 50x40 Water depth 16"

❑ measured ☒ estimated

water temp 10°C

SPECIES	WF	SS					
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs	4	SS					
tadpoles/larvae							
juveniles							

Comments:

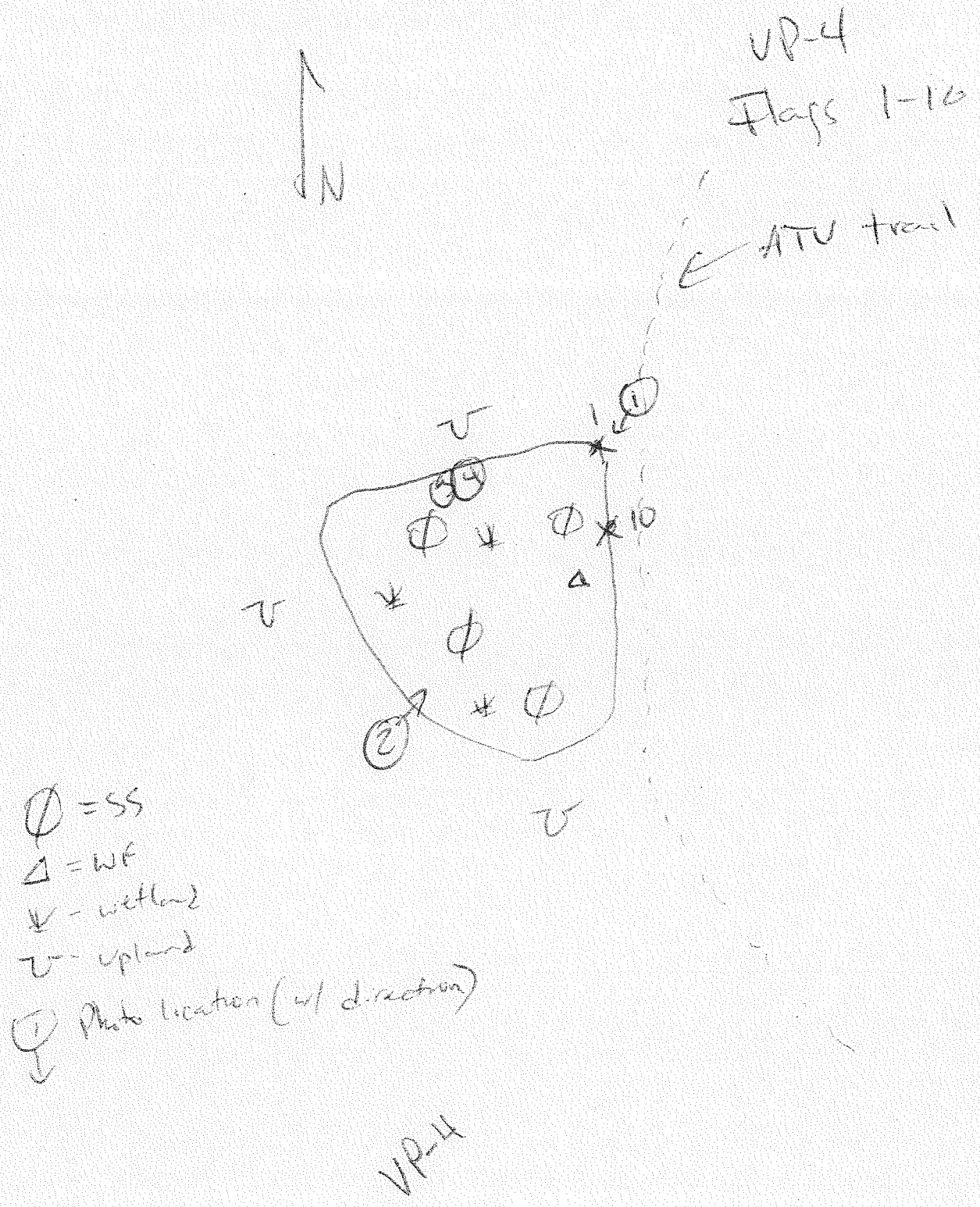
Date: Time start Time end

Weather Pool size Water depth

SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

Comments:

Use the back of the sheet for sketch/field map of the pool.


N
VP-4
Flags 1-10
ATV trail
1
2
3
4
10
U
U
U
= SS
= WF
- wetland
U - upland
Photo location (w/ direction)
VP-4

VP-4

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Between Tuttle Hill + Wilard road **Observer** JB + AF

SITE/ TYPE:

____ upland-isolated (pool not associated with a wetland)
____ bottomland-isolated (pool in a floodplain, not in a wetland)
✓ wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)
Hemlock swamp

HABITAT: (estimate % of type)

100 woodland (specify type) ____ deciduous ____ coniferous ✓ mixed
____ agriculture or open fields
____ gravel pit
____ residential
____ roadside
____ other____

OVERSTORY:

✓ heavy overstory, >50% shrubs and/or trees (Hemlock)
____ moderate overstory, <50% shrubs and/or trees
____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type).

5 shrubs
5 emergent vegetation (i.e. grass, cattails)
40 branches, twigs (in pool or overhanging into water)
____ submergent vegetation
____ sphagnum moss
____ other____

BOTTOM: (estimate % of types composing bottom surface)

____ sand
____ mud/soft sediment
100 leaf litter
____ submergent vegetation
____ emergent vegetation

DOMINANT PLANTS, LIST: (optional)
Ace rub, Tsu can, Osmcin

COMMENTS: Adjacent to ATV trail

Attach location documentation.

VP-4

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
  ✓ photos included (x4)

___ dry, drying pool visit
  ___ photos included

___ field map of pool

___ written directions to pool

___ USGS map, photo copy

___ ONE of the following, indicating pool location:
  ___ tax assessors map
  ___ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
  ___ fairy shrimp
  ✓ wood frog
    ___ chorus
    ___ amplexus
    ✓ egg mass
    ___ tadpoles

  ✓ salamander (spotted, Jefferson, blue-spotted)
    ___ courtship
    ___ spermatophores
    ✓ egg mass
    ___ larvae

✓ Photos of indicator species

___ Documentation forms and maps submitted to <u>both</u>:
  ___ town conservation commission
  ___ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name Jim Boldue + Alex Finamore

Address _____

_____

Phone number _____

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP4 spotted salamander eggs

VP4 spotted salamander eggs

VP4

VP4

VP4 second visit June 2011

VP-5

5-flags

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name JB - AF Phone number

Address

Location of pool Between Tuttle Hill & Willard Mnt

GPS (if available): Latitude 43° 03.169 Longitude 72° 01.319 Datum NAD 83

Photos attached 2 pool 1 animals

Date: 5-9-2011 Time start 9:00 Time end 9:25 Weather temp 10 °C

Weather Sunny ~60° Pool size 15x25 ☐ measured ☒ estimated Water depth 6"

SPECIES	SS						
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs	10						
tadpoles/larvae							
juveniles							

Comments:

Date: Time start Time end

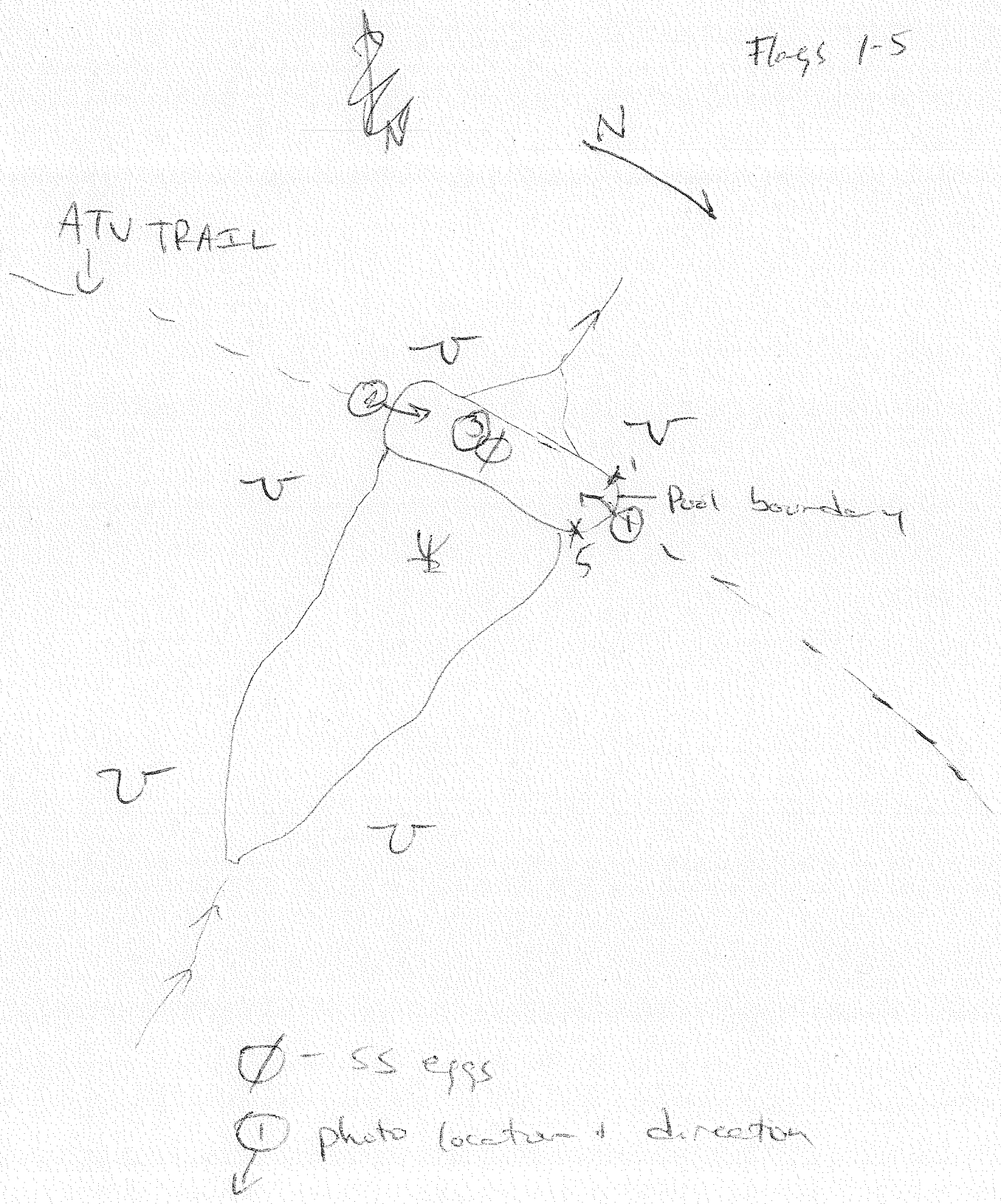
Weather Pool size Water depth

SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

Comments:

Use the back of the sheet for sketch/field map of the pool.

VP-5


Flags 1-5
N
ATV TRAIL
Pool boundary
1
2
3
4
5
Ø - SS eggs
photo location + direction

VP-5

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Between Tattle Hill + wetland **Observer** JB + AF

SITE/ TYPE:

____ upland-isolated (pool not associated with a wetland)
____ bottomland-isolated (pool in a floodplain, not in a wetland)
✓ wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)
Seep

HABITAT: (estimate % of type)

100 woodland (specify type) ____ deciduous ____ coniferous ✓ mixed
____ agriculture or open fields
____ gravel pit
____ residential
____ roadside
____ other____

OVERSTORY:

✓ heavy overstory, >50% shrubs and/or trees
____ moderate overstory, <50% shrubs and/or trees
____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type).

____ shrubs
____ emergent vegetation (i.e. grass, cattails)
10 branches, twigs (in pool or overhanging into water)
____ submergent vegetation
____ sphagnum moss
____ other____

BOTTOM: (estimate % of types composing bottom surface)

____ sand
____ mud/soft sediment
100 leaf litter
____ submergent vegetation
____ emergent vegetation

DOMINANT PLANTS, LIST: (optional)

COMMENTS: In ATV trail where wetland seep crosses

Attach location documentation.

VP-5

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
  2 photos included

___ dry, drying pool visit
  ___ photos included

___ field map of pool

___ written directions to pool

___ USGS map, photo copy

___ ONE of the following, indicating pool location:
  ___ tax assessors map
  ___ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
  ___ fairy shrimp
  ___ wood frog
    ___ chorus
    ___ amplexus
    ___ egg mass
    ___ tadpoles
  ✓ salamander (spotted, Jefferson, blue-spotted)
    ___ courtship
    ___ spermatophores
    10 egg mass
    ___ larvae

1 Photos of indicator species

___ Documentation forms and maps submitted to both:
  ___ town conservation commission
  ___ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name Jim Boldue + Alex Finamore

Address _____

_____

Phone number _____

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP5 spotted salamander eggs

VP5

VP5

VP5 second visit June 2011

VP-6
Flags 1-3

VERNAL POOL DOCUMENTATION (PART 1 OF 2)

Observer's name: JBt AF Phone number:

Address:

Location of pool: Willard Mnt

GPS (if available): Latitude 43° 02.878 Longitude 72° 01.279 Datum NAD83

Photos attached: 2 pool 1 animals

Date: 5-9-11 Time start 10:15 Time end 10:25

Weather: Sunny ~65° Pool size 10 x 20 ☐ measured ☒ estimated Water depth 5"

water temp 13°C

SPECIES	SS						
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs	9						
tadpoles/larvae							
juveniles							

Comments: In old relic farm rd.

Date: Time start Time end

Weather Pool size Water depth

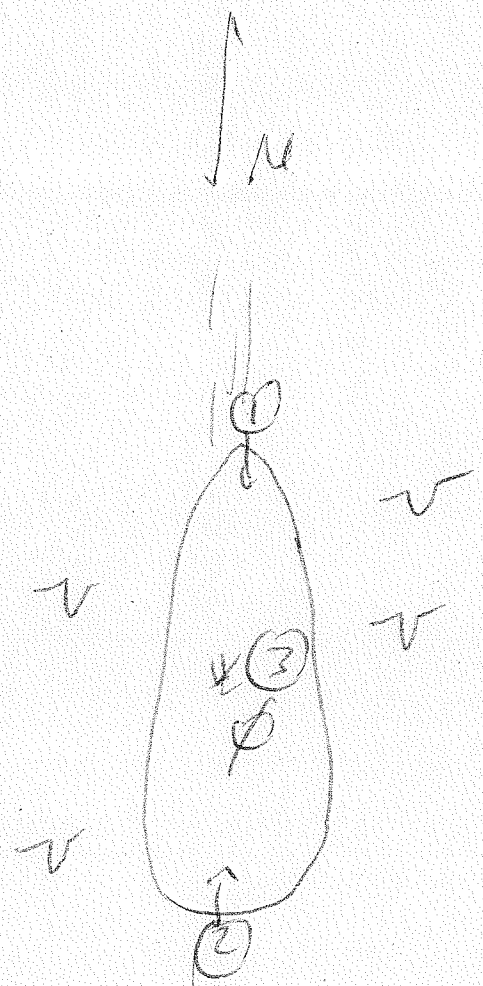
SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							

Comments:

Use the back of the sheet for sketch/field map of the pool.

VP-6

Flays 1-5



ϕ = SS eqm

① = pic

← old farm road

VP-6

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)

Pool Location Willard mn 1 **Observer** JR / AF

SITE/ TYPE:

____ upland-isolated (pool not associated with a wetland)
____ bottomland-isolated (pool in a floodplain, not in a wetland)
✓ wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other)
Isolated w/in old farm rd

HABITAT: (estimate % of type)

60 woodland (specify type) ✓ deciduous ____ coniferous ____ mixed
____ agriculture or open fields
____ gravel pit
____ residential
____ roadside
____ other____

OVERSTORY:

✓ heavy overstory, >50% shrubs and/or trees
____ moderate overstory, <50% shrubs and/or trees
____ open site with grasses, forbs, scattered shrubs

COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type).

____ shrubs
____ emergent vegetation (i.e. grass, cattails)
10 branches, twigs (in pool or overhanging into water)
____ submergent vegetation
____ sphagnum moss
____ other____

BOTTOM: (estimate % of types composing bottom surface)

____ sand
____ mud/soft sediment
100 leaf litter
____ submergent vegetation
____ emergent vegetation

DOMINANT PLANTS, LIST: (optional)

Fag gra

COMMENTS:

Attach location documentation.

VP-6

VERNAL POOL DOCUMENTATION COVER SHEET

Include with documentation for each vernal pool.

✓ flooded pool visit
- 2 photos included

___ dry, drying pool visit
- ___ photos included

___ field map of pool

___ written directions to pool

___ USGS map, photo copy

___ ONE of the following, indicating pool location:
- ___ tax assessors map
- ___ detailed location information

✓ Evidence of vernal pool indicator species (check all present):
- ___ fairy shrimp
- ___ wood frog
  - ___ chorus
  - ___ amplexus
  - ___ egg mass
  - ___ tadpoles
- ✓ salamander (spotted, Jefferson, blue-spotted)
  - ___ courtship
  - ___ spermatophores
  - 9 egg mass
  - ___ larvae

1 Photos of indicator species

___ Documentation forms and maps submitted to both:
- ___ town conservation commission
- ___ Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

Reporter's name _____

Address _____

_____

Phone number _____

Thank you for participating in the vital process of protecting the resources of your community and the state.

VP6

VP6 spotted salamander eggs

VP7

VP7

EXHIBIT 7

USACE NH PROGRAMMATIC PERMIT APPENDIX B

US Army Corps of Engineers®
New England District

New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		X
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	X	
2.5 The overall project site is more than 40 acres.	X	
2.6 What is the size of the existing impervious surface area?	0 sq. ft.	
2.7 What is the size of the proposed impervious surface area?	490,348 sq. ft.	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	0.16%	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)		X
3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	

3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?	X	
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	X	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		
5. Historic/Archaeological Resources		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law..
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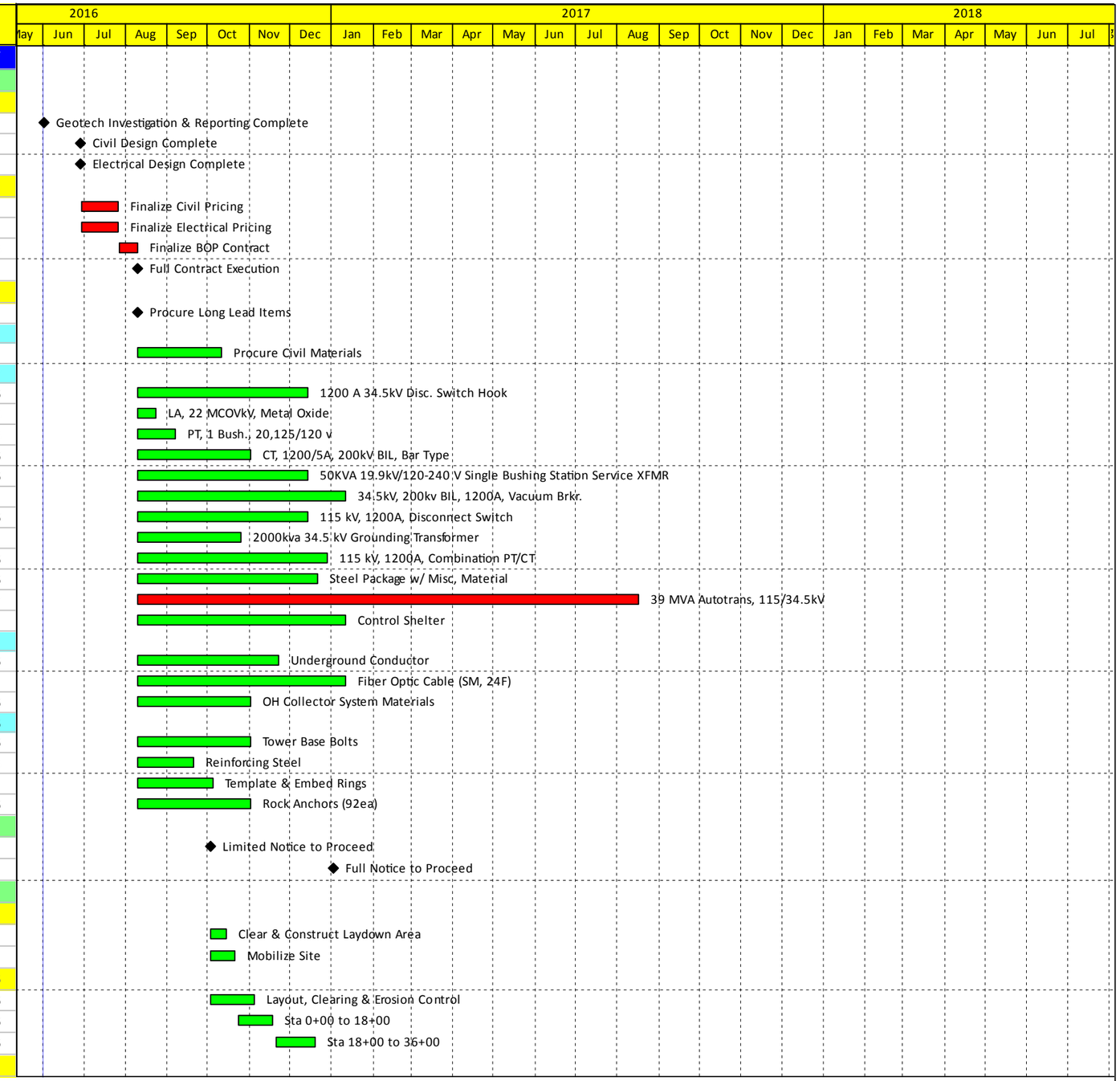
EXHIBIT 8

CONSTRUCTION SEQUENCE

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
Eolian-Antrim Wind Power Project- Permit Level Schedule		392	0		01-Jun-16	01-Dec-17
Preconstruction Phase		315	77		01-Jun-16	16-Aug-17
Owner Design & Engineering		20	0		01-Jun-16	28-Jun-16
PRE-00-05	Geotech Investigation & Reporting Complete	0	0	0%		01-Jun-16
PRE-00-10	Civil Design Complete	0	0	0%		28-Jun-16
PRE-00-25	Electrical Design Complete	0	0	0%		28-Jun-16
RFP & Preconstruction		30	0		29-Jun-16	10-Aug-16
PRE-00-20	Finalize Civil Pricing	20	0	0%	29-Jun-16	26-Jul-16
PRE-00-35	Finalize Electrical Pricing	20	0	0%	29-Jun-16	26-Jul-16
PRE-00-60	Finalize BOP Contract	10	0	0%	27-Jul-16	09-Aug-16
PRE-00-70	Full Contract Execution	0	0	0%	10-Aug-16	
Procurement		265	77		10-Aug-16	16-Aug-17
PRO-LLI-00	Procure Long Lead Items	0	0	0%	10-Aug-16	
Civil Materials		45	297		10-Aug-16	11-Oct-16
PR0-CM-00	Procure Civil Materials	45	297	0%	10-Aug-16	11-Oct-16
Collector Substation Materials		265	7		10-Aug-16	16-Aug-17
PRO-SUB-010	1200 A 34.5kV Disc. Switch Hook	90	177	0%	10-Aug-16	14-Dec-16
PRO-SUB-030	LA, 22 MCOVkV, Metal Oxide	10	257	0%	10-Aug-16	23-Aug-16
PRO-SUB-040	PT, 1 Bush., 20,125/120 v	20	247	0%	10-Aug-16	06-Sep-16
PRO-SUB-050	CT, 1200/5A, 200kV BIL, Bar Type	60	207	0%	10-Aug-16	01-Nov-16
PRO-SUB-060	50KVA 19.9kV/120-240 V Single Bushing Station Service XFMR	90	177	0%	10-Aug-16	14-Dec-16
PRO-SUB-070	34.5kV, 200kv BIL, 1200A, Vacuum Brkr.	110	162	0%	10-Aug-16	11-Jan-17
PRO-SUB-080	115 kV, 1200A, Disconnect Switch	90	177	0%	10-Aug-16	14-Dec-16
PRO-SUB-090	2000kva 34.5 kV Grounding Transformer	55	212	0%	10-Aug-16	25-Oct-16
PRO-SUB-100	115 kV, 1200A, Combination PT/CT	100	167	0%	10-Aug-16	28-Dec-16
PRO-SUB-110	Steel Package w/ Misc, Material	95	162	0%	10-Aug-16	21-Dec-16
PRO-SUB-120	39 MVA Autotrans, 115/34.5kV	265	0	0%	10-Aug-16	16-Aug-17
PRO-SUB-130	Control Shelter	110	160	0%	10-Aug-16	11-Jan-17
Collector System		110	196		10-Aug-16	11-Jan-17
PRO-CS-00	Underground Conductor	75	143	0%	10-Aug-16	22-Nov-16
PRO-CS-10	Fiber Optic Cable (SM, 24F)	110	196	0%	10-Aug-16	11-Jan-17
PRO-CS-20	OH Collector System Materials	60	191	0%	10-Aug-16	01-Nov-16
WTG Foundations		60	178		10-Aug-16	01-Nov-16
PRO-WTG-00	Tower Base Bolts	60	178	0%	10-Aug-16	01-Nov-16
PRO-WTG-10	Reinforcing Steel	30	208	0%	10-Aug-16	20-Sep-16
PRO-WTG-20	Template & Embed Rings	40	198	0%	10-Aug-16	04-Oct-16
PRO-WTG-30	Rock Anchors (92ea)	60	178	0%	10-Aug-16	01-Nov-16
Construction		64	0		03-Oct-16	02-Jan-17
MOB-00-01	Limited Notice to Proceed	0	48	0%	03-Oct-16*	
MOB-00-02	Full Notice to Proceed	0	0	0%	02-Jan-17*	
Construction Phase		273	31		03-Oct-16	19-Oct-17
Mobilize		15	289		03-Oct-16	21-Oct-16
CRP-01-22	Clear & Construct Laydown Area	10	294	0%	03-Oct-16	14-Oct-16
MOB-01-00	Mobilize Site	15	48	0%	03-Oct-16	21-Oct-16
Clearing & Development of Access Road		55	48		03-Oct-16	19-Dec-16
ACC-01-02	Layout, Clearing & Erosion Control	25	48	0%	03-Oct-16	04-Nov-16
ACC-01-13	Sta 0+00 to 18+00	20	48	0%	24-Oct-16	18-Nov-16
ACC-01-23	Sta 18+00 to 36+00	20	48	0%	21-Nov-16	19-Dec-16
Clearing & Development of Crane Path & WTG Pads		145	27		02-Jan-17	21-Jul-17



Actual Work
Remaining Work
Critical Remaining Work
Milestone

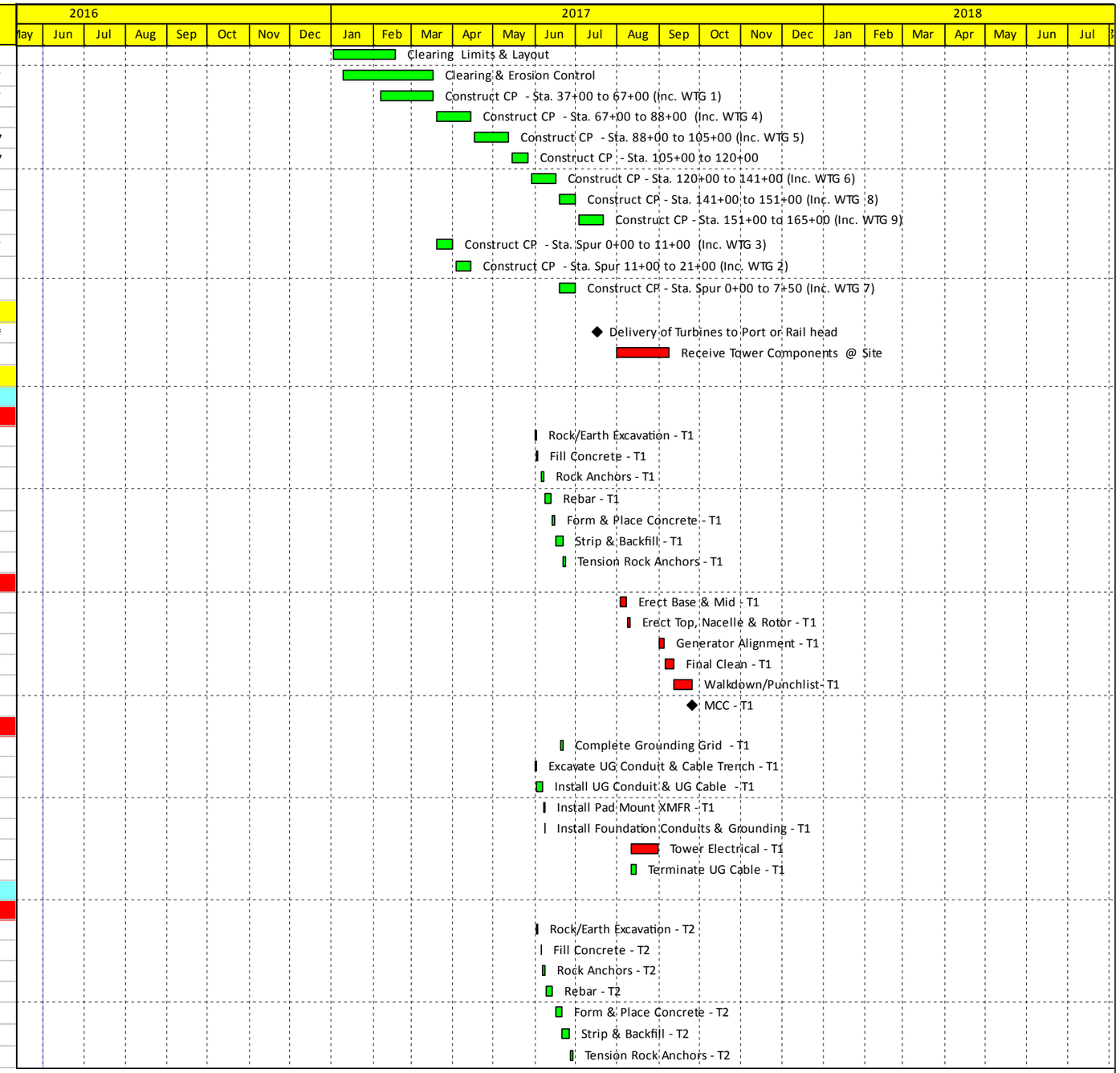
Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

05-Mar-15

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
CRP-01-00	Clearing Limits & Layout	35	14	0%	02-Jan-17	17-Feb-17
CRP-01-05	Clearing & Erosion Control	50	14	0%	09-Jan-17	17-Mar-17
CRP-01-10	Construct CP - Sta. 37+00 to 67+00 (Inc. WTG 1)	30	14	0%	06-Feb-17	17-Mar-17
CRP-01-15	Construct CP - Sta. 67+00 to 88+00 (Inc. WTG 4)	20	27	0%	20-Mar-17	14-Apr-17
CRP-01-20	Construct CP - Sta. 88+00 to 105+00 (Inc. WTG 5)	20	27	0%	17-Apr-17	12-May-17
CRP-01-25	Construct CP - Sta. 105+00 to 120+00	10	27	0%	15-May-17	26-May-17
CRP-01-30	Construct CP - Sta. 120+00 to 141+00 (Inc. WTG 6)	15	27	0%	29-May-17	16-Jun-17
CRP-01-35	Construct CP - Sta. 141+00 to 151+00 (Inc. WTG 8)	10	27	0%	19-Jun-17	30-Jun-17
CRP-01-40	Construct CP - Sta. 151+00 to 165+00 (Inc. WTG 9)	15	27	0%	03-Jul-17	21-Jul-17
CRP-01-45	Construct CP - Sta. Spur 0+00 to 11+00 (Inc. WTG 3)	10	66	0%	20-Mar-17	31-Mar-17
CRP-01-50	Construct CP - Sta. Spur 11+00 to 21+00 (Inc. WTG 2)	10	66	0%	03-Apr-17	14-Apr-17
CRP-01-55	Construct CP - Sta. Spur 0+00 to 7+50 (Inc. WTG 7)	10	34	0%	19-Jun-17	30-Jun-17
WTG Transportation		40	0		17-Jul-17	08-Sep-17
TRN-01-11	Delivery of Turbines to Port or Rail head	0	0	0%		17-Jul-17*
TRN-02-01	Receive Tower Components @ Site	30	0	0%	31-Jul-17	08-Sep-17
WTG Construction		101	0		01-Jun-17	19-Oct-17
WTG 1		83	18		01-Jun-17	25-Sep-17
Foundation Construction		17	28		01-Jun-17	23-Jun-17
FND-01-01	Rock/Earth Excavation - T1	1	28	0%	01-Jun-17	01-Jun-17
FND-01-02	Fill Concrete - T1	1	28	0%	02-Jun-17	02-Jun-17
FND-01-03	Rock Anchors - T1	3	28	0%	05-Jun-17	07-Jun-17
FND-01-04	Rebar - T1	3	28	0%	08-Jun-17	12-Jun-17
FND-01-05	Form & Place Concrete - T1	3	28	0%	13-Jun-17	15-Jun-17
FND-01-06	Strip & Backfill - T1	4	28	0%	16-Jun-17	21-Jun-17
FND-01-16	Tension Rock Anchors - T1	2	28	0%	22-Jun-17	23-Jun-17
Deliver, Stage & Erect		38	18		03-Aug-17	25-Sep-17
ERE-01-01	Erect Base & Mid - T1	3	0	0%	03-Aug-17	07-Aug-17
ERE-01-02	Erect Top, Nacelle & Rotor - T1	3	0	0%	08-Aug-17	10-Aug-17
ERE-01-03	Generator Alignment - T1	2	0	0%	01-Sep-17	04-Sep-17
ERE-01-04	Final Clean - T1	5	0	0%	05-Sep-17	11-Sep-17
ERE-01-05	Walkdown/Punchlist- T1	10	0	0%	12-Sep-17	25-Sep-17
ERE-01-06	MCC - T1	0	18	0%		25-Sep-17
Tower Electrical		66	2		01-Jun-17	31-Aug-17
ELE-01-01	Complete Grounding Grid - T1	2	30	0%	20-Jun-17	21-Jun-17
ELE-01-02	Excavate UG Conduit & Cable Trench - T1	1	60	0%	01-Jun-17	01-Jun-17
ELE-01-03	Install UG Conduit & UG Cable - T1	3	60	0%	02-Jun-17	06-Jun-17
ELE-01-04	Install Pad Mount XMFR - T1	2	60	0%	07-Jun-17	08-Jun-17
ELE-01-05	Install Foundation Conduits & Grounding - T1	1	60	0%	08-Jun-17	08-Jun-17
ELE-01-06	Tower Electrical - T1	15	0	0%	11-Aug-17	31-Aug-17
ELE-01-07	Terminate UG Cable - T1	2	15	0%	11-Aug-17	14-Aug-17
WTG 2		87	13		02-Jun-17	02-Oct-17
Foundation Construction		19	30		02-Jun-17	28-Jun-17
FND-02-01	Rock/Earth Excavation - T2	1	32	0%	02-Jun-17	02-Jun-17
FND-02-02	Fill Concrete - T2	1	32	0%	05-Jun-17	05-Jun-17
FND-02-03	Rock Anchors - T2	3	32	0%	06-Jun-17	08-Jun-17
FND-02-04	Rebar - T2	3	32	0%	09-Jun-17	13-Jun-17
FND-02-05	Form & Place Concrete - T2	3	30	0%	16-Jun-17	20-Jun-17
FND-02-06	Strip & Backfill - T2	4	30	0%	21-Jun-17	26-Jun-17
FND-02-16	Tension Rock Anchors - T2	2	30	0%	27-Jun-17	28-Jun-17



Actual Work
Remaining Work
Critical Remaining Work
Milestone

Eolian-Antrim Wind Power Project

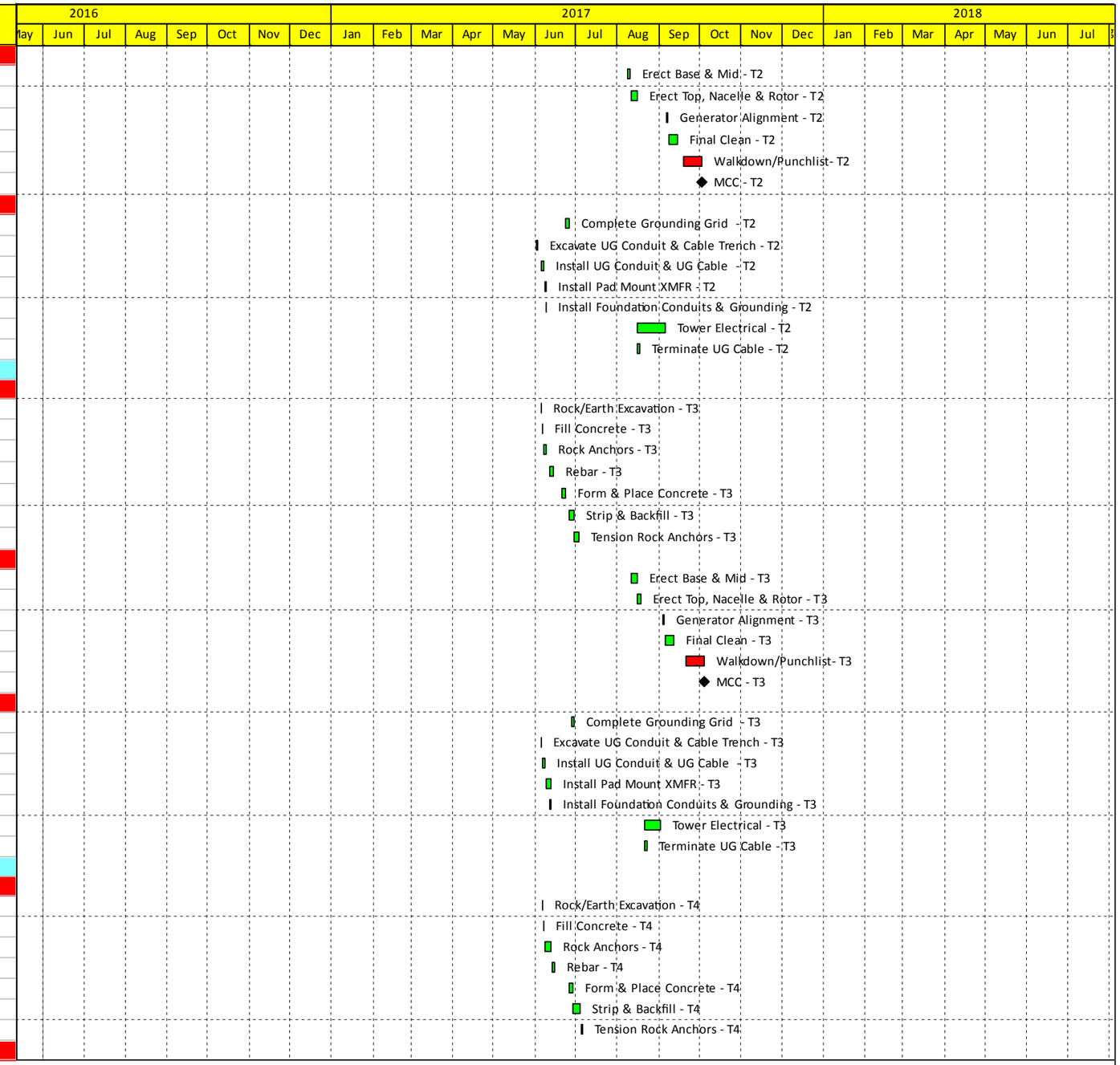
Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

05-Mar-15

GENERAL CONTRACTORS
WOOLWICH, MAINE
(207) 443-9747

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
Deliver, Stage & Erect		40	13		08-Aug-17	02-Oct-17
ERE-02-01	Erect Base & Mid - T2	3	2	0%	08-Aug-17	10-Aug-17
ERE-02-02	Erect Top, Nacelle & Rotor - T2	3	2	0%	11-Aug-17	15-Aug-17
ERE-02-03	Generator Alignment - T2	2	2	0%	06-Sep-17	07-Sep-17
ERE-02-04	Final Clean - T2	5	2	0%	08-Sep-17	14-Sep-17
ERE-02-05	Walkdown/Punchlist- T2	10	0	0%	19-Sep-17	02-Oct-17
ERE-02-06	MCC - T2	0	13	0%		02-Oct-17
Tower Electrical		68	4		02-Jun-17	05-Sep-17
ELE-02-01	Complete Grounding Grid - T2	2	32	0%	23-Jun-17	26-Jun-17
ELE-02-02	Excavate UG Conduit & Cable Trench - T2	1	64	0%	02-Jun-17	02-Jun-17
ELE-02-03	Install UG Conduit & UG Cable - T2	3	64	0%	05-Jun-17	07-Jun-17
ELE-02-04	Install Pad Mount XMFR - T2	2	64	0%	08-Jun-17	09-Jun-17
ELE-02-05	Install Foundation Conduits & Grounding - T2	1	64	0%	09-Jun-17	09-Jun-17
ELE-02-06	Tower Electrical - T2	15	2	0%	16-Aug-17	05-Sep-17
ELE-02-07	Terminate UG Cable - T2	2	17	0%	16-Aug-17	17-Aug-17
WTG 3		88	11		05-Jun-17	04-Oct-17
Foundation Construction		21	35		05-Jun-17	03-Jul-17
FND-03-01	Rock/Earth Excavation - T3	1	39	0%	05-Jun-17	05-Jun-17
FND-03-02	Fill Concrete - T3	1	39	0%	06-Jun-17	06-Jun-17
FND-03-03	Rock Anchors - T3	3	39	0%	07-Jun-17	09-Jun-17
FND-03-04	Rebar - T3	3	39	0%	12-Jun-17	14-Jun-17
FND-03-05	Form & Place Concrete - T3	3	35	0%	21-Jun-17	23-Jun-17
FND-03-06	Strip & Backfill - T3	4	35	0%	26-Jun-17	29-Jun-17
FND-03-16	Tension Rock Anchors - T3	2	35	0%	30-Jun-17	03-Jul-17
Deliver, Stage & Erect		39	11		11-Aug-17	04-Oct-17
ERE-03-01	Erect Base & Mid - T3	3	7	0%	11-Aug-17	15-Aug-17
ERE-03-02	Erect Top, Nacelle & Rotor - T3	3	7	0%	16-Aug-17	18-Aug-17
ERE-03-03	Generator Alignment - T3	1	7	0%	04-Sep-17	04-Sep-17
ERE-03-04	Final Clean - T3	5	7	0%	05-Sep-17	11-Sep-17
ERE-03-05	Walkdown/Punchlist- T3	10	0	0%	21-Sep-17	04-Oct-17
ERE-03-06	MCC - T3	0	11	0%		04-Oct-17
Tower Electrical		65	8		05-Jun-17	01-Sep-17
ELE-03-01	Complete Grounding Grid - T3	2	37	0%	28-Jun-17	29-Jun-17
ELE-03-02	Excavate UG Conduit & Cable Trench - T3	1	65	0%	05-Jun-17	05-Jun-17
ELE-03-03	Install UG Conduit & UG Cable - T3	3	65	0%	06-Jun-17	08-Jun-17
ELE-03-04	Install Pad Mount XMFR - T3	2	65	0%	09-Jun-17	12-Jun-17
ELE-03-05	Install Foundation Conduits & Grounding - T3	1	65	0%	12-Jun-17	12-Jun-17
ELE-03-06	Tower Electrical - T3	10	7	0%	21-Aug-17	01-Sep-17
ELE-03-07	Terminate UG Cable - T3	2	16	0%	21-Aug-17	22-Aug-17
WTG 4		89	9		06-Jun-17	06-Oct-17
Foundation Construction		23	38		06-Jun-17	06-Jul-17
FND-04-01	Rock/Earth Excavation - T4	1	44	0%	06-Jun-17	06-Jun-17
FND-04-02	Fill Concrete - T4	1	44	0%	07-Jun-17	07-Jun-17
FND-04-03	Rock Anchors - T4	3	44	0%	08-Jun-17	12-Jun-17
FND-04-04	Rebar - T4	3	44	0%	13-Jun-17	15-Jun-17
FND-04-05	Form & Place Concrete - T4	3	38	0%	26-Jun-17	28-Jun-17
FND-04-06	Strip & Backfill - T4	4	38	0%	29-Jun-17	04-Jul-17
FND-04-16	Tension Rock Anchors - T4	2	38	0%	05-Jul-17	06-Jul-17
Deliver, Stage & Erect		38	9		16-Aug-17	06-Oct-17



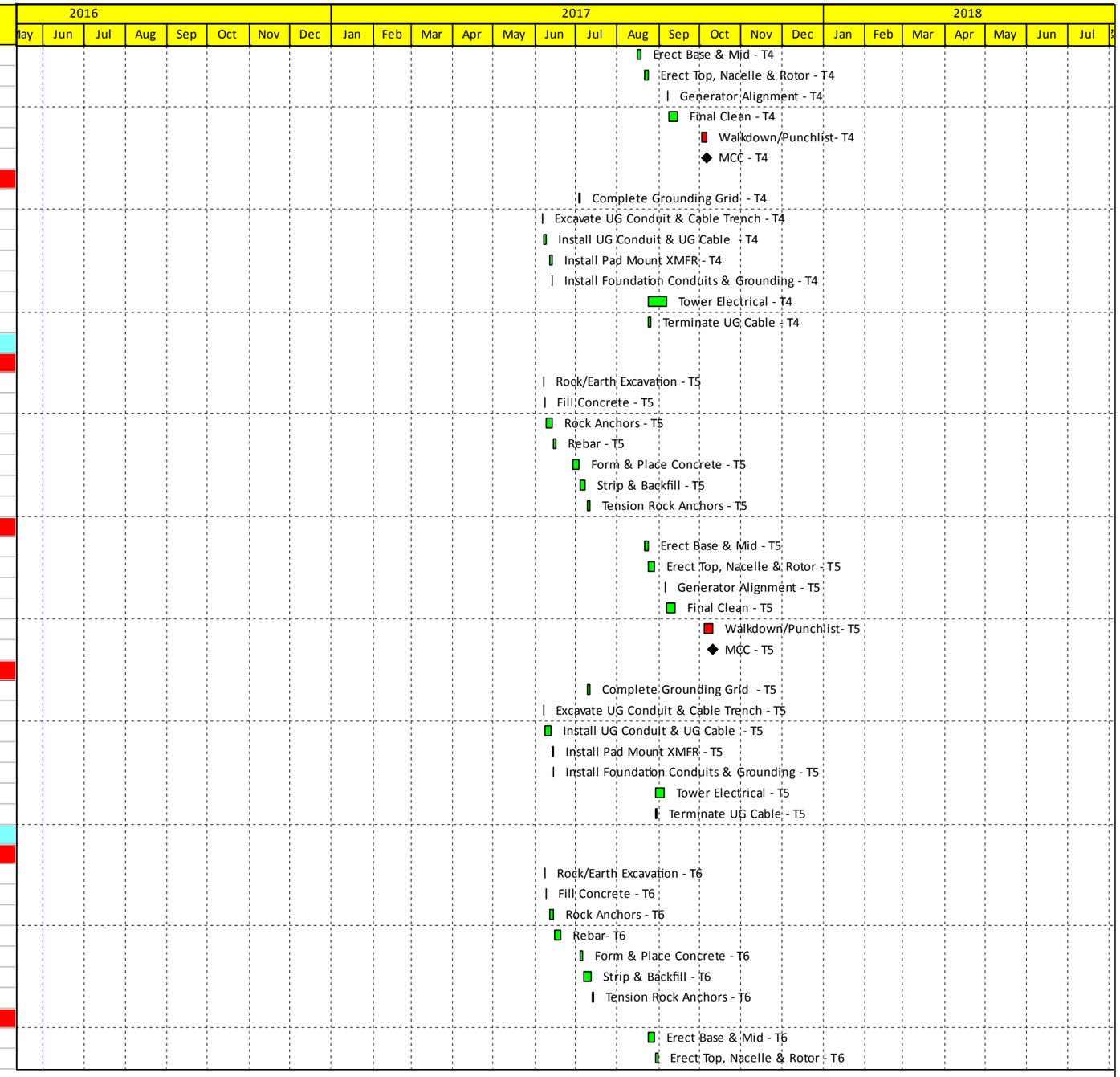
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
ERE-04-01	Erect Base & Mid - T4	3	10	0%	16-Aug-17	18-Aug-17
ERE-04-02	Erect Top, Nacelle & Rotor - T4	3	10	0%	21-Aug-17	23-Aug-17
ERE-04-03	Generator Alignment - T4	1	11	0%	07-Sep-17	07-Sep-17
ERE-04-04	Final Clean - T4	5	11	0%	08-Sep-17	14-Sep-17
ERE-04-05	Walkdown/Punchlist- T4	5	0	0%	02-Oct-17	06-Oct-17
ERE-04-06	MCC - T4	0	9	0%		06-Oct-17
Tower Electrical		67	12		06-Jun-17	06-Sep-17
ELE-04-01	Complete Grounding Grid - T4	2	40	0%	03-Jul-17	04-Jul-17
ELE-04-02	Excavate UG Conduit & Cable Trench - T4	1	71	0%	06-Jun-17	06-Jun-17
ELE-04-03	Install UG Conduit & UG Cable - T4	3	71	0%	07-Jun-17	09-Jun-17
ELE-04-04	Install Pad Mount XMFR - T4	2	71	0%	12-Jun-17	13-Jun-17
ELE-04-05	Install Foundation Conduits & Grounding - T4	1	71	0%	13-Jun-17	13-Jun-17
ELE-04-06	Tower Electrical - T4	10	11	0%	24-Aug-17	06-Sep-17
ELE-04-07	Terminate UG Cable - T4	2	20	0%	24-Aug-17	25-Aug-17
WTG 5		90	7		07-Jun-17	10-Oct-17
Foundation Construction		25	38		07-Jun-17	11-Jul-17
FND-05-01	Rock/Earth Excavation - T5	1	46	0%	07-Jun-17	07-Jun-17
FND-05-02	Fill Concrete - T5	1	46	0%	08-Jun-17	08-Jun-17
FND-05-03	Rock Anchors - T5	3	46	0%	09-Jun-17	13-Jun-17
FND-05-04	Rebar - T5	3	46	0%	14-Jun-17	16-Jun-17
FND-05-05	Form & Place Concrete - T5	3	38	0%	29-Jun-17	03-Jul-17
FND-05-06	Strip & Backfill - T5	4	38	0%	04-Jul-17	07-Jul-17
FND-05-16	Tension Rock Anchors - T5	2	38	0%	10-Jul-17	11-Jul-17
Deliver, Stage & Erect		37	7		21-Aug-17	10-Oct-17
ERE-05-01	Erect Base & Mid - T5	3	10	0%	21-Aug-17	23-Aug-17
ERE-05-02	Erect Top, Nacelle & Rotor - T5	3	10	0%	24-Aug-17	28-Aug-17
ERE-05-03	Generator Alignment - T5	1	15	0%	05-Sep-17	05-Sep-17
ERE-05-04	Final Clean - T5	5	15	0%	06-Sep-17	12-Sep-17
ERE-05-05	Walkdown/Punchlist- T5	5	0	0%	04-Oct-17	10-Oct-17
ERE-05-06	MCC - T5	0	7	0%		10-Oct-17
Tower Electrical		64	16		07-Jun-17	04-Sep-17
ELE-05-01	Complete Grounding Grid - T5	2	38	0%	10-Jul-17	11-Jul-17
ELE-05-02	Excavate UG Conduit & Cable Trench - T5	1	72	0%	07-Jun-17	07-Jun-17
ELE-05-03	Install UG Conduit & UG Cable - T5	3	72	0%	08-Jun-17	12-Jun-17
ELE-05-04	Install Pad Mount XMFR - T5	2	72	0%	13-Jun-17	14-Jun-17
ELE-05-05	Install Foundation Conduits & Grounding - T5	1	72	0%	14-Jun-17	14-Jun-17
ELE-05-06	Tower Electrical - T5	5	15	0%	29-Aug-17	04-Sep-17
ELE-05-07	Terminate UG Cable - T5	2	19	0%	29-Aug-17	30-Aug-17
WTG 6		91	5		08-Jun-17	12-Oct-17
Foundation Construction		27	38		08-Jun-17	14-Jul-17
FND-06-01	Rock/Earth Excavation - T6	1	48	0%	08-Jun-17	08-Jun-17
FND-06-02	Fill Concrete - T6	1	48	0%	09-Jun-17	09-Jun-17
FND-06-03	Rock Anchors - T6	3	48	0%	12-Jun-17	14-Jun-17
FND-06-04	Rebar- T6	3	48	0%	15-Jun-17	19-Jun-17
FND-06-05	Form & Place Concrete - T6	3	38	0%	04-Jul-17	06-Jul-17
FND-06-06	Strip & Backfill - T6	4	38	0%	07-Jul-17	12-Jul-17
FND-06-16	Tension Rock Anchors - T6	2	38	0%	13-Jul-17	14-Jul-17
Deliver, Stage & Erect		36	5		24-Aug-17	12-Oct-17
ERE-06-01	Erect Base & Mid - T6	3	10	0%	24-Aug-17	28-Aug-17
ERE-06-02	Erect Top, Nacelle & Rotor - T6	3	10	0%	29-Aug-17	31-Aug-17



Actual Work
Remaining Work
Critical Remaining Work
Milestone

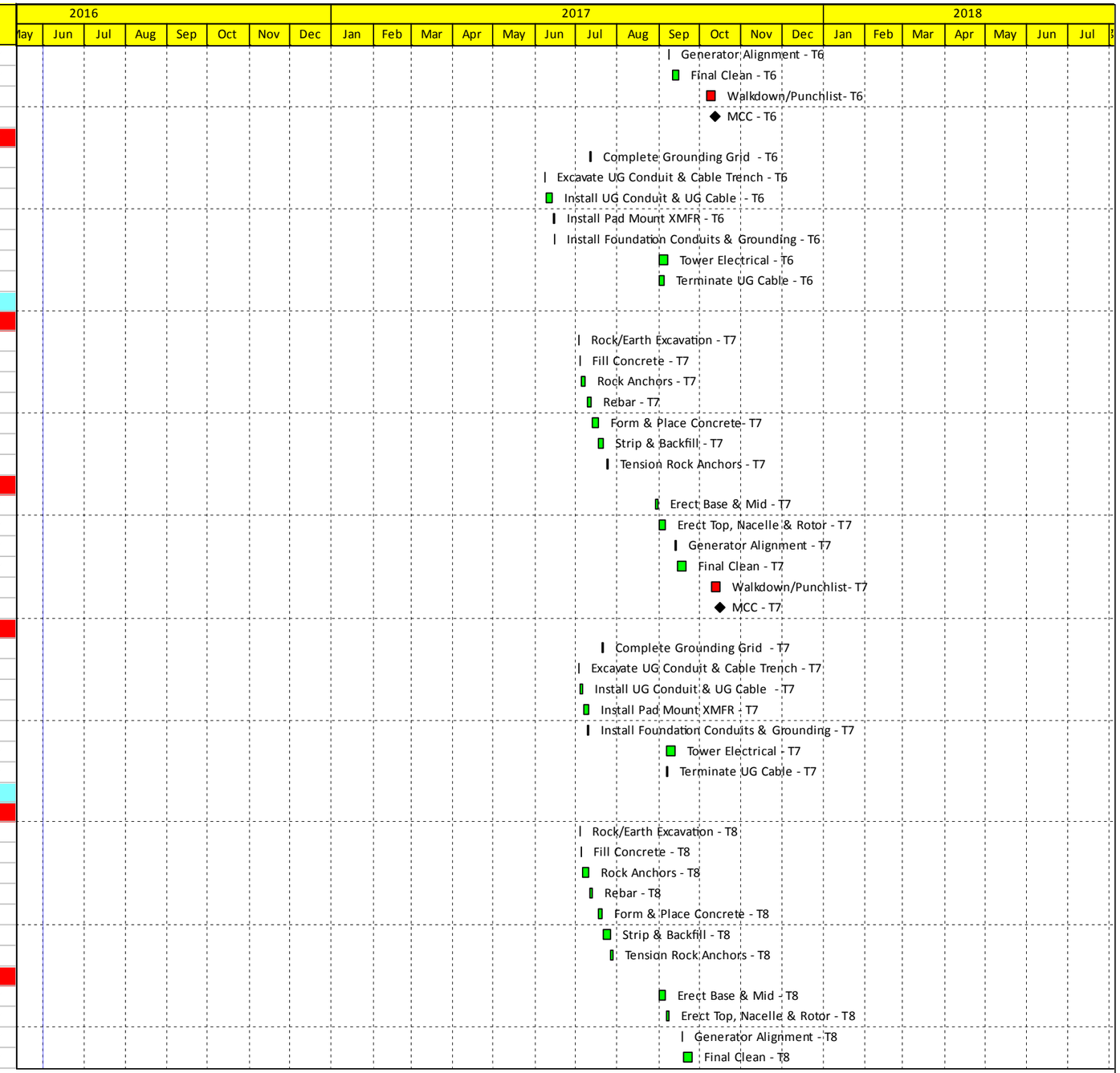
Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

05-Mar-15

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
ERE-06-03	Generator Alignment - T6	1	14	0%	08-Sep-17	08-Sep-17
ERE-06-04	Final Clean - T6	5	14	0%	11-Sep-17	15-Sep-17
ERE-06-05	Walkdown/Punchlist- T6	5	0	0%	06-Oct-17	12-Oct-17
ERE-06-06	MCC - T6	0	5	0%		12-Oct-17
Tower Electrical		**66**	**15**		**08-Jun-17**	**07-Sep-17**
ELE-06-01	Complete Grounding Grid - T6	2	40	0%	11-Jul-17	12-Jul-17
ELE-06-02	Excavate UG Conduit & Cable Trench - T6	1	73	0%	08-Jun-17	08-Jun-17
ELE-06-03	Install UG Conduit & UG Cable - T6	3	73	0%	09-Jun-17	13-Jun-17
ELE-06-04	Install Pad Mount XMFR - T6	2	73	0%	14-Jun-17	15-Jun-17
ELE-06-05	Install Foundation Conduits & Grounding - T6	1	73	0%	15-Jun-17	15-Jun-17
ELE-06-06	Tower Electrical - T6	5	14	0%	01-Sep-17	07-Sep-17
ELE-06-07	Terminate UG Cable - T6	2	18	0%	01-Sep-17	04-Sep-17
WTG 7		**76**	**3**		**03-Jul-17**	**16-Oct-17**
Foundation Construction		**17**	**34**		**03-Jul-17**	**25-Jul-17**
FND-07-01	Rock/Earth Excavation - T7	1	34	0%	03-Jul-17	03-Jul-17
FND-07-02	Fill Concrete - T7	1	34	0%	04-Jul-17	04-Jul-17
FND-07-03	Rock Anchors - T7	3	34	0%	05-Jul-17	07-Jul-17
FND-07-04	Rebar - T7	3	34	0%	10-Jul-17	12-Jul-17
FND-07-05	Form & Place Concrete- T7	3	34	0%	13-Jul-17	17-Jul-17
FND-07-06	Strip & Backfill - T7	4	34	0%	18-Jul-17	21-Jul-17
FND-07-16	Tension Rock Anchors - T7	2	34	0%	24-Jul-17	25-Jul-17
Deliver, Stage & Erect		**35**	**3**		**29-Aug-17**	**16-Oct-17**
ERE-07-01	Erect Base & Mid - T7	3	10	0%	29-Aug-17	31-Aug-17
ERE-07-02	Erect Top, Nacelle & Rotor - T7	3	10	0%	01-Sep-17	05-Sep-17
ERE-07-03	Generator Alignment - T7	1	13	0%	13-Sep-17	13-Sep-17
ERE-07-04	Final Clean - T7	5	13	0%	14-Sep-17	20-Sep-17
ERE-07-05	Walkdown/Punchlist- T7	5	0	0%	10-Oct-17	16-Oct-17
ERE-07-06	MCC - T7	0	3	0%		16-Oct-17
Tower Electrical		**52**	**14**		**03-Jul-17**	**12-Sep-17**
ELE-07-01	Complete Grounding Grid - T7	2	36	0%	20-Jul-17	21-Jul-17
ELE-07-02	Excavate UG Conduit & Cable Trench - T7	1	58	0%	03-Jul-17	03-Jul-17
ELE-07-03	Install UG Conduit & UG Cable - T7	3	58	0%	04-Jul-17	06-Jul-17
ELE-07-04	Install Pad Mount XMFR - T7	2	58	0%	07-Jul-17	10-Jul-17
ELE-07-05	Install Foundation Conduits & Grounding - T7	1	58	0%	10-Jul-17	10-Jul-17
ELE-07-06	Tower Electrical - T7	5	13	0%	06-Sep-17	12-Sep-17
ELE-07-07	Terminate UG Cable - T7	2	17	0%	06-Sep-17	07-Sep-17
WTG 8		**77**	**1**		**04-Jul-17**	**18-Oct-17**
Foundation Construction		**19**	**34**		**04-Jul-17**	**28-Jul-17**
FND-08-01	Rock/Earth Excavation - T8	1	36	0%	04-Jul-17	04-Jul-17
FND-08-02	Fill Concrete - T8	1	36	0%	05-Jul-17	05-Jul-17
FND-08-03	Rock Anchors - T8	3	36	0%	06-Jul-17	10-Jul-17
FND-08-04	Rebar - T8	3	36	0%	11-Jul-17	13-Jul-17
FND-08-05	Form & Place Concrete - T8	3	34	0%	18-Jul-17	20-Jul-17
FND-08-06	Strip & Backfill - T8	4	34	0%	21-Jul-17	26-Jul-17
FND-08-16	Tension Rock Anchors - T8	2	34	0%	27-Jul-17	28-Jul-17
Deliver, Stage & Erect		**34**	**1**		**01-Sep-17**	**18-Oct-17**
ERE-08-01	Erect Base & Mid - T8	3	10	0%	01-Sep-17	05-Sep-17
ERE-08-02	Erect Top, Nacelle & Rotor - T8	3	10	0%	06-Sep-17	08-Sep-17
ERE-08-03	Generator Alignment - T8	1	12	0%	18-Sep-17	18-Sep-17
ERE-08-04	Final Clean - T8	5	12	0%	19-Sep-17	25-Sep-17



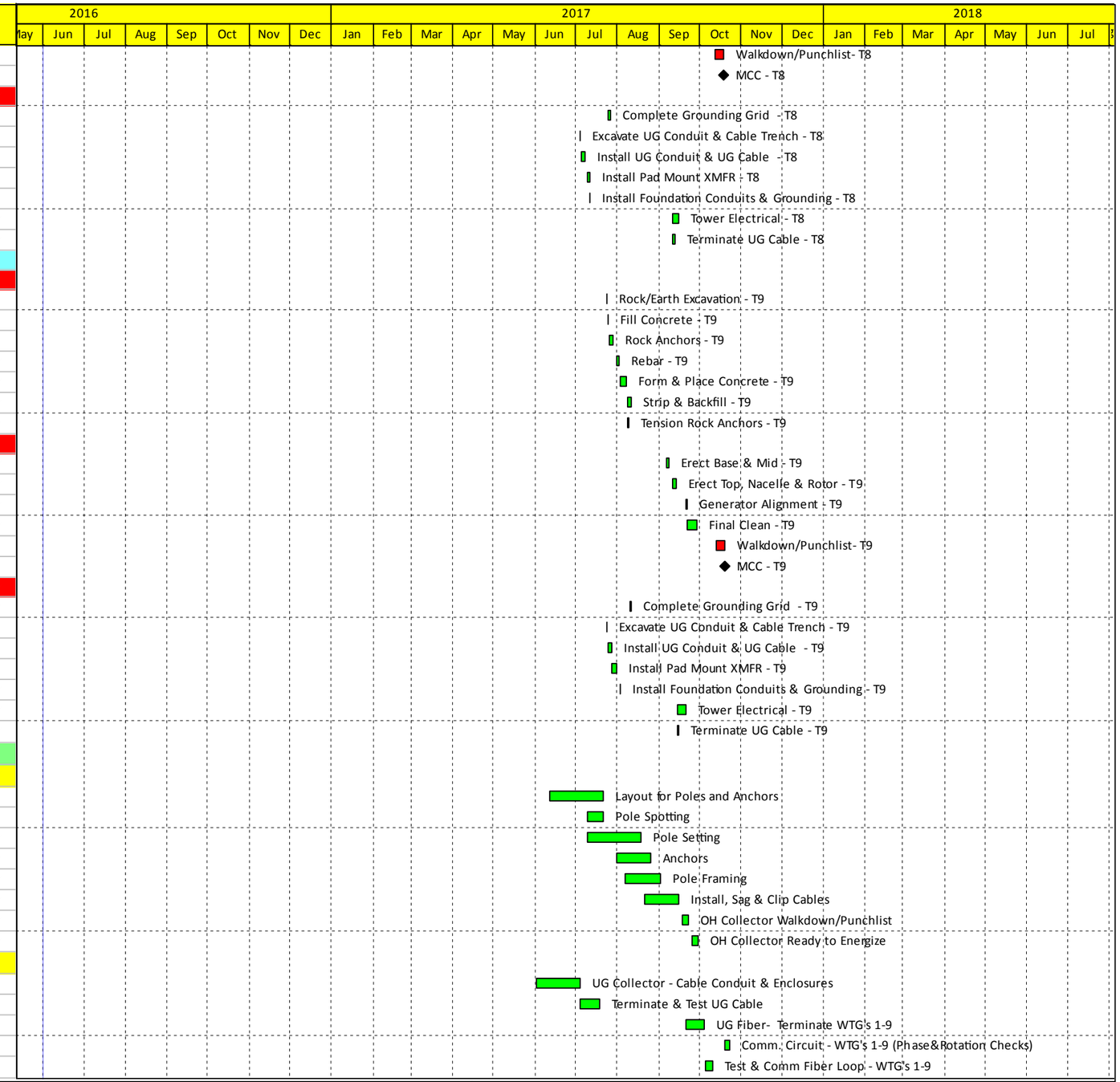
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
ERE-08-05	Walkdown/Punchlist- T8	5	0	0%	12-Oct-17	18-Oct-17
ERE-08-06	MCC - T8	0	1	0%		18-Oct-17
Tower Electrical		**54**	**13**		**04-Jul-17**	**15-Sep-17**
ELE-08-01	Complete Grounding Grid - T8	2	36	0%	25-Jul-17	26-Jul-17
ELE-08-02	Excavate UG Conduit & Cable Trench - T8	1	59	0%	04-Jul-17	04-Jul-17
ELE-08-03	Install UG Conduit & UG Cable - T8	3	59	0%	05-Jul-17	07-Jul-17
ELE-08-04	Install Pad Mount XMFR - T8	2	59	0%	10-Jul-17	11-Jul-17
ELE-08-05	Install Foundation Conduits & Grounding - T8	1	59	0%	11-Jul-17	11-Jul-17
ELE-08-06	Tower Electrical - T8	5	12	0%	11-Sep-17	15-Sep-17
ELE-08-07	Terminate UG Cable - T8	2	16	0%	11-Sep-17	12-Sep-17
WTG 9		**64**	**0**		**24-Jul-17**	**19-Oct-17**
Foundation Construction		**15**	**27**		**24-Jul-17**	**11-Aug-17**
FND-09-01	Rock/Earth Excavation - T9	1	27	0%	24-Jul-17	24-Jul-17
FND-09-02	Fill Concrete - T9	1	27	0%	25-Jul-17	25-Jul-17
FND-09-03	Rock Anchors - T9	3	27	0%	26-Jul-17	28-Jul-17
FND-09-04	Rebar - T9	3	27	0%	31-Jul-17	02-Aug-17
FND-09-05	Form & Place Concrete - T9	3	27	0%	03-Aug-17	07-Aug-17
FND-09-06	Strip & Backfill - T9	4	27	0%	08-Aug-17	11-Aug-17
FND-09-07	Tension Rock Anchors - T9	2	29	0%	08-Aug-17	09-Aug-17
Deliver, Stage & Erect		**32**	**0**		**06-Sep-17**	**19-Oct-17**
ERE-09-01	Erect Base & Mid - T9	3	10	0%	06-Sep-17	08-Sep-17
ERE-09-02	Erect Top, Nacelle & Rotor - T9	3	10	0%	11-Sep-17	13-Sep-17
ERE-09-03	Generator Alignment - T9	1	10	0%	21-Sep-17	21-Sep-17
ERE-09-04	Final Clean - T9	5	10	0%	22-Sep-17	28-Sep-17
ERE-09-05	Walkdown/Punchlist- T9	5	0	0%	13-Oct-17	19-Oct-17
ERE-09-06	MCC - T9	0	0	0%		19-Oct-17
Tower Electrical		**43**	**11**		**24-Jul-17**	**20-Sep-17**
ELE-09-01	Complete Grounding Grid - T9	2	27	0%	10-Aug-17	11-Aug-17
ELE-09-02	Excavate UG Conduit & Cable Trench - T9	1	46	0%	24-Jul-17	24-Jul-17
ELE-09-03	Install UG Conduit & UG Cable - T9	3	46	0%	25-Jul-17	27-Jul-17
ELE-09-04	Install Pad Mount XMFR - T9	2	46	0%	28-Jul-17	31-Jul-17
ELE-09-05	Install Foundation Conduits & Grounding - T9	1	43	0%	03-Aug-17	03-Aug-17
ELE-09-06	Tower Electrical - T9	5	10	0%	14-Sep-17	20-Sep-17
ELE-09-07	Terminate UG Cable - T9	2	14	0%	14-Sep-17	15-Sep-17
Collector & Substation		**212**	**9**		**30-Dec-16**	**23-Oct-17**
Ridgeline OH Collector		**80**	**14**		**12-Jun-17**	**29-Sep-17**
OHC-00-05	Layout for Poles and Anchors	30	14	0%	12-Jun-17	21-Jul-17
OHC-00-10	Pole Spotting	10	14	0%	10-Jul-17	21-Jul-17
OHC-00-15	Pole Setting	30	14	0%	10-Jul-17	18-Aug-17
OHC-00-20	Anchors	20	14	0%	31-Jul-17	25-Aug-17
OHC-00-25	Pole Framing	20	14	0%	07-Aug-17	01-Sep-17
OHC-00-30	Install, Sag & Clip Cables	20	14	0%	21-Aug-17	15-Sep-17
OHC-00-35	OH Collector Walkdown/Punchlist	5	14	0%	18-Sep-17	22-Sep-17
OHC-00-40	OH Collector Ready to Energize	5	14	0%	25-Sep-17	29-Sep-17
Underground Collector		**102**	**9**		**02-Jun-17**	**23-Oct-17**
UGC-00-05	UG Collector - Cable Conduit & Enclosures	23	67	0%	02-Jun-17	04-Jul-17
UGC-00-10	Terminate & Test UG Cable	11	67	0%	04-Jul-17	18-Jul-17
UGC-00-15	UG Fiber- Terminate WTG's 1-9	10	16	0%	21-Sep-17	04-Oct-17
UGC-00-20	Comm. Circuit - WTG's 1-9 (Phase&Rotation Checks)	2	9	0%	20-Oct-17	23-Oct-17
UGC-00-25	Test & Comm Fiber Loop - WTG's 1-9	4	16	0%	05-Oct-17	10-Oct-17



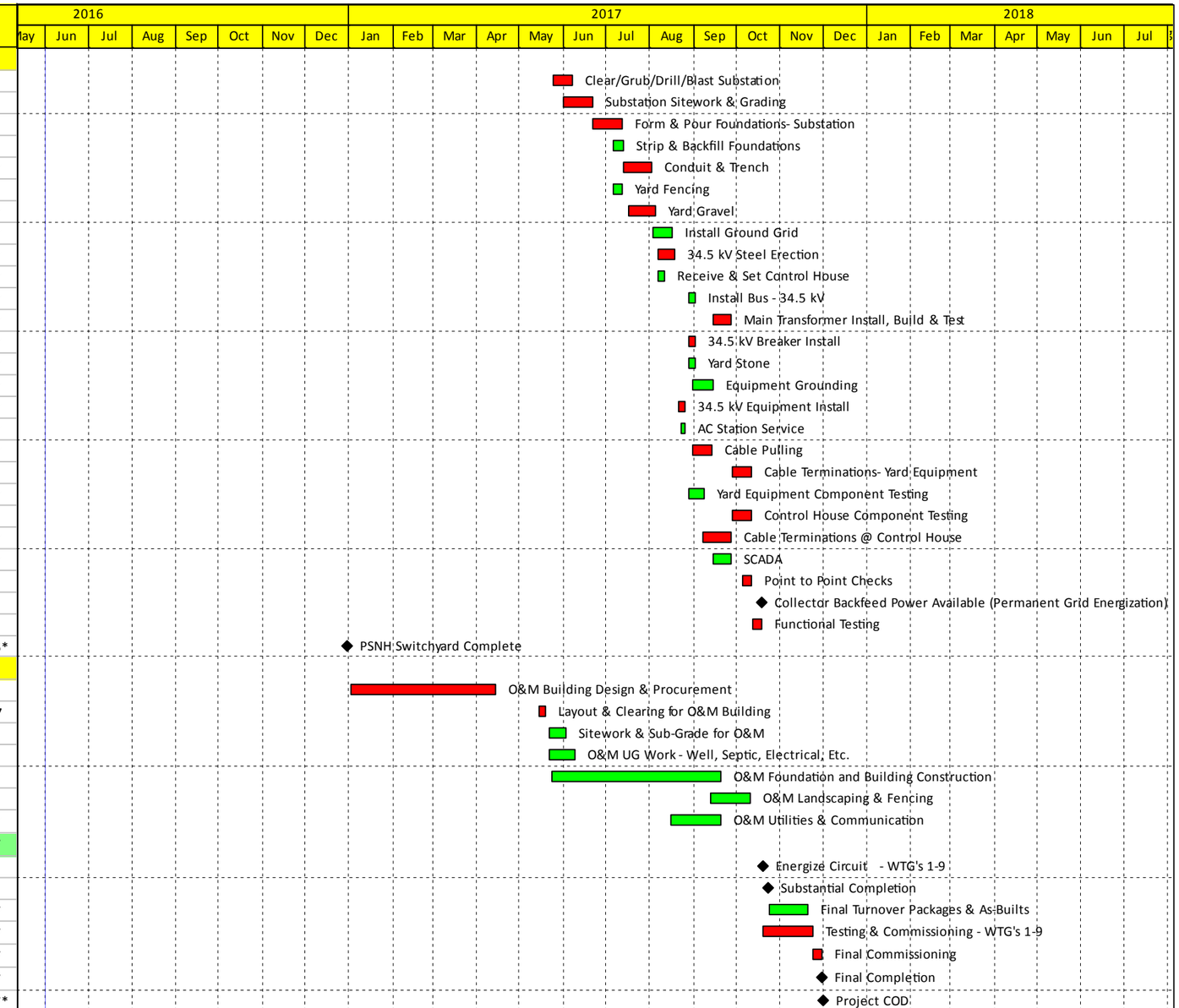
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

Activity ID	Activity Name	Orig. Dur.	Float	%	Start	Finish
Substation		**209**	**0**		**30-Dec-16**	**18-Oct-17**
SUB-00-02	Clear/Grub/Drill/Blast Substation	10	0	0%	25-May-17	07-Jun-17
SUB-00-03	Substation Sitework & Grading	15	0	0%	01-Jun-17	21-Jun-17
SUB-00-04	Form & Pour Foundations- Substation	15	0	0%	22-Jun-17	12-Jul-17
SUB-00-06	Strip & Backfill Foundations	6	16	0%	06-Jul-17	13-Jul-17
SUB-00-07	Conduit & Trench	15	0	0%	13-Jul-17	02-Aug-17
SUB-00-08	Yard Fencing	5	2	0%	06-Jul-17	12-Jul-17
SUB-00-09	Yard Gravel	15	0	0%	17-Jul-17	04-Aug-17
SUB-00-10	Install Ground Grid	10	30	0%	03-Aug-17	16-Aug-17
SUB-00-13	34.5 kV Steel Erection	10	0	0%	07-Aug-17	18-Aug-17
SUB-00-14	Receive & Set Control House	5	13	0%	07-Aug-17	11-Aug-17
SUB-00-17	Install Bus - 34.5 kV	5	33	0%	28-Aug-17	01-Sep-17
SUB-00-20	Main Transformer Install, Build & Test	10	0	0%	14-Sep-17	27-Sep-17
SUB-00-21	34.5 kV Breaker Install	5	0	0%	28-Aug-17	01-Sep-17
SUB-00-22	Yard Stone	5	33	0%	28-Aug-17	01-Sep-17
SUB-00-24	Equipment Grounding	10	25	0%	31-Aug-17	14-Sep-17
SUB-00-27	34.5 kV Equipment Install	5	0	0%	21-Aug-17	25-Aug-17
SUB-00-28	AC Station Service	3	3	0%	23-Aug-17	25-Aug-17
SUB-00-29	Cable Pulling	10	0	0%	31-Aug-17	13-Sep-17
SUB-00-30	Cable Terminations- Yard Equipment	10	0	0%	28-Sep-17	11-Oct-17
SUB-00-32	Yard Equipment Component Testing	10	23	0%	28-Aug-17	08-Sep-17
SUB-00-33	Control House Component Testing	10	0	0%	28-Sep-17	11-Oct-17
SUB-00-34	Cable Terminations @ Control House	15	0	0%	07-Sep-17	27-Sep-17
SUB-00-35	SCADA	10	10	0%	14-Sep-17	27-Sep-17
SUB-00-37	Point to Point Checks	5	0	0%	05-Oct-17	11-Oct-17
SUB-00-38	Collector Backfeed Power Available (Permanent Grid Energization)	0	0	0%		18-Oct-17
SUB-00-48	Functional Testing	5	0	0%	12-Oct-17	18-Oct-17
SUB-00-58	PSNH Switchyard Complete	0	0	0%		30-Dec-16*
O&M Building		**202**	**18**		**02-Jan-17**	**10-Oct-17**
O&M-00-01	O&M Building Design & Procurement	75	0	0%	02-Jan-17	14-Apr-17
O&M-00-02	Layout & Clearing for O&M Building	5	0	0%	15-May-17	19-May-17
O&M-00-03	Sitework & Sub-Grade for O&M	10	18	0%	22-May-17	02-Jun-17
O&M-00-04	O&M UG Work - Well, Septic, Electrical, Etc.	15	85	0%	22-May-17	09-Jun-17
O&M-00-05	O&M Foundation and Building Construction	85	18	0%	24-May-17	19-Sep-17
O&M-00-06	O&M Landscaping & Fencing	20	18	0%	13-Sep-17	10-Oct-17
O&M-00-07	O&M Utilities & Communication	25	33	0%	16-Aug-17	19-Sep-17
Project Completion & Turnover		**31**	**0**		**19-Oct-17**	**01-Dec-17**
COM-00-05	Energize Circuit - WTG's 1-9	0	0	0%		19-Oct-17
COM-00-10	Substantial Completion	0	9	0%		23-Oct-17
COM-00-15	Final Turnover Packages & As-Builts	20	9	0%	24-Oct-17	20-Nov-17
COM-00-20	Testing & Commissioning - WTG's 1-9	25	0	0%	20-Oct-17	23-Nov-17
COM-00-25	Final Commissioning	5	0	0%	24-Nov-17	30-Nov-17
COM-00-30	Final Completion	0	1	0%		30-Nov-17
COM-00-35	Project COD	0	0	0%		01-Dec-17*



Actual Work
Remaining Work
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Milestone

Eolian-Antrim Wind Power Project

Preliminary Construction Schedule - DD 01-Jun-16

Reed & Reed, Inc.

05-Mar-15

GENERAL CONTRACTORS
WOOLWICH, MAINE
(207) 443-9747

EXHIBIT 9

RESPONSE TO ENV-WT 904.01 GENERAL DESIGN CONSIDERATIONS

PART Env-Wt 904: DESIGN AND CONSTRUCTION OF STREAM CROSSINGS

Response to Env-Wt 904.01: General Design Considerations

Stream Crossing at STA. 18+75

This stream crossing was designed in accordance with the "New Hampshire Stream Crossing Guidelines – May 2009". The proposed culvert is an open bottom concrete box culvert with a width of 10 feet. The 10-foot width will allow construction of the culvert beyond the top-of-bank of the stream, leaving the channel undisturbed. As such, the applicable requirements of Env-Wt 904.01 General Design Considerations are met. Please note that Env-Wt 904.01(f) does not apply.

As a Tier One Stream Crossing (contributing area is approximately 106 acres), the requirements of Env-Wt 904.02 also apply. The contributing watershed is less than 200 acres. Based on the stormwater model, the culvert passes the 50-year storm event. The crossing is designed with an open bottom box culvert. If construction involves any in-stream work, it will be limited to low flow conditions.

Stream Crossing at STA. 2+25

The proposed access road will cross an intermittent stream at approximately STA. 2+25. Because of project-specific roadway design requirements, compliance with sections Env-Wt 904.01 and 904.02 is not practicable. Therefore the applicant requests approval of an Alternative Design under section Env-Wt 904.09.

"Practicable" is defined in section Env-Wt 101.73 as "available and capable of being done after taking into consideration cost, existing technology, and logistics, in light of overall project purposes".

A contractor with experience with this type of project was consulted throughout the design process. Considering the construction and delivery vehicles required for this project, the contractor recommended that roadway slopes greater than 12% be avoided. In order to comply with this recommendation and ensure safe access during construction, approximately ten feet of cut is required in the vicinity of the stream crossing. Damage to this stream is unavoidable and irreparable, and compliance with the above-referenced sections is not practicable.

EXHIBIT 10

PROPERTY INFORMATION

Name	Map	Lots	Address	Town	State	Zip
Ott, Michael J.	212	027; 030; 034	354 Keene Road	Antrim	NH	03440
Antrim Limited Partnership, C/O Charles S. Bean	235	014	100 Louder Brook Drive, Suite 1000	Westwood	MA	02090
The Cotran Group	236	001	685 Massabesic Street	Manchester	NH	03103
Paul Whittemore	236	002	183 Hillside Drive	Henniker	NH	03242
The Whittemore Trust, C/O Paul Whittemore	239	001	183 Hillside Drive	Henniker	NH	03242
TWBW, LLC	222	003; 004	155 Fleet Street	Portsmouth	NH	03801

ENV.
JACK KENWORTHY
EOLIAN RENEWABLE ENERGY LLC
155 FLEET ST
PORTSMOUTH NH
03801-4050

Doc # 1104944 Jan 26, 2011 12:13 PM
Book 8288 Page 0340 Page 1 of 9
Register of Deeds, Hillsborough County
Pamela O Caughlin

ANTRIM WIND ENERGY LLC (ANTRIM, NH – TAX MAP #236 /PARCEL #002-000 – PAUL WHITTEMORE

EXHIBIT C
MEMORANDUM OF LEASE

PARTIES TO LEASE:

LESSOR
Paul and Helen Whittemore
c/o Paul Whittemore
P.O. Box 528
Auburn, NH 03032

LESSEE
Antrim Wind Energy LLC
c/o Eolian Renewable Energy
155 Fleet Street
Portsmouth, New Hampshire 03801

PREMISES: Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all or a portion of Lessor's Property as depicted on the map attached hereto as Exhibit B (the "Leased Premises"), together with the non-exclusive right of ingress to and egress from Windpower Facilities (defined in the Lease) located on the Leased Premises, adjoining properties and elsewhere over and across the Leased Premises and Lessor's Land by means of existing roads and lanes, if any, or otherwise by such route or routes as Lessee may construct from time to time.

TERM OF LEASE: Lease shall be for an initial term of twenty-five (25) years and shall commence on the Effective Date.

EXTENSION TERM: Lessee shall have the option to renew the Lease for one additional twenty-five (25) year term.

022307

ANTRIM WIND ENERGY LLC (ANTRIM, NH – TAX MAP #236 /PARCEL #002-000 – PAUL WHITTEMORE

DATED at Auburn NH, _____ this 6 day of January, 2011.

By: Paul Whittemore
Name: Paul Whittemore
Its: Owner/Self

STATE OF NEW HAMPSHIRE
) ss.:
COUNTY OF Rockingham

On this 6th day of January 2011, before me, the undersigned, a Notary Public in and for said State, personally appeared Paul Whittemore, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

Denise M Pease
Notary Public

DENISE M. PEASE
MY COMMISSION EXPIRES AUG. 19, 2014
NOTARY PUBLIC
NEW HAMPSHIRE

DATED at Portsmouth, New Hampshire this 4 day of January 2011.

By: _____
Name: John Kenworthy
Its: Manager

STATE OF NEW HAMPSHIRE
) ss.:
COUNTY OF ROCKINGHAM

On this 4 day of January, 2011, before me, the undersigned, a Notary Public in and for said State, personally appeared John Kenworthy, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

Katrina Ricker
Notary Public

KATRINA RICKER
MY COMMISSION EXPIRES MAR. 24, 2015
NOTARY PUBLIC
NEW HAMPSHIRE

EXHIBIT A to Memorandum of Lease

0009937 2000 FEB 24 AM 9:22

W A R R A N T Y D E E D

KNOW ALL MEN BY THESE PRESENTS:

That I, MARVIN W. CUDDIHY, a/k/a Marvin Cuddihy, an unremarried widow, of 19 Davisville Road, Wilton, in the County of Hillsborough and State of New Hampshire,

for consideration paid,

grants to PAUL WHITTEMORE and CAROLE WHITTEMORE, husband and wife, both of 29 Sagharbor Drive, Auburn, in the County of Rockingham and the State of New Hampshire, and HELEN WHITTEMORE, of P. O. Box 242, Antrim, in the County of Hillsborough and State of New Hampshire, all as joint tenants with rights of survivorship,

with WARRANTY covenants,

Two certain tracts or parcels of land with the buildings thereon, if any, situated in Antrim, in the County of Hillsborough and State of New Hampshire, bounded and described as follows:

T R A C T I

Beginning at the Northeast corner of the tract at land now or formerly of John B. Jameson; thence Westerly by said Jameson land along the stone wall to land formerly of Helen C. Thayer; thence Southerly along a stone wall adjoining land of said Thayer to a stake and stones at land now or formerly of John B. Jameson; thence Easterly along said Jameson land to stone wall at a corner of land now or formerly of said Jameson and land now or formerly of John Cuddihy; thence Northerly along land of said Cuddihy and Jameson along stone wall to the point of beginning.

Containing thirty (30) acres, more or less, and being known as the Nesmith Pasture.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
***** THOUSAND 6 HUNDRED AND 00 DOLLARS
02/24/2000 421757 $ *****600.00
VOID IF ALTERED

BK 6211 PG 1465

The above premises are subject however to a right of way and privilege of roadway being built to land now or formerly of Helen C. Thayer or her heirs, executors or assigns, of thirty (30) feet in width at such point as possible for best construction, all as set forth in deed of Helen C. Thayer to John Cuddihy, dated August 6, 1914 and recorded in Volume 723, Page 336, of the Hillsborough County Registry of Deeds.

T R A C T II

Beginning at the Southwest corner of the premises at land now or formerly of one Harrington; thence Northerly by said Harrington land to land formerly of Alfred G. Holt, now or formerly of Arthur F. Holt and Gladys H. Warner; thence Easterly by land of said Holt-Warner to land now or formerly of Alvin Brown; thence Southerly by said Brown land and land formerly of James W. Jameson and of John Cuddihy to land now or formerly of R. B. Harrington; thence Westerly by said Harrington land to the place of beginning.

Containing one hundred ten (110) acres, more or less, and being known as the Mountain Pasture.

Meaning and intending to convey the same premises conveyed to Marvin Cuddihy and Sarah Cuddihy, as joint tenants with rights of survivorship, by deed of Alice E. Cuddihy, Mary I. Boynton and Matthew N. Cuddihy, dated October 12, 1965 and recorded in Volume 1853, Page 26, of the Hillsborough County Registry of Deeds. The said Sarah J. Cuddihy died on December 16, 1979 and her death certificate is to be recorded with the Hillsborough County Registry of Deeds. The grantor herein derives his title as surviving joint tenant.

This conveyance is made subject to Current Use Classification recorded in Volume 3696, Page 136, of the Hillsborough County Registry of Deeds.

And I, Marvin W. Cuddihy, and unremarried widow, release to said Grantees my rights of Homestead and other interests in said premises.

Dated this 14th day of January, 2000.

Marvin W. Cuddihy

Marvin W. Cuddihy

BK6211PG1466

STATE OF NEW HAMPSHIRE

County of Hillsborough

The foregoing instrument was acknowledged before me this 14th day of January, 2000, by MARVIN W. CUDDIHY.

Name Patricia C. Jacobsen

Title President

My Commission Expires: 12/26/2000

BK6211PG1467

Doc # 1019268 Apr 29, 2010 2:41 PM
Book 8199 Page 0260 Page 1 of 3
Register of Deeds, Hillsborough County
Pamela O Caughlin

C/H
L-CHIP
HIA083348

#11 Blodgett, Makechnie & Lawrence

QUITCLAIM DEED

I, CAROLE WHITTEMORE, single woman, of Auburn, County of Rockingham and State of New Hampshire, for consideration paid, grant to PAUL J. WHITTEMORE, of 29 Sagharbor Drive (with a mailing address of P. O. Box 528), Town of Auburn, County of Rockingham and State of New Hampshire 03032-0528, and HELEN M. WHITTEMORE, of Brimstone Corner Road (with a mailing address of P. O. Box 242), Town of Antrim, County of Hillsborough and State of New Hampshire 03440-0242, as joint tenants with rights of survivorship, with **QUITCLAIM covenants**, all my right, title and interest in

Two certain tracts or parcels of land, with the buildings thereon, if any, situate in the Town of **Antrim**, in the County of Hillsborough and State of New Hampshire, bounded and described as follows:

Tract I

Beginning at the northeast corner of the tract at land now or formerly of John B. Jameson; thence running

WESTERLY by land of said Jameson along the stone wall to land formerly of Helen C. Thayer; thence running

SOUTHERLY by a stone wall adjoining land of said Thayer to a stake and stones at land now or formerly of John B. Jameson; thence running

EASTERLY by land of said Jameson to a stone wall at a corner of land now or formerly of said Jameson and land now or formerly of John Cuddihy; thence running

NORTHERLY by land of said Cuddihy and Jameson along a stone wall to the point of beginning.

Containing thirty (30) acres, more or less, and being known as the Nesmith Pasture.

The above premises are subject however to a right of way and privilege of roadway being built to land now or formerly of Helen C. Thayer or her heirs, executors or assigns, of thirty (30) feet in width at such point as possible for best construction, all as set forth in deed of Helen C. Thayer to John Cuddihy, dated August 6, 1914 and recorded in the Hillsborough County Registry of Deeds at Volume 723, Page 336.

Tract II

Beginning at the southwest corner of the premises at land now or formerly of one Harrington; thence running

NORTHERLY by land of said Harrington to land now or formerly of Arthur F. Holt and Gladys H. Warner; thence running

EASTERLY by land of said Holt-Warner to land now or formerly of Alvin Brown; thence running

SOUTHERLY by land of said Brown and land formerly of James W. Jameson and of John Cuddihy to land now or formerly of R. B. Harrington; thence running

WESTERLY by land of said Harrington to the place of beginning.

Containing one hundred ten (110) acres, more or less, and being known as the Mountain Pasture.

Meaning and intending to convey the grantor's interest in the premises conveyed to Paul Whittemore, Carole Whittemore and Helen Whittemore by deed of Marvin W. Cuddihy, dated January 14, 2000, recorded in the Hillsborough County Registry of Deeds at Book 6211, Page 1465.

The premises are conveyed subject to the notice of current use classification filed by the Town of Antrim in the Hillsborough County Registry of Deeds at Book 3696, Page 136.

This conveyance is exempt from the New Hampshire real estate transfer tax under the provisions of RSA 78-B:2,XIII as a transfer pursuant to a decree of divorce issued by the Merrimack Superior Court, Docket Number 07-M-0495 on July 10, 2007, and under the provisions of RSA 78-B:2,IX.

Signed this 21st day of April, 2009.

Carole J. Whittemore
Carole Whittemore

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

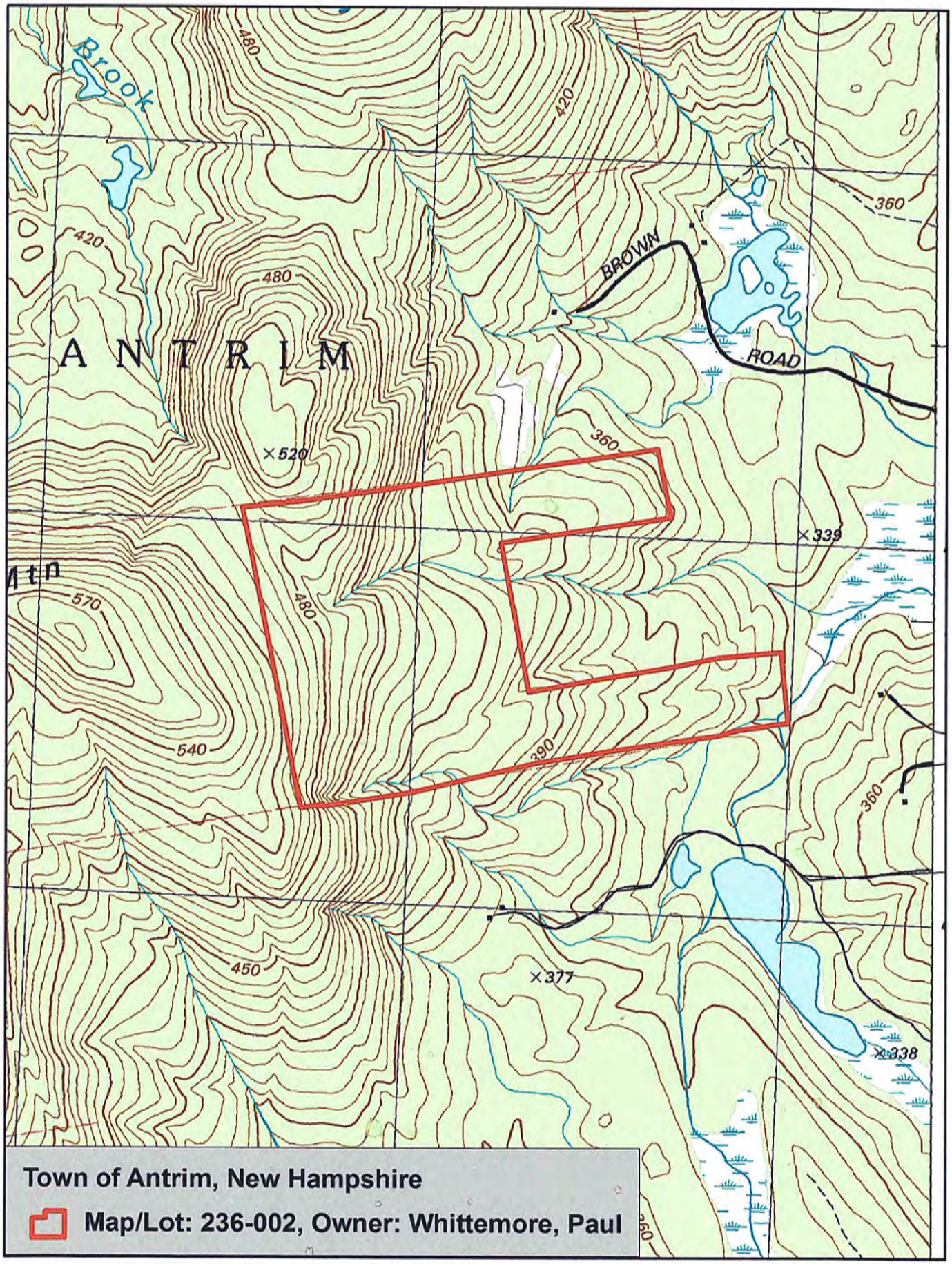
The foregoing instrument was acknowledged before me this 21 day of April, 2009, by Carole Whittemore.

Carol A. Theos
Notary Public/Justice of the Peace

CAROL A. THEOS 1/30/2013
Printed Name Expiration Date

CAROL A. THEOS, Justice of the Peace
My Commission Expires January 30, 2013

CAROL A. THEOS JUSTICE OF THE PEACE NEW HAMPSHIRE



ORIGINAL NOT SUITABLE FOR
PROPER REPRODUCTION

SHORT FORM OPTION AGREEMENT

Dr. Lyle J. Micheli and Mrs. Anne J. Micheli, whose mailing address is 319 Longwood Avenue, Boston, MA 02155 ("Grantor") and **Antrim Wind Energy LLC** a Delaware limited liability company having a mailing address at c/o Eolian Renewable Energy, LLC, 155 Fleet Street, Portsmouth, New Hampshire 03801 ("Grantee"), have entered into an option agreement dated September 8, 2011 (the "Option").

1. **Grant of Option**. For valuable consideration, Grantor has granted to Grantee the exclusive right and option to purchase an Easement encumbering the premises situated in the Town of Antrim, Hillsborough County, New Hampshire, being more particularly described in **Exhibit A** attached hereto (the "Property"), subject to the terms and conditions contained in this Option. The easement (the "Easement") shall be in the form attached hereto as **Exhibit B**.

2. **Expiration Date**. This Option shall expire two (2) years from the date hereof at 5:00 p.m. in the time zone in which the Property is located. For additional consideration, Grantee may postpone the expiration of this Option for an additional period of two (2) years.

3. **Exercise of Option**. This Option may be exercised by Grantee by giving written notice thereof to Grantor prior to the expiration of this Option.

4. **Easement**. Within thirty (30) days after the exercise of this Option, Grantor shall execute and deliver to Grantee an original of the Easement.

5. **Due Diligence Inspections**. Grantee, its agents, contractors, and subcontractors, may enter upon the Property at reasonable times prior to exercise of this Option, and prior to the granting of the Easement, in order to inspect the Property and/or to perform surveys and other physical inspections (collectively, the "Due Diligence Inspections"); provided, however, that the Grantee shall not perform any physical alterations to the Property without the written permission of the Grantor. In the event Grantee determines, in its sole discretion, that any one or more of the Due Diligence Inspections is not acceptable to Grantee, then Grantee may terminate this Option and be relieved of its obligations hereunder.

6. **Failure to Exercise**. In the event Grantee fails to exercise this Option before its

expiration for any reason other than a default by Grantor, this option shall terminate, and none of the parties hereto shall have any further rights, claims, or obligations with respect to this Option.

8. **Assignment**. Grantee shall have the right to assign its rights and obligations under this Option without the consent of Grantor. All acts performable by Grantee under this Option may be performed by any assignee. Any assignment shall be in writing, acknowledged, and recorded in the Registry of Deeds in the county where the property is located. Such assignment shall relieve Grantee from the obligations of this Option.

9. **Licenses and Permits**. Grantor agrees that during the term of this Option, Grantee may attempt to obtain any licenses and/or permits relating to the Property which Grantee finds necessary or desirable for its contemplated use of the Property, and Grantor shall cooperate with Grantee in obtaining the same, at no expense to Grantor.

10. **Notice**. All notices pursuant to this Option shall be in writing and shall be delivered by hand, mailed overnight courier or by certified mail, postage prepaid, return receipt requested, to the following addresses:

(i) To the Grantor(s):
Dr. and Mrs. Lyle J. Micheli
319 Longwood Avenue
Boston, MA 02155

(ii) To the Grantee(s):
Antrim Wind Energy LLC
c/o Eolian Renewable Energy, LLC
155 Fleet Street
Portsmouth, New Hampshire 03801
Attention: Jack Kenworthy

with a copy to:

Jeffrey T. Selser, Esq.
Verrill Dana LLP
One Portland Square
Portland, Maine 04101

Notices shall be deemed given on the date mailed, or, if hand delivered, on the date of delivery. Either party may, by such manner of notice, substitute persons or addresses for notice other than those listed above.

11. **Miscellaneous**. This Option shall be binding upon and inure to the benefit of Grantor and Grantee, their successors and assigns. This Option is, and shall be, governed in all respects (including validity, construction, interpretation, and effect) by the laws of the State of New Hampshire, without giving effect to its principles or rules of conflict of laws to the extent that such principles or rules would require or permit the application of the laws of another

jurisdiction. Should any provision of this Option for any reason be declared invalid or unenforceable, such decision shall not affect the validity or enforceability of any other provisions of this Option, which shall remain in full force and effect. This Option shall be recorded in the Registry of Deeds in the County in which the Property is located.

IN WITNESS WHEREOF, Grantor and Grantee have executed or caused this instrument to be executed as of the date first above written.

WITNESS:

GRANTOR(s)

DR. LYLE MICHELI

By: _____

MRS. ANNE J. MICHELI

By: _____

WITNESS:

GRANTEE
ANTRIM WIND ENERGY LLC

By: _____
Name: John B. Kenworthy
Its. Executive Officer

STATE OF Massachusetts
County of Suffolk, SS

September 16, 2011

Then personally appeared the above-named Lyle Micheli in his/her capacity as owner/joint tenant of the Property and acknowledged the foregoing instrument to be his/her free act and deed.

Dr. Lyle J. Micheli

Before me,

Notary Public

JILL E. MUISE
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
July 20, 2018

STATE OF Massachusetts
County of Suffolk, SS

September 16, 2011

Then personally appeared the above-named Anne J. Micheli in his/her capacity as owner/joint tenant of the Property and acknowledged the foregoing instrument to be his/her free act and deed.

Mrs. Anne J. Micheli

Before me,

Notary Public

JILL E. MUISE
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
July 20, 2018

STATE OF NEW HAMPSHIRE
County of Rockingham ss

Sept 8, 2011

Then personally appeared the above-named John B. Kenworthy in his/her capacity as Executive Officer of Antrim Wind Energy LLC and acknowledged the foregoing instrument to be his/her free act and deed in said capacity and the free act and deed of Antrim Wind Energy, LLC.

John B. Kenworthy

Before me,

Katrina Ricker

Notary Public

KATRINA RICKER
MY COMMISSION EXPIRES MAR. 24, 2015
NOTARY PUBLIC
NEW HAMPSHIRE

Exhibit A
Property Description and Map

A certain lot or parcel of land situated off Salmon Brook Road in the Town of Antrim, County of Hillsborough, and State of New Hampshire, more particularly described in the deed dated December 6 1996 and recorded at the Hillsborough County Registry of Deeds in Book 5774, Page 1777 and depicted on the map below.

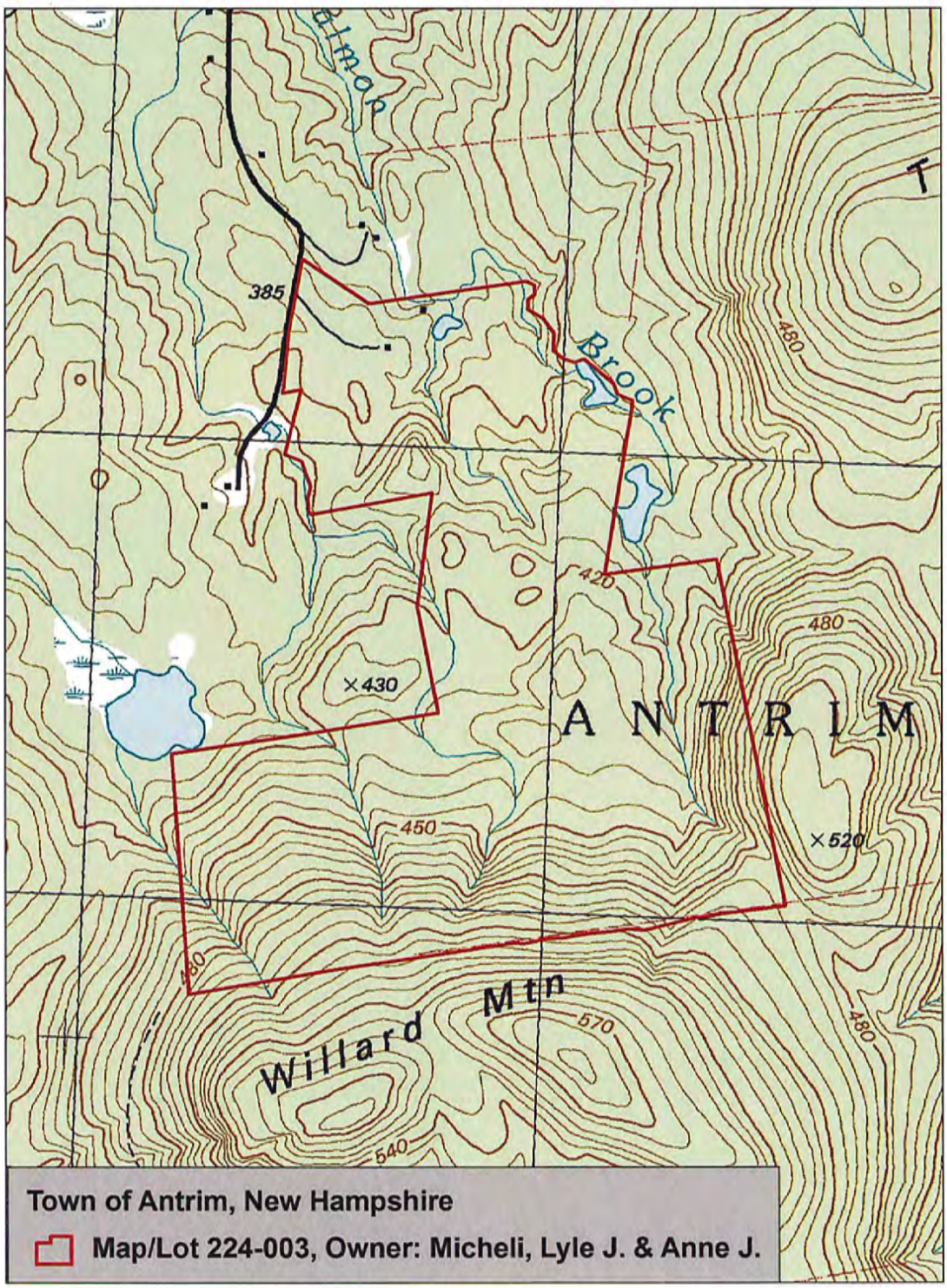


Exhibit B
Form of Easement

EASEMENT

THIS EASEMENT is made by Dr. Lyle J. Micheli and Mrs. Anne J. Micheli (collectively, "Grantor"), the owner(s) of a certain lot or parcel of land situated off Salmon Brook Road in the Town of Antrim, County of Hillsborough, and State of New Hampshire, more particularly described in the deed dated December 6 1996 and recorded at the Hillsborough County Registry of Deeds in Book 5774, Page 1777 (hereinafter referred to as the "Servient Land").

WHEREAS, Antrim Wind Energy LLC a Delaware limited liability company having a mailing address at c/o Eolian Renewable Energy, LLC, 155 Fleet Street, Portsmouth, New Hampshire 03801 ("Grantee"), plans to construct and operate a wind power project, including wind turbine generators and towers and related equipment, facilities, infrastructure and substructures (hereinafter referred to as the "Wind Power Project"), on lands near the Servient Land, including (without limitation) the lands described on the attached Exhibit A; and

WHEREAS, the Wind Power Project will emit sound including at levels that may exceed applicable state or local maximum sound level limits for the Servient Land, and may cast shadows onto or produce a shadow flicker effect at the Servient Land;

NOW, THEREFORE, for good and valuable consideration received, Grantor hereby grants an easement to Grantee for: (a) the right to have sound generated from the Wind Power Project impact the Servient Land and exceed otherwise applicable state or local maximum sound level limits applicable to locations on the Servient Land; (b) the right to cast shadows or shadow flicker from the Wind Power Project onto the Servient Land; and (c) the right to locate turbines closer than any minimum distance setback requirement to structures or property lines, including the right to have the blades of wind turbines overhang the Servient land;

This Easement shall expire on the earlier to occur of (a) fifty years after the date hereof, or (b) the date on which the Wind Power Project is fully decommissioned and has been abandoned or surrendered by Grantee (or its successors and/or assigns, as the case may be).

This Easement shall extend to, be binding upon and shall inure to the benefit of heirs, personal representatives, successors and assigns of the parties hereto. The burden of the easement hereby granted shall run with the Servient Land, until it expires as set forth above. The benefit of the easement hereby granted is not appurtenant to any particular property, but shall be transferable in whole or in part, and may be sold, leased, assigned, pledged, and mortgaged by Grantee, it being the intent of the parties that such benefit may be transferred to any successors or assignees of Grantee that own or operate the Wind Power Project, as it may be modified, divided or expanded.

As a condition of the grant of this Easement, Grantee agrees to indemnify, defend, and hold Grantor harmless from and against any and all damage, loss, claim, liability, or expense of any kind arising from any claim of bodily injury and/or physical or property damage of any kind present by third parties, and physical damage to or destruction of the Servient Land caused by Wind Power Project, except to the extent arising from the negligence or willful misconduct of Grantor.

The benefit of the easement hereby granted may be enforced by Grantee, its successors and assigns, by any appropriate legal or equitable remedy. In the event that Grantee, its

successors or assigns, shall bring an action against Grantor, its successors or assigns, by reason of a breach or violation of this Easement by Grantor, its successors and assigns, the substantially prevailing party in such action shall be entitled to recover their reasonable attorneys' fees and court costs incurred in such action from the substantially non-prevailing party.

WITNESS our hands and seals this _____ day of _____, 2011.

In the presence of:

GRANTOR(s)

_____

_____
Print: Dr. Lyle J. Micheli

_____

_____
Print: Mrs. Anne J. Micheli

STATE OF _____
COUNTY OF _____

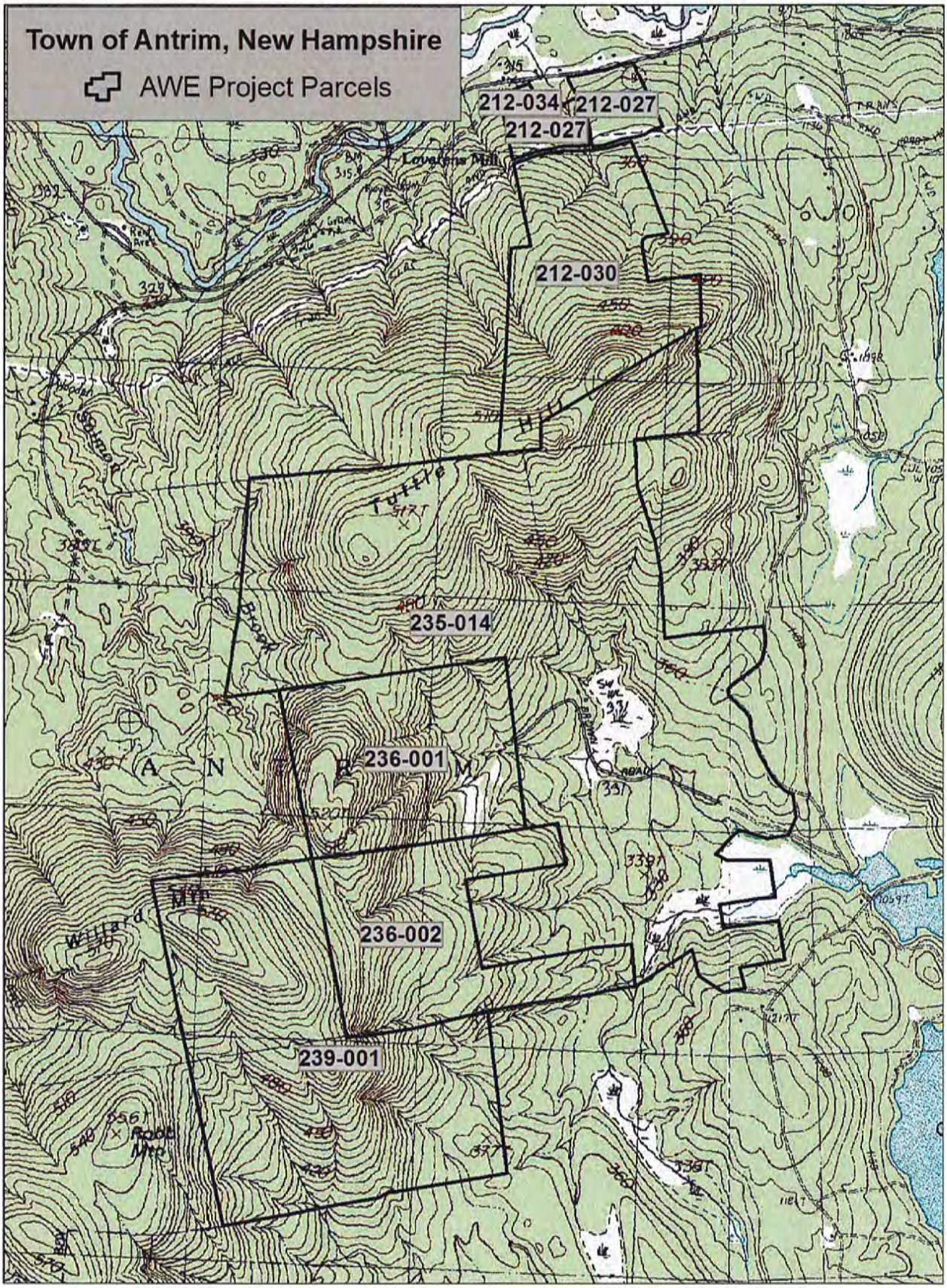
_____, 20__

Personally appeared the above-named LYLE J. MICHELI and ANNE J. MICHELI and [severally] acknowledged the foregoing instrument to be his/her/their free act and deed.

Before me,

_____
Notary Public
Print Name:_____
My Commission Expires:_____

EXHIBIT A
Proposed Wind Power Project Lands
(not intended to be exhaustive)



Doc # 1028814 Jun 24, 2010 10:40 AM
Book 8214 Page 2699 Page 1 of 6
Register of Deeds, Hillsborough County
Pamela O Caughlin

EOLIAN RENEWABLE ENERGY LLC
155 FLEET ST.
PORTSMOUTH NH 03801
ATTN: JACK KENWORTHY

Antrim Wind (Antrim, NH – Map #212 Lot #'s 212-030-000; 212-027-000; 212-034-000 – Michael J. Ott)

EXHIBIT C

MEMORANDUM OF LEASE

PARTIES TO LEASE:

LESSOR
Michael J. Ott
P.O. Box 160
Antrim, New Hampshire 03440

LESSEE
Antrim Wind Energy LLC
c/o Eolian Renewable Energy
155 Fleet Street
Portsmouth, New Hampshire 03801

PREMISES: Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all or a portion of Lessor's Property as depicted on the map attached hereto as Exhibit B (the "Leased Premises"), together with the non-exclusive right of ingress to and egress from Windpower Facilities (defined in the Lease) located on the Leased Premises, adjoining properties and elsewhere over and across the Leased Premises and Lessor's Land by means of existing roads and lanes, if any, or otherwise by such route or routes as Lessee may construct from time to time.

TERM OF LEASE: Lease shall be for an initial term of twenty-five (25) years and shall commence on the Effective Date.

EXTENSION TERM: Lessee shall have the option to renew the Lease for one additional twenty-five (25) year term.

Antrim Wind (Antrim, NH – Map #212 Lot #'s 212-030-000; 212-027-000; 212-034-000 – Michael J. Ott)

DATED at Portsmouth, New Hampshire this 18th day of December 2009.

Antrim Wind Energy LLC

By: _____
Name: John B. Kenworthy
Its: Manager

STATE OF NEW HAMPSHIRE
ss.:
COUNTY OF ~~HILLSBORO~~ Rockingham

On this 18th day of December, 2009, before me, the undersigned, a Notary Public in and for said State, personally appeared John B. Kenworthy, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

KATHRINE NELSON, Notary Public
My Commission Expires May 18, 2010 Notary Public

DATED at Town Hall, Antrim NH this 24 day of December, 2009.

MICHAEL J.H. OTT

By: _____
Name: Michael J. H. Ott
Its: Self

STATE OF NEW HAMPSHIRE
ss.:
COUNTY OF HILLSBORO

On this 24 day of December, 2009 before me, the undersigned, a Notary Public in and for said State, personally appeared Michael J. H. Ott, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

NANCY E. TORRES
STATE OF NEW HAMPSHIRE
MY COMMISSION EXPIRES SEPTEMBER 23, 2014
NOTARY PUBLIC

Notary Public

EXHIBIT A to MEMORANDUM OF LEASE

6038778 2006 JUN -2 PM 2:37

9-60
9-61
9-64

AL7

Record and return to:
Craighead and Martin, PLLC
62 Stark Street
Manchester, NH 03101

22.39
2
24.39

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
****2 THOUSAND 5 HUNDRED AND 20 DOLLARS
06/02/2006 773470 $ ****2520.00
VOID IF ALTERED

2520
TS

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, That, we, John A. Eddy and Laura C. Eddy, husband and wife, both of 763 Templeton Turnpike Road, Fitzwilliam, County of Cheshire, and State of New Hampshire, **for consideration paid,** grants to Michael James Hutchins Ott, a single person of 493 Ocean Boulevard, #24, Hampton, County of Rockingham, and State of New Hampshire, **with Warranty Covenants:**

9-60-33
9-61-205
9-64-2.5

The following four (4) tracts of land situated in Antrim, County of Hillsborough and State of New Hampshire:

Tract 1:

A certain tract of land situated in the northwest part of Antrim in the County of Hillsborough and State of New Hampshire, bounded and described as follows:

9-61-205
212-30-24 acc
9-60-33
212-27-39 acc
9-64-2.5
212-35-5.1 acc

BK7685PG0864

Beginning at the Northeast corner of the premises at a stake and stones by an old road leading from near the dwelling formerly occupied by Walter Buchanan to the dwelling of the late William R. Carr; thence

1. Westerly by the same old road about 101.5 rods to land formerly owned by the late Hiram Griffin; thence

2. Southerly by said Griffin land about 62 rods to the corner of the wall by land of the Steele heirs; thence

3. Easterly by said last mentioned land about 94 rods to the corner of the wall by land of the late William R. Carr; thence

4. Northerly by said Carr land about 19.5 rods to a stake and stones; thence

5. Easterly by said Carr land about 21.5 rods to a stake and stones; thence

6. Northerly by said Carr land about 49 rods to the first named bound.

Estimated to contain 43 acres, more or less.

Tract 2:

Also another tract of land situated in the northwest part of said Antrim, New Hampshire, bounded and described as follows:

Beginning at the Northeast corner of the premises; thence

1. Southerly by land formerly owned by Samuel Tuttle 52 rods; thence

2. Westerly by the wall by land formerly owned by Dodge to the Northwest corner of said Dodge land; thence

3. Southerly by said Dodge land to land formerly owned by Davis; thence

4. Westerly by said Davis land and land formerly owned by Handley to land formerly of Samuel Curtis; thence

5. Northerly and Easterly by said Curtis land to land formerly owned by John McClure, et al; thence

6. Easterly by said McClure land to land formerly owned by Samuel Weston; thence

7. Southerly by said Weston land to land formerly owned by Samuel Tuttle, et al, about 57 rods; thence

8. Easterly by said Tuttle land to the point of beginning.

Said to contain 150 acres, more or less.

Tract 3:

A certain tract of land with the buildings thereon, if any, situate in the north part of Antrim, Hillsborough County and State of New Hampshire, bounded and described as follows:

Beginning at the Northwest corner of the premises at a stake and stones by land formerly owned by John Dodge; thence

1. Southerly by said Dodge land to the old road leading from the former residence of William R. Carr to the former residence of Samuel Dinsmore, to a stake and stones; thence

2. Easterly by said road about 37 rods to stake and stones; thence

3. Northerly by land formerly owned by Chandler Boutelle to a stake and stones by land formerly owned by Grafton Curtice; thence

4. Westerly by said Curtice land to the bound first mentioned.

Estimated to contain 6.5 acres, more or less, but reserving to the Public Service Company of New Hampshire and those claiming under it, any pole rights it may have acquired.

Tract 4:

Also another tract adjoining the above tract, bounded and described as follows:

Beginning at a bound on the Southerly side of the Keene Road, State Highway, at an old roadway; thence

1. Easterly by said Keene Road to land formerly of William M. Conn; thence

2. Southerly by wall and said Conn land to land formerly of William Boutelle; thence

3. Westerly by said Boutelle land to a stake and stones; thence

4. Southerly by said Boutelle land to the Old Town Road; Thence

5. Westerly by said Old Road to road first above mentioned; thence

6. Northerly by said roadway to the bound of beginning.

Said premises are subject to the rights of the public of the State highway and rights heretofore conveyed to the Public Service Company of New Hampshire.

Subject to current use tax recorded with the said Registry of Deeds at Book 3696, Page 137.

This conveyance of the within described properties are not subject to homestead rights.

Meaning and intending to describe and convey the same premises conveyed to the within grantor by Warranty Deed of Donald H. Hardwick, Sr., dated June 10th, 1999, and recorded at the Hillsborough County Registry of Deeds at Book 6115 Page 1762.

SIGNED this 2nd day of June, 2006.

By: _____
John A. Eddy

By: _____
Laura C. Eddy

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

On this 2nd day of June, 2006, personally appeared the above-named John A. Eddy and Laura C. Eddy, known to me (or satisfactorily proven) to be the persons whose names are subscribed to the foregoing instrument, and acknowledged that they executed the same in that capacity, and for the purposes therein contained.

JOANNE C. CRAIGHEAD
MY COMMISSION EXPIRES NOV. 13, 2007
NOTARY PUBLIC
NEW HAMPSHIRE

_____
Notary Public/~~Justice of the Peace~~
My commission expires:_____

BK7685PG0867

ENV
EOLIAN RENEWABLE
ENERGY LLC
155 FLEET ST
PORTSMOUTH, NH
03801-4050

Doc # 1063367 Dec 23, 2010 1:38 PM
Book 8277 Page 0354 Page 1 of 4
Register of Deeds, Hillsborough County
Pamela O Coughlin

ANTRIM WIND ENERGY (ANTRIM, NH – TAX MAP #236 /PARCEL #001-000 – STEVEN R. COTRAN)

EXHIBIT C
MEMORANDUM OF LEASE

PARTIES TO LEASE:

LESSOR
Mr. Steven R. Cotran
26 McIntosh Lane
Bedford, NH 03110

LESSEE
Antrim Wind Energy LLC
c/o Eolian Renewable Energy
155 Fleet Street
Portsmouth, New Hampshire 03801

PREMISES: Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all or a portion of Lessor's Property as depicted on the map attached hereto as Exhibit B (the "Leased Premises"), together with the non-exclusive right of ingress to and egress from Windpower Facilities (defined in the Lease) located on the Leased Premises, adjoining properties and elsewhere over and across the Leased Premises and Lessor's Land by means of existing roads and lanes, if any, or otherwise by such route or routes as Lessee may construct from time to time.

TERM OF LEASE: Lease shall be for an initial term of twenty-five (25) years and shall commence on the Effective Date.

EXTENSION TERM: Lessee shall have the option to renew the Lease for one additional twenty-five (25) year term.

ANTRIM WIND ENERGY (ANTRIM, NH – TAX MAP #236 /PARCEL #001-000 – STEVEN R. COTRAN)

DATED at Manchester, NH this 21st day of December, 2010.

By: _____
Name: Steven R. Cotran
Its: Self/landowner

STATE OF NEW HAMPSHIRE
) ss.:
COUNTY OF Hillsborough

On this 21st day of December, 2010, before me, the undersigned, a Notary Public in and for said State, personally appeared Steven R. Cotran, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

LAUREN A. KORANDA
MY COMMISSION EXPIRES OCT. 7, 2014
NOTARY PUBLIC
NEW HAMPSHIRE

_____
Notary Public

DATED at Portsmouth, NH this 20 day of December, 2010.

By: _____
Name: John B. Kenworthy
Its: Manager

STATE OF NEW HAMPSHIRE
) ss.:
COUNTY OF ROCKINGHAM

On this 20th day of December, 2010, before me, the undersigned, a Notary Public in and for said State, personally appeared John B. Kenworthy, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

Notary Public _____

NICOLE SCAMMAN
MY COMMISSION EXPIRES JAN. 16, 2013
NOTARY PUBLIC
NEW HAMPSHIRE

EXHIBIT A to Memorandum of Lease

6065402 2006 SEP 13 AM 11: 11

McKenney + Bausha

10.39 no TS **QUITCLAIM DEED**

2
12.39 ***KNOW EVERYONE BY THESE PRESENTS***

That Diane Cotran, single, of 83 Rosewell Road, Town of Bedford, Hillsborough County, State of New Hampshire, for consideration paid, grants to Steven R. Cotran, single, of 26 McIntosh Lane, Town of Bedford, Hillsborough County, State of New Hampshire, with ***quitclaim covenants***

A certain tract or parcel of land, with the buildings thereon, situated in the Town of Antrim, County of Hillsborough, State of New Hampshire, on Pigeon Mountain, being more particularly bounded and described as follows:

Containing one hundred thirty (130) acres, be the same more or less, and is Lot #21 in the Great right number five, drawn to the original right of Pierce and Moore, bounded on the north by land now or formerly of Artemus Brown, on the east by land now or formerly of George Brown, on the south by land now or formerly of Condry and others, and on the west by Hubbard Lot, so-called.

Meaning and intending to describe and convey the same premises conveyed to Diane Cotran, by Quitclaim Deed of Steven R. Cotran (a/k/a/ Steven Cotran) dated November 25, 1997 and recorded at Volume 5877, Page 1149, Hillsborough County Registry of Deeds.

This conveyance is made pursuant to the terms of the decree of divorce In the Matter of Steven R. Cotran and Diane M. Cotran, Hillsborough County Superior Court, and is therefore exempt from New Hampshire real estate transfer taxes pursuant to RSA 78-B:2, XIII.

The Grantor releases to the Grantee all rights of homestead and other interests therein.

Dated: 6/16/06 Diane Cotran L.S.
Diane Cotran

State of New Hampshire, County of Hillsborough June 16, 2006

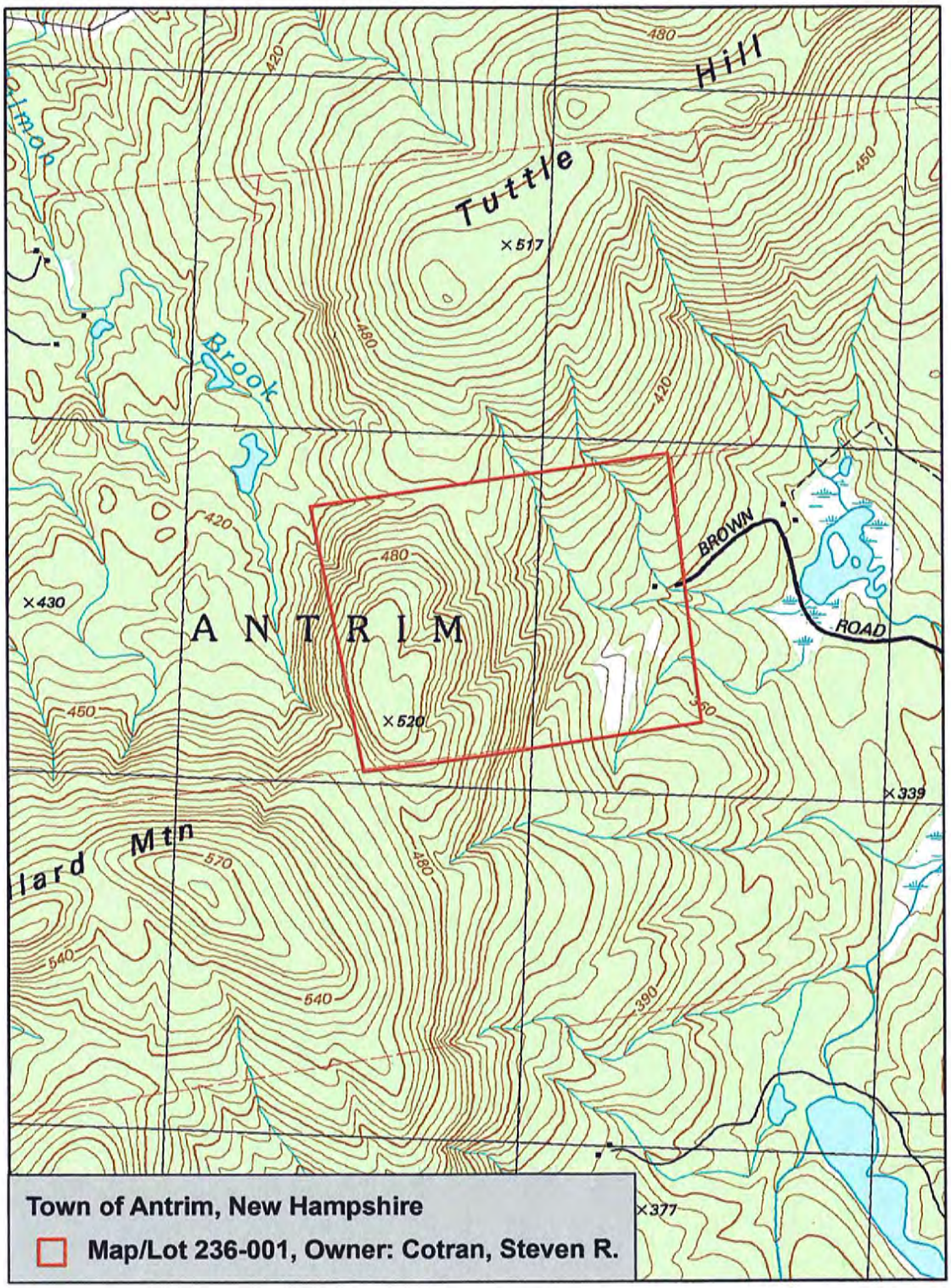
Personally appeared Diane Cotran, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument and acknowledged that s/he executed the same for the purposes therein contained.

Before me, [signature]
Justice of the Peace/~~Notary Public~~

CATHERINE P. BAUSHA
JUSTICE OF THE PEACE - NEW HAMPSHIRE
My Commission Expires February 22, 2011

BK7737PG1502

EXHIBIT B to Memorandum of Lease



Please return to
#11 Blodgett, Makechnie & Lawrence

Doc # 1114961 Mar 24, 2011 2:47 PM
Book 8304 Page 1113 Page 1 of 6
Register of Deeds, Hillsborough County
Pamela O Coughlin

ANTRIM WIND ENERGY LLC (ANTRIM, N.H. - TAX MAP #239/PARCEL #001-000-ARTHUR WHITTEMORE, ET. AL., TRUSTEES OF WHITTEMORE TRUST)

MEMORANDUM OF LEASE

PARTIES TO LEASE:

LESSOR
Helen M. Whittemore and Paul J. Whittemore,
Trustees of the Whittemore Trust
c/o Paul J. Whittemore
P. O. Box 528
Auburn, New Hampshire 03032-0528

LESSEE
Antrim Wind Energy, LLC
c/o Eolian renewable Energy
155 Fleet Street
Portsmouth, New Hampshire 03801

PREMISES:

Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all or a portion of Lessor's Property as depicted on the map attached hereto as Exhibit B (the "Leased Premises"), together with the non-exclusive right of ingress to and egress from Windpower Facilities (defined in the Lease) located on the Leased Premises, adjoining properties and elsewhere over and across the Leased Premises and Lessor's Land by means of existing roads and lanes, if any, or otherwise by such route or routes as Lessee may construct from time to time.

TERM OF LEASE:

Lease shall be for an initial term of twenty-five (25) years and shall commence on the Effective Date.

EXTENSION TERM:

Lessee shall have the option to renew the Lease for one additional twenty-five (25) year term.

CERTIFICATE OF TRUSTEE: The undersigned Trustees, as Trustees of the Whittemore Trust, under Indenture of Trust dated October 2, 1992, by Arthur F. Whittemore, Helen M. Whittemore and Paul J. Whittemore, and thereto have full and absolute power in said trust agreement to convey any interest in real estate and improvements thereon held in said trust and no purchaser or third party shall be bound to inquire whether the trustees have said power or are properly exercising said power or to see to the application of any trust asset paid to the Trustees for a conveyance thereof.

DATED at _____, _____, this 10 day of ~~January~~ February, 2011.

By: Paul J Whittemore
Name: Paul J. Whittemore
Its: Owner/Trustee

By: Helen M Whittemore
Name: Helen M. Whittemore
Its: Owner/Trustee

STATE OF NEW HAMPSHIRE
COUNTY OF Rockingham

On this 10th day of ~~January~~ FEBRUARY, 2011, before me, the undersigned, a Notary Public in and for said State, personally appeared Paul J. Whittemore, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Sharon A. Cann
Notary Public/Justice of the Peace
SHARON A. CANN
Printed Name Expiration Date

SHARON A. CANN
MY COMMISSION EXPIRES MAY 20, 2014
NOTARY PUBLIC
NEW HAMPSHIRE

STATE OF AZ
COUNTY OF MARICOPA

On this 22 day of ~~January~~ FEB, 2011, before me, the undersigned, a Notary Public in and for said State, personally appeared Helen M. Whittemore, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Notary Public
JACK Bloomfield 9/19/2013
Printed Name Expiration Date

JACK BOOMFIELD
Notary Public –Arizona
Maricopa County
Expires 09/19/2013

DATED at Portsmouth, New Hampshire this 8 day of ~~January~~ March, 2011

Antrim Wind Energy LLC

By: _____

Name: Jack Kenworthy (JoLn)

Its: Manager

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this 8 day of ~~January~~ March, 2011, before me, the undersigned, a Notary Public in and for said State, personally appeared Jack Kenworthy, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Katrina Ricker

Notary Public/Justice of the Peace

KATRINA RICKER 3/24/2015

Printed Name Expiration Date

KATRINA RICKER
MY COMMISSION EXPIRES MAR. 24, 2015
NOTARY PUBLIC
NEW HAMPSHIRE

EXHIBIT A to Memorandum of Lease

354837 93 OCT 13 AM 8:28

QUITCLAIM DEED

KNOW ALL MEN BY THESE PRESENTS:

That ARTHUR F. WHITTEMORE and HELEN M. WHITTEMORE, married, of Cuddihee Hill Road, Antrim, County of Hillsborough and State of New Hampshire,

for consideration paid,

grant to ARTHUR F. WHITTEMORE and HELEN M. WHITTEMORE, married, of Cuddihee Hill Road, Antrim, County of Hillsborough and State of New Hampshire, 03440, and PAUL J. WHITTEMORE, married, of 184 Emery Street, Berlin, County of Coos and State of New Hampshire, 03570, as Trustees of the Whittemore Trust, under Indenture of Trust, dated October 2, 1992,

with QUITCLAIM covenants,

Three certain tracts of land situated in the northwesterly part of Antrim, in the County of Hillsborough and State of New Hampshire, bounded and described as follows:

FIRST: Beginning at the Southeast corner of the premises at a beech tree, marked at the southwest corner of Tenney and Dutton's land; thence westerly, by land of Evans and Hayward to the Worthley pasture; thence northerly by said Worthley pasture to land of Samuel Holt; thence easterly by said Holt's land to land of Tenney and Dutton; thence southerly by said Tenney and Dutton's land to the first named bounds. Estimated to contain one hundred and twenty-one acres (121), more or less.

SECOND: Beginning at the northeast corner of the premises at the northwest corner of land formerly owned by John R. Hills; thence southerly by said land to John Hayward's land; thence westerly by land of said John Hayward and the "Allds Pasture", so-called, to land formerly owned by William Weston, deceased; thence northerly on land formerly owned by said Weston to the "Woodbury Pasture", so-called; thence easterly by said Woodbury Pasture to the bounds first mentioned. Containing one hundred thirteen (113) acres, more or less.

BK5480PG1134

BRIGHTON, FERNALD, TAFT & FALBY · PROFESSIONAL ASSOCIATION · PETERBOROUGH, N. H. 03458-0270

THIRD: Beginning at the northwesterly corner of the premises at the corner of walls running southerly and westerly; thence southerly by land formerly of Lee and Holden to the southwest corner of the premises to land now or formerly of William Weston; thence easterly by land now or formerly of said Weston and land now or formerly of Worthley and Hill to the southeast corner of the premises at the corner of land now or formerly of Samuel Fletcher by the corner of walls; thence northerly by land now or formerly of said Fletcher and land now or formerly of Davis to the northeast corner at land formerly of Darias Hubbard; thence westerly by land formerly of said Hubbard to the bound first mentioned. Containing one hundred twenty-three (123) acres, and 36 rods, more or less.

This conveyance is made subject to all restrictions of record or otherwise, stipulations and agreements made or existing between any predecessor in title in reference to the said premises, so far as said matters concern the premises hereby conveyed.

For title of Arthur F. Whittemore and Helen M. Whittemore, reference is made to the deed from Francis R. Fellows, Ruth M. Fellows and Arthur F. Whittemore to Arthur F. Whittemore and Helen M. Whittemore, dated August 31, 1976 and recorded with the Hillsborough County Registry of Deeds in Book 2483, Page 432.

SIGNED this 2nd day of October, 1992.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
XXX THOUSAND XXX HUNDRED AND 40 DOLLARS
MO. DAY YR. AMOUNT
10 13 93 111107 $ 40 00
VOID IF ALTERED

Arthur F. Whittemore
Arthur F. Whittemore

Helen M. Whittemore
Helen M. Whittemore

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

October 2, 1992

Before me, the undersigned officer, personally appeared ARTHUR F. WHITTEMORE and HELEN M. WHITTEMORE, and acknowledged the foregoing to be their free act and deed.

Mark D. Fernald
Notary Public

My commission expires:_____

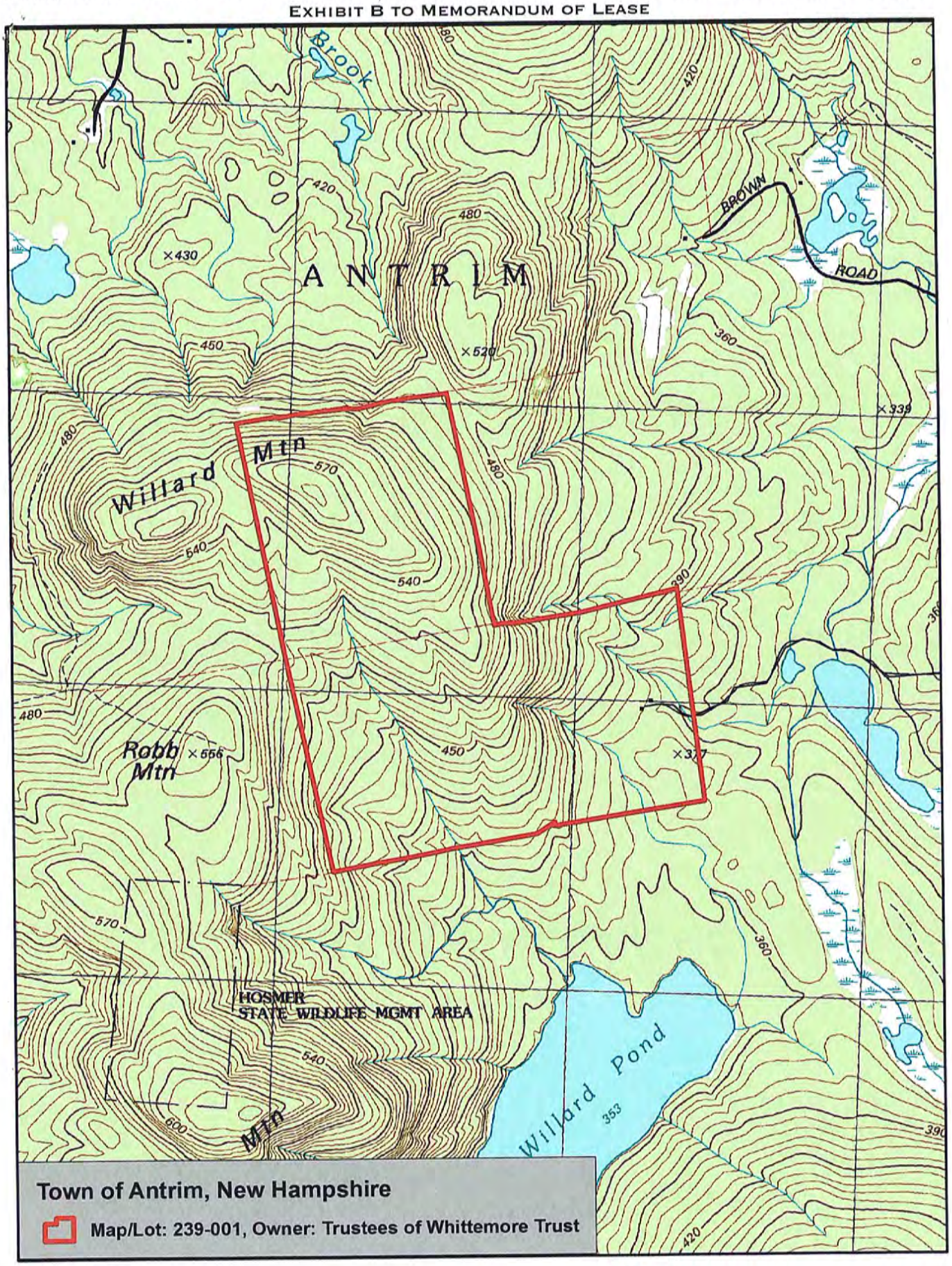
MARK D. FERNALD
COMMISSION EXPIRES 6/28/94

BK5480PG1135

BRIGHTON, FERNALD, TAFT & FALBY - PROFESSIONAL ASSOCIATION - PETERBOROUGH, N. H. 03458-0270

ANTRIM WIND ENERGY LLC (ANTRIM, NH TAX MAP #239, PARCEL #001-000 - WHITTEMORE TRUST.

EXHIBIT B TO MEMORANDUM OF LEASE



Verrill : Dana
490

Doc # 1026732 Jun 11, 2010 12:41 PM
Book 8211 Page 1362 Page 1 of 16
Register of Deeds, Hillsborough County
Pamela O Caughlin

Antrim Wind (Antrim, NH – Map # 235 Lot # 235-014-000 – Antrim Limited Partnership)

MEMORANDUM OF LEASE

PARTIES TO LEASE:

LESSOR
Antrim Limited Partnership
c/o Charles S. Bean III
477 Washington Street
Norwood, Massachusetts 02062

LESSEE
Antrim Wind Energy, LLC
c/o Eolian Renewable Energy, LLC
155 Fleet Street
Portsmouth, New Hampshire 03801

PREMISES: Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all or a portion of Lessor's Property as depicted on the map attached hereto as Exhibit B (the "Leased Premises"), together with the non-exclusive right of ingress to and egress from Windpower Facilities (defined in the Lease) located on the Leased Premises, adjoining properties and elsewhere over and across the Leased Premises and Lessor's Land by means of existing roads and lanes, if any, or otherwise by such route or routes as Lessee may construct from time to time.

TERM OF LEASE: Lease shall be for an initial term of twenty-five (25) years and shall commence on the Effective Date.

EXTENSION TERM: Lessee shall have the option to renew the Lease for one additional twenty-five (25) year term.

Antrim Wind (Antrim, NH – Map # 235 Lot # 235-014-000 – Antrim Limited Partnership)

DATED at Norwood, Massachusetts this 23rd day of April, 2010.

ANTRIM LIMITED PARTNERSHIP

By: _____

Name: Charles S. Bean III

Its: Manager of its General Partner, Bean Family, LLC

STATE OF MA)
) ss.:
COUNTY OF Norfolk)

On this 23rd day of April, 2010, before me, the undersigned, a Notary Public in and for said State, personally appeared Charles S. Bean III, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

Karen Ann Keefe
Notary Public

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

NOTARY PUBLIC

Antrim Wind (Antrim, NH – Map # 235 Lot # 235-014-000 – Antrim Limited Partnership)

EXHIBIT A to Memorandum of Lease

See attached deeds

Doc # 1018119 Apr 23, 2010 11:10 AM
Book 8197 Page 0116 Page 1 of 5
Register of Deeds, Hillsborough County
Pamela O Coughlin

C/H
L-CHIP
HIA082547

ENV
#290
CUSHING & DOLAN PC

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
***** Thousand * Hundred 40 Dollars
DATE 04/23/2010 HI019875 AMOUNT $ ******40.00
VOID IF ALTERED

NEW HAMPSHIRE WARRANTY DEED

We, **Charles S. Bean, II, Elena A. Bean** and **Charles S. Bean, III**, Trustees of the **Antrim Realty Trust**, under Declaration of Trust dated December 23, 1994 and recorded with Hillsborough County Registry of Deeds at Book 5608, Page 1532.

For Consideration Paid

Grant to **Antrim Limited Partnership**, a Limited Partnership organized under the law of the Commonwealth of Massachusetts with a usual place of business of 477 Washington Street, Norwood, Norfolk County, Massachusetts

Two certain tracts of land situated in Antrim, in the County of Hillsborough, State of New Hampshire:

Tract #1:

With the buildings thereon, bounded and described as follows:

Beginning on the east line of the lot on the south side of the highway leading from Gregg's Pond to the Alvin Brown Farm, so called, at an iron pin at the corner of land of John Cuddihy and George P. Hildreth; thence south 86.5 degrees west, 19 rods north 63 degrees west, 25.5 rods by land of said Cuddihy to stake and stones; thence south, 35 degrees west, 30 rods by said Cuddihy's land to stakes and stones; then southeasterly 11 rods and easterly by said Cuddihy's land to land of George P. Hildreth; thence southerly by said Hildreth's land to land of John Cuddihy; thence westerly by said Cuddihy's land; thence southerly by said Cuddihy's land to a stake and stones on a rock; thence south, 86

degrees east, fifty rods to land of Frank M. Brooks; thence south, 9 degrees west, 5 rods and south, 5.25 degrees west 30 rods by land of said Brooks to the corner of a wall at land of C. H. Bass and being the southeast corner of the premises; thence north 86 degrees west, 41 rods by said Bass land to the corner of the wall; thence 2 degrees west, by the wall 19 rods to a lane; thence westerly and northwesterly by a stone wall at said land against the land of John Cuddihy 46 rods to a stake and stones; thence, 85 degrees west, 46 rods by said Cuddihy's land to stake and stones; thence north 7 degrees east, 37 rods to the corner of a wall; thence north, 87 degrees west, still by land of said Cuddihy 135 rods to the corner of the wall; thence north 6 degrees east, 80 rods by said Cuddihy's land to the corner of a wall at the land of Alvin Brown Estate; thence south 86 degrees east, 89 rods by said Brown land to a corner of the wall; thence north, 3 degrees east, 35 rods by said Brown land to the corner of the wall; thence north, 79.5 degrees west, 30 rods by said Brown land to a stake and stones; thence north, 7 degrees east, 151 rods by land of said Brown, crossing the highway to a corner of the wall; thence north, 84 degrees west, 58 rods by said Brown land to a stake and stones, thence north, 85 degrees west, 151 rods by land of said Alfred G. Holt to a stake and stones; thence north 85 degrees west, 49 rods by land of Eastern Lumber Company to a take and stones, thence north, 20 degrees east, 114 rods by land of W.K. Flint and still further north, 20 degrees east, 84 rods by land of H.W. Dustin to a corner of the wall being the northwest corner of the premises; thence south 81 degrees east, 110 rods to land of H.D. Tudor; thence south 85 degrees east, 107 rods by land of H.D. Tudor to a stone wall; thence south 83 degrees east, 14 rods and south, 80 degrees east, 30 rods by land of W. F. Adams to a stone wall; thence south 83 degrees east 86 rods by land of F.L. Proctor formerly of John E. Tenney to a stake and stones at land of George P. Craig being the northeast corner of the premises; thence south 11 degrees west, 43 rods by said Craig's land to a stake and stones; thence south 3.25 degrees east, 52 rods by said Craig's land to a stake and stones; thence south 2 degrees west, 27 rods by said Craig's land to a stake and stones; thence south 9.5 degrees west, 59 rods by said Craig's land to a stake and stones; thence south, 83.5 degrees east, 68 rods by said Craig's land to a stake and stones at land of Delia Flanders; thence south 7.5 degrees west. 40 rods by said Flanders land to a beech tree marked, at the highway leading from Gregg's Pond to the homestead of George P. Craig, then crossing the highway south, 7 degrees west, 36 rods to a stake and stones on the east side of said "Craig" highway, crossing said highway and continuing southeasterly along some 84 rods to a stone wall at land of George P. Hildreth; thence southerly along said wall 19.5 rods by land of said Hildreth; thence south 33 degrees west, 19 rods to the highway first mentioned opposite the place of beginning and containing 817 acres more or less reserving the Town of Antrim the highway rights as they now exist.

Tract #2:

Located on the northwesterly side of that highway leading from Gregg's Pond to Keene highway known as Route #9, and bounded and described as follows, to wit:

Beginning at the northeasterly corner of the premises at a stake and stones; thence southerly by the highway about forty (40) rods to a stake and stones at land formerly of Artemis Brown; thence northerly by said Brown land about forty (40) rods to land

formerly of Caleb Clark to a stake and stones; thence easterly about twenty-five (25) rods to the bound first mentioned. Said premises contains three acres, be the same more or less. This tract adjoins track No. 1.

For grantor's title see deed of Charles S. Bean, II to Charles S. Bean, II, Elena A. Bean and Charles S. Bean, III, Trustees of the Antrim Realty Trust dated December 23, 1994 and recorded at Book 5608, Page 1544.

SIGNATURE PAGE TO FOLLOW

Charles S. Bean II Elena A. Bean

CHARLES S. BEAN, II, TRUSTEE ELENA A. BEAN, TRUSTEE

ANPRIM REALTY TRUST

CHARLES S. BEAN, III, TRUSTEE

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, II, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:

My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **ELENA A. BEAN, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:

My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, III, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that **he signed it voluntarily for its stated purposes** on behalf of the Trust.

Karen Ann Keefe

Notary Public:

My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

Doc # 1020521 May 6, 2010 11:14 AM
Book 8201 Page 0787 Page 1 of 3
Register of Deeds, Hillsborough County
Pamela O Coughlin

C/H
L-CHIP
HIA084205

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
***** Thousand * Hundred 40 Dollars
DATE 05/06/2010 HI020247 AMOUNT $ ******40.00
VOID IF ALTERED

Env

290

CUSHING + DOLAN

NEW HAMPSHIRE WARRANTY DEED

We, **Charles S. Bean, II, Elena A. Bean** and **Charles S. Bean, III**, Trustees of the **Antrim Realty Trust**, under Declaration of Trust dated December 23, 1994 and recorded with Hillsborough County Registry of Deeds at Book 5608, Page 1532.

For Consideration Paid

Grant to **Antrim Limited Partnership**, a Limited Partnership organized under the law of the Commonwealth of Massachusetts with a usual place of business of 477 Washington Street, Norwood, Norfolk County, Massachusetts

A certain tract of land situate in the west part of said Antrim, Hillsborough County and State of New Hampshire, containing fifty acres more or less, bounded on the north and west by land formerly of the Steel Heirs; on the south by land formerly owned by George Brown, now owned by Leon A. Bean and Hester Bean and land formerly owned by George P. Craig, now owned by Clark A. Craig and Sue K. Craig; on the east by land formerly owned by Lewis Simonds.

The within described premises were originally owned by John E. Tenney, later by Fred L. Proctor and more lately by Earl Smith and Ruth D. Smith.

For grantors' title see of Charles S. Bean, II a/k/a Charles S. Bean to Charles S. Bean, II, Elena A. Bean and Charles S. Bean, III, Trustees of Antrim Realty Trust dated December 23, 1994 recorded with the Hillsborough County Registry of Deeds at Book 5608, Page 1542.

ANTRIM REALTY TRUST

Charles S. Bean II Elena A. Bean

CHARLES S. BEAN, II, TRUSTEE ELENA A. BEAN, TRUSTEE

CHARLES S. BEAN, III, TRUSTEE

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, II, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:
My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **ELENA A. BEAN, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:
My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, III, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:

My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

Doc # 1020523 May 6, 2010 11:14 AM
Book 8201 Page 0793 Page 1 of 3
Register of Deeds, Hillsborough County
Pamela D Caughlin

C/H
L-CHIP
HIA084206

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
***** Thousand * Hundred 40 Dollars
DATE 05/06/2010 HI020248 AMOUNT $ ******40.00
VOID IF ALTERED

Env
290

CUSHING + DOLAN

NEW HAMPSHIRE WARRANTY DEED

We, **Charles S. Bean, II, Elena A. Bean** and **Charles S. Bean, III**, Trustees of the **Antrim Realty Trust**, under Declaration of Trust dated December 23, 1994 and recorded with Hillsborough County Registry of Deeds at Book 5608, Page 1532.

For Consideration Paid

Grant to **Antrim Limited Partnership**, a Limited Partnership organized under the law of the Commonwealth of Massachusetts with a usual place of business of 477 Washington Street, Norwood, Norfolk County, Massachusetts

The land with the buildings thereon situated in said Antrim, Hillsborough County, New Hampshire, bounded and described as follows:

Beginning at the northwest corner of the premises at a stake and stones; thence southerly by land of Charles F. Holt and Samuel A. Holt to a stake and stones; thence easterly on land of George Brown to a stake and stones; thence northerly on land of said Brown about forty (40) rods; thence westerly on land of said Brown about forty-one (41). rods; thence northerly on land of said Brown about one hundred forty (140) rods to a stake and stones; thence westerly on land of said Brown to the bounds first mentioned, containing seventy-five (75) acres more or less, excepting however from the above conveyance the sawable timber located upon the above described premises conveyed to Benjamin F. Tenney by said John A. Brown by deed of even date to be recorded herewith.

For grantors' title see deed of Charles S. Bean, II a/k/a Charles S. Bean to Charles S. Bean, II, Elena A. Bean and Charles S. Bean, III Trustees of Antrim Realty Trust dated December 23, 1994 and recorded with Hillsborough County Registry of Deeds at Book 5608, Page 1543.

ANTRIM REALTY TRUST

CHARLES S. BEAN, II, TRUSTEE

ELENA A. BEAN, TRUSTEE

CHARLES S. BEAN, III, TRUSTEE

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, II, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Notary Public:
My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **ELENA A. BEAN, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Notary Public:
My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

On this 16 day of April 2010, before me, the undersigned Notary Public, personally appeared **CHARLES S. BEAN, III, TRUSTEE** proved to me through satisfactory evidence of identification which was ☐ photo identification ☑ personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes on behalf of the Trust.

Karen Ann Keefe

Notary Public:

My Commission Expires:

KAREN ANN KEEFE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires Oct. 8, 2015

KAREN ANN KEEFE NOTARY PUBLIC

Antrim Wind (Antrim, NH – Map # 235 Lot # 235-014-000 – Antrim Limited Partnership)

EXHIBIT B to Memorandum of Lease

See attached map

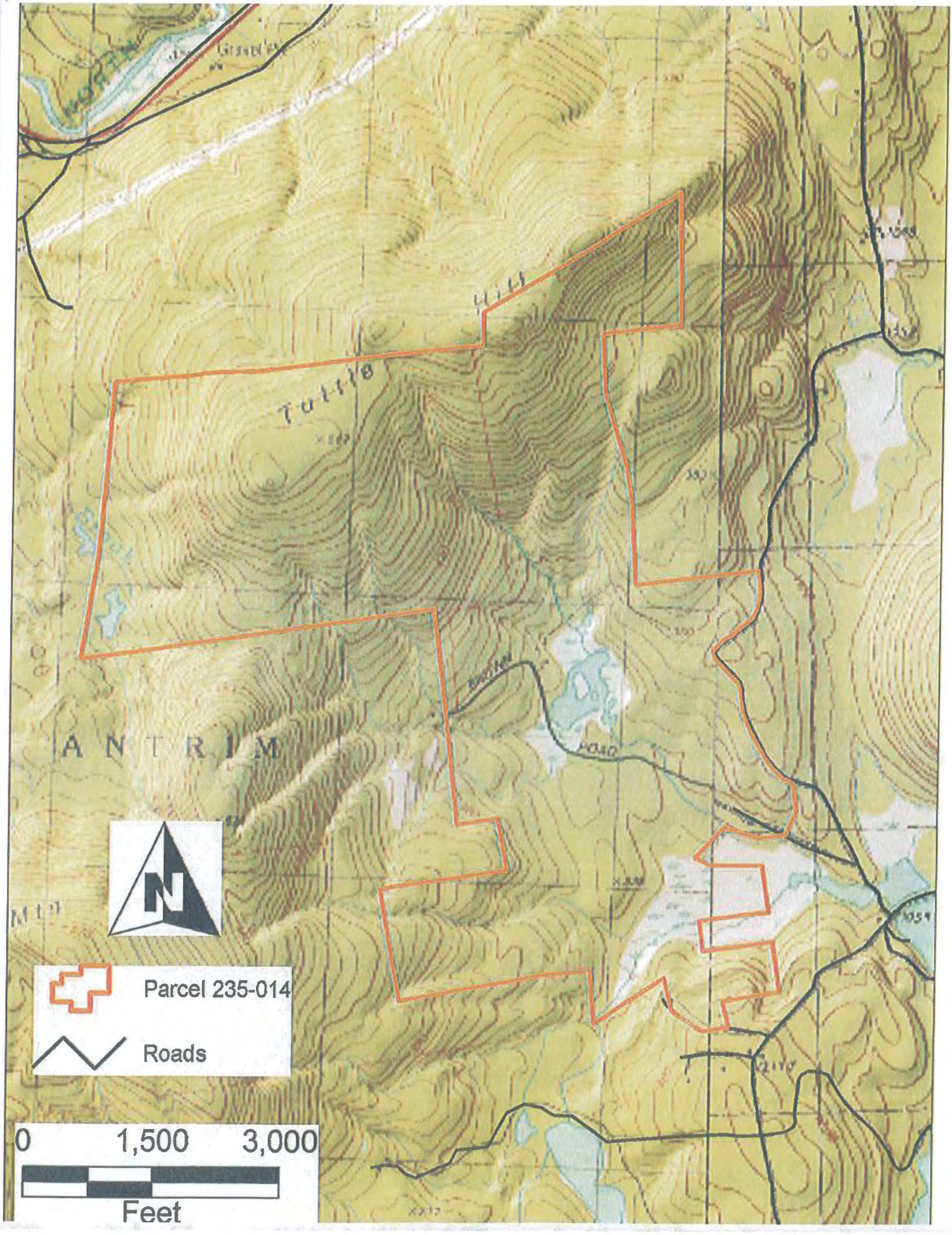

Parcel 235-014
Roads
0
1,500
3,000
Feet
N
ANTRIM

EXHIBIT B

MEMORANDUM OF LEASE and PURCHASE OPTION

PARTIES TO LEASE:	LESSOR TWBW LLC 155 Fleet Street Portsmouth, NH 03801
	LESSEE Antrim Wind Energy LLC c/o Eolian Renewable Energy, LLC 155 Fleet Street Portsmouth, New Hampshire 03801
PREMISES:	Lessor is the owner of that certain real property described in Exhibit A attached hereto ("Lessor's Land"). Lessor leases to Lessee all of Lessor's Property as described in Exhibit A.
DATE OF LEASE:	November 15, 2013
TERM OF LEASE:	The Lease Term commences on November 15, 2013 and shall expire upon termination of the Lease as provided therein or December 31, 2019, whichever is sooner.
RIGHT TO PURCHASE:	Lessee has exclusive right to purchase Lessor's Land during the Term.
ASSIGNMENT:	The Lease may be sold, assigned or transferred by Lessee without the consent of Lessor.
ORIGINAL OF LEASE:	An original of the Lease is located at the office of Lessee.

DATED at Portsmouth, New Hampshire this 11 day of November, ~~2012~~ 2013

By: _____
Name: John B Kenworthy
Its: Executive Officer

STATE OF New Hampshire
ss.:
COUNTY OF Rockingham

On this 11 day of November, 2013, before me, the undersigned, a Notary Public in and for said State, personally appeared John B Kenworthy personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

KATRINA RICKER
MY COMMISSION EXPIRES MAR. 24, 2015
NOTARY PUBLIC
NEW HAMPSHIRE

Katrina Ricker
Notary Public

DATED at Portsmouth, New Hampshire this 11 day of November, ~~2012~~ 2013

By: _____
Name: John M Soininen
Its: Member

STATE OF NEW HAMPSHIRE
ss.:
COUNTY OF Rockingham

On this 11 day of November 2013, before me, the undersigned, a Notary Public in and for said State, personally appeared John M Soininen, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his, signature on the instrument, the individual(s) or the person(s) upon behalf of which the individual acted, executed the instrument.

KATRINA RICKER
MY COMMISSION EXPIRES MAR. 24, 2015
NOTARY PUBLIC
NEW HAMPSHIRE

Katrina Ricker
Notary Public

EXHIBIT A to Memorandum of Lease

Return to:
TWBW, LLC
155 Fleet Street
Portsmouth, NH 03801

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS: That **I, RICHARD K. JACQUIN**, a single person of 4089 Nesconset Highway, Apartment 323, Town of South Setauket, County of Suffolk County, and State of New York,

For consideration paid grant(s) to **TWBW, LLC**, a New Hampshire Limited Liability Company, with a mailing address of 155 Fleet Street, City of Portsmouth, County of Rockingham and State of New Hampshire, with WARRANTY COVENANTS:

The following described parcels of land located in the Town of Antrim, County of Hillsborough and State of New Hampshire, being more particularly bounded and described as follows:

Parcel I:

A certain tract or parcel of land situate on the northerly side of Old Keene Road a/k/a Old Buchanan Road and the southerly side of Route 9, in the Town of Antrim, County of Hillsborough and State of New Hampshire, bounded and described as follows:

Beginning at an iron pipe set on the northerly side of Old Keene Road a/k/a Old Buchanan Road to a cross road as referred to in Book 1132, Page 37;

Thence northerly by said cross road about 336 feet to the present Keene Highway n/k/a Route 9;

Thence easterly along said Route 9 to a point opposite a 24 inch culvert on the southerly side of Route 9;

Thence South 27° East 36 feet, more or less, to an iron pipe set;

Thence South 37° East 100 feet, more or less, to an iron pipe set;

Thence South 30° East 100 feet, more or less, to an iron pipe set;

Thence South 8° East 220 feet, more or less, to the point or place of beginning.

The above described easterly lot line was shown on a tape and compass survey by Kenneth s. Rockwell dated March 12, 1976, for Ledgewood Properties, Inc., Claremont, New Hampshire.

Being the same premises as conveyed to Richard Jacquin by Trustees Deed of David J. Ferrari, Chapter 11 Trustee of the Estate of Freeport Development, Inc., dated November 9, 1994 and recorded in Book 5593, Page 1746 of the Hillsborough County Registry of Deeds.

PARCEL II:

A certain tract or parcel of land with the buildings thereon, located in the Town of Antrim, County of Hillsborough and State of New Hampshire, being bounded and described as follows:

Beginning at a point near the junction of that highway known as Route 9 with the highway known as the Old Buchanan Road; thence northerly 580 feet, more or less, by said Route 9 to a point; thence southerly 319 feet, more or less, to a point on the said Old Buchanan Road; thence westerly 575 feet, more or less, by said Old Buchanan Road to a point; thence northerly 15 feet to the point or place of beginning.

Subject to the flowage rights and rights-of-way as stated in deed of Public Service Company of New Hampshire to Herbert E. Wilson, dated March 1, 1935 and recorded in the Hillsborough County Registry of Deeds at Volume 1132, Page 373.

Meaning and intending to describe and convey the same premises as conveyed to Richard K. Jacquin by Warranty Deed of Paul M. Wilmott dated September 8, 1993 and recorded on September 9, 1993 in Book 5470, Page 0989 of the Hillsborough County Registry of Deeds.

The property is not the residence of the grantor or the grantor's spouse and is not subject to homestead rights.

Executed this July 25, 2012

Richard K. Jacquin

Richard K. Jacquin

State of New York
County of Suffolk

Then personally appeared before me on this July 25, 2012 the said Richard K. Jacquin and acknowledged the foregoing to be his voluntary act and deed.

Joy Raimo

Notary Public/Justice of the Peace
Commission expiration:

JOYCE RAIMO
Notary Public, State of New York
No. 01RA6083119
Qualified in Suffolk County
Commission Expires November 12, 2014