



February 2, 2007

Mr. Charles Turlinski
Horizon Wind Energy
3 Columbia Place
Albany, NY 12207

**Subject: Rare Plant Assessment Report
Marble River Wind Farm
Clinton County, New York**

Dear Mr. Turlinski:

Tetra Tech EC, Inc. (TtEC) is pleased to provide this Rare Plant Assessment Report for the proposed Marble River Wind Farm. The purpose of this assessment is to determine what listed plant species or their habitat are present, or are likely to be present, at the proposed Marble River Wind Farm. The following provides the introduction, methods, results and summary of the assessment.

INTRODUCTION

This report presents the findings of a rare plant assessment for the proposed Marble River Wind Farm. This effort included the identification of rare plants that may occur within the project area, researching the habitat and plant associations of the potential plant species, and reviewing wetland and upland delineation data that were collected during the 2005 and 2006 wetland delineation effort to determine if these plants or their potential suitable habitat was encountered at the Site.

METHODS

This effort included the determination of rare plants that may occur within the project area, researching the habitat, plant associations and range of distribution of the potential rare plant species, and reviewing wetland delineation data that were collected during the wetland delineation effort to determine if these plants or their potential suitable habitats were encountered at the Site. While the wetland delineation effort is not a formal threatened and endangered species survey, it does constitute a plant survey of the potentially affected areas and provides an initial assessment of whether these plants are present in the project area.

Correspondence from the USFWS and the NYSDEC regarding the presence of rare plants or communities within the proposed Marble River Wind Farm project were reviewed to determine if there were any documented occurrences of rare plants or communities at the Site. In addition, the New York Natural Heritage Program (NYNHP) Rare Plant Lists and the USFWS Threatened and Endangered Species System (TESS) databases were reviewed to determine what rare plants have been documented in Clinton County, New

York. Specific habitats, plant associations and the distributions of the listed plant species documented in Clinton County were researched using readily available information including various internet sources. Wetland data from the 2005 and 2006 delineation effort at the proposed Marble River Wind Farm were reviewed to determine if any of these listed species, or their potential habitat and/or plant associations were observed during the wetland delineation field effort.

Areas with potential habitats or plant associations for listed species will be targeted for specific threatened and endangered species surveys that will be conducted by a qualified botanist, familiar with the flora of New York State, in the spring and fall of 2007. A letter report, identifying the findings of the survey, will be generated and provided to the USFWS and the NYSDEC for review upon the completion of the field effort.

RESULTS

Identification of Rare Plants within the Project Area

Results of the review of USFWS and NYSDEC correspondence (2004, 2005 and 2007), and the NYNHP Rare Plant List and the USFWS TESS databases are provided in the following sections.

State and Federal Correspondence Review. USFWS and the NYSDEC Division of Fish, Wildlife and Marine Resources correspondence from March 9 and April 15, 2004 (NYSDEC and USFWS, respectively), October 20 and November 3, 2005 (USFWS and NYSDEC, respectively) and January 30, 2007 (NYSDEC) regarding the presence of rare plants or communities within the proposed Marble River Wind Farm project area was reviewed. According to the USFWS and the NYSDEC, no federally or state-listed plant species or communities are documented within the proposed project area. An updated request regarding the presence of threatened and endangered species at the proposed Marble River Wind Farm was submitted to the USFWS on January 12, 2007. A response to this request was not received at the time of this report preparation. This correspondence will be reviewed prior to the commencement of the 2007 field surveys. Copies of the above listed correspondence are provided in Attachment 1.

Natural Heritage Program Database. The May 2006 NYNHP Rare Plant Status Lists identifies 32 confirmed state-listed plants as occurring in Clinton County. Sixteen of these plant species are state-listed endangered, 15 are state-listed threatened and one is identified as rare. The majority (16) of the plant species listed were, or were assumed to be, wetland plants, 13 were, or were assumed to be, upland plants, and three plant species were identified as occurring in either habitats. Eleven federally listed species were also identified by the NYNHP as occurring in New York State; however, there are no recorded occurrences of these federally listed species in Clinton County. Table 1 identifies the common and scientific name of the 32 state-listed species, the state status and the regional wetland indicator status.

USFWS Threatened and Endangered Species System. The USFWS TESS identifies ten plant species as potentially occurring in New York State. Of these ten species, the habitat

of one, the northern wild monk's-hood (*Aconitum noveboracense*), which includes cool streamsides, occurs within the project boundaries. However, according to the NYNHP Rare Plant Status Lists, this plant, listed as threatened, is not documented in Clinton County.

Habitat, Plant Association and Range Review

Based on a literature search of the habitat, plant association and range of the 32 confirmed state listed species, seven of these (Purple rock-cress, Rock-cress, Smooth rock-cress, Northern stickseed, Water milfoil, Dwarf sand-cherry and Low sand-cherry) require specific habitats that were not identified within the proposed Marble River Wind Farm project area. These habitats include rock ledges, overhangs and cliffs, talus slopes, limestone rock crevices, acid lakes, sandbars and rocky shores. Also, the range of six plant species (Champlain beachgrass, Back's sedge, Crawe's sedge, Emory's sedge, Handsome sedge and Cat-tail sedge) did not extend into the project area. Portions of the ranges of Cloud sedge, Northern wild comfrey and Veiny Meadow-rue extend into the project area. The range of Cloud sedge and Northern wild comfrey extends into the southern portion of the project area and the range of Veiny Meadow-rue extends into the northwestern portion of the project area. Therefore, of the 32 state-listed plant species that occur within Clinton County, 19 could potentially occur within at least a portion of the project area. Table 2 lists the common name, habitat and plant association of the 19 confirmed state-listed plant species, which could potentially occur at the proposed Marble River Wind Farm.

Wetland Data Review

None of the 32 state-listed threatened or endangered plant species documented in Clinton County were observed in the 384 wetlands or 80 streams that bisect the proposed Marble River Wind Farm during the 2005 and 2006 wetland delineation effort. Table 3 lists the 384 wetland crossings delineated at the proposed Marble River Wind Farm by coartype. Based on coartype, all of the project's wetlands could potentially provide habitat for one or more of the 19 state-listed plant species that have ranges which overlap the project area. The locations of the 384 wetland and 80 stream crossings associated with the proposed Marble River Wind Farm are provided on Figure 1.

SUMMARY

According to USFWS and NYSDEC correspondence from 2004 and 2005 and NYSDEC correspondence from 2007, there are no documented occurrences of listed plant species within the project area. Also, threatened or endangered plant species were not observed at the proposed Marble River Wind Farm site during the 2005 and 2006 wetland delineation effort. Coartypes that could support the habitat and/or plant associations of 19 state-listed plant species (11 wetland, six upland and two facultative) were identified within the project area. These areas will be surveyed in the spring and fall of 2007 for the presence of any listed plant species. Suitable upland habitats for state-listed plant species in those portions of the project area other than at the delineated wetland crossings will be identified and surveyed during the 2007 field survey.

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Thank you for the opportunity to support you on this project. Should you have any questions or comments regarding this submittal, please call me at (973) 630-8402.

Very truly yours,

Richard Delahunty
Project Manager

Insert Figure 1- Wetland Delineation Map

Table 1
State-Listed Species in Clinton County, New York

Common Name	Scientific Name	State Status	Regional Indicator status ¹
Champlain beachgrass	<i>Ammophila champlainensis</i>	endangered	WET*
Purple rock-cress	<i>Arabis divaricarpa</i>	rare	FACU
New England northern reedgrass	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	threatened	WET*
Northern reedgrass	<i>Calamagrostis stricta</i> ssp. <i>stricta</i>	endangered	WET*
Back's sedge	<i>Carex backii</i>	threatened	UPL*
Crawe's sedge	<i>Carex crawei</i>	threatened	FACW
Clustered sedge	<i>Carex cumulata</i>	threatened	FACU
Emory's sedge	<i>Carex emoryi</i>	endangered	OBL
Handsome sedge	<i>Carex formosa</i>	threatened	FAC
Cloud sedge	<i>Carex haydenii</i>	endangered	OBL
Houghton's sedge	<i>Carex houghtoniana</i>	threatened	UPL*
Cat-tail sedge	<i>Carex typhina</i>	threatened	FACW+
Prairie redroot	<i>Ceanothus herbaceous</i>	endangered	UPL*
Golden corydalis	<i>Corydalis aurea</i>	threatened	UPL*
Northern wild comfrey	<i>Cynoglossum virginianum</i> var. <i>boreale</i>	endangered	UPL*
Ram's head lad's slipper	<i>Cypripedium arietinum</i>	threatened	FACW+
Northern tansy mustard	<i>Descurainia pinnata</i> ssp. <i>brachycarpa</i>	endangered	UPL*
Rock-cress	<i>Draba arabisans</i>	threatened	UPL*
Smooth rock-cress	<i>Draba glabella</i>	endangered	UPL*
Ovate spikerush	<i>Eleocharis ovata</i>	endangered	OBL
Marsh horsetail	<i>Equisetum palustre</i>	threatened	FACW
Meadow horsetail	<i>Equisetum pratense</i>	threatened	FACW
Northern stickseed	<i>Hackelia deflexa</i> var. <i>americana</i>	endangered	UPL*
Spurred gentian	<i>Halenia deflexa</i>	endangered	FAC
American shore-grass	<i>Littorela uniflora</i>	endangered	OBL
Water milfoil	<i>Myriophyllum alterniflorum</i>	threatened	OBL
Riverweed	<i>Podostemum ceratophyllum</i>	threatened	OBL
Dwarf sand-cherry	<i>Prunus pumila</i> var. <i>depressa</i>	threatened	UPL*
Low sand-cherry	<i>Prunus pumila</i> var. <i>pumila</i>	endangered	UPL*
Slender bulrush	<i>Schoenoplectus heterochaetus</i>	endangered	WET*
Veiny meadow-rue	<i>Thalictrum venulosum</i>	endangered	WET*
Melic-oats	<i>Trisetum melicoides</i>	endangered	FAC

¹ Indicator Categories:

FAC = Facultative – Equally likely to occur in wetlands or non wetlands

FACU = Facultative upland – Usually occurs in non-wetlands

+ = More frequently found in wetlands

UPL* = not listed on Region 1 National List of Plant Species that Occur in Wetlands: Northeast (Region 1).

Presumed to be an upland species

WET* = not listed on Region 1 National List of Plant Species that Occur in Wetlands: Northeast (Region 1).

Presumed to be a wetland species

FACW = Facultative wetland – Usually occurs in wetlands

OBL = Obligate wetland – In natural conditions, occurs almost always in wetlands

Table 2
State-Listed Species That Could Potentially Occur at
The Marble River Wind Farm Site

Common Name	Habitat	Plant Association
<i>Wetland Plant Species</i>		
New England northern reedgrass	Wet meadows, along streams and lake shores	ND
Northern reedgrass	Wet meadows, along streams and lake shores	ND
Cloud sedge	Red maple-hardwood swamp, sedge meadow and shallow emergent marsh	Tussock sedge (<i>Carex stricta</i>), sheep laurel (<i>Kalmia angustifolia</i>), meadow-sweet (<i>Spirea alba</i>)
Ram's head lad's slipper	Coniferous swamps and bogs including northern white cedar swamp	Northern white cedar (<i>Thuja occidentalis</i>), balsam fir (<i>Abies balsamea</i>), tamarack (<i>Larix laricina</i>) and spruce (<i>Picea</i> sp.)
Ovate spikerush	Shallow waters, marshes and swamps	Tamarack, spruce and cattail (<i>Typha latifolia</i>)
Marsh Horsetail	Along stream and pond edges and in marshes and wooded swamps	Tamarack, spruce, white cedar, speckled alder (<i>Alnus incana</i>), bebb willow (<i>Salix bebbiana</i>) meadowsweet, sedges (<i>Carex</i> spp.) and sphagnum moss (<i>Sphagnum</i> sp.)
Meadow horsetail	Moist woods, thickets and meadows	ND
American shore-grass	Wet shores and shallows	ND
Riverweed	Shoals in rocky stream and riverbeds	Monospecific community dominated by Riverweed
Slender bulrush	Emergent aquatic	Cat-tails, bulrushes (<i>Schoenoplectus</i> spp.), bur-reeds (<i>Sparganium</i> spp.), giant reed (<i>Phragmites australis</i>), water-plantains (<i>Alisma</i> spp.), arrowheads (<i>Sagittaria</i> spp.), and spikerush (<i>Eleocharis</i> spp.)
Veiny Meadow-rue	Shores and along riverbanks in rocky gravelly soil	ND
<i>Upland PLant Species</i>		
Houghton's sedge	Sandy disturbed areas including roadsides and successional forests	Gray birch (<i>Betula populifolia</i>), quaking aspen (<i>Populus tremula</i>), big toothed aspen (<i>P. grandidentata</i>), black cherry (<i>Prunus serotina</i>), red maple (<i>Acer rubrum</i>) and white pine (<i>Pinus strobus</i>)
Prairie redroot	Northern upland forests	ND
Golden corydalis	Hillsides along streams and in open woods	Spruce, fir, maple, aspen, beech (<i>Fagus grandifolia</i>) and birch
Northern wild comfrey	Successional northern hardwoods	Sugar maple (<i>Acer saccharum</i>) and wild sarsaparilla (<i>Aralia nudicaulis</i>)
Northern tansy mustard	Waste ground, disturbed sites, open woods, and roadsides	Spruce, fir, aspen, maple, beech and birch
Clustered sedge	Open rocky habitats with shallow soil including shrub swamps	Hardhack spirea (<i>Spirea tomentosa</i>) and lowbush blueberry (<i>Vaccinium pallidum</i>)
<i>Facultative Plant Species</i>		
Spurred gentian	Northern lowland and upland forests, moist woods and riverside seeps	Joe-pye-weed (<i>Eupatorium maculatum</i>), boneset (<i>E. perfoliatum</i>), jewelweed (<i>Impatiens capensis</i>) and soft rush (<i>Juncus effusus</i>)
Melic-oats	Streambanks, gravelly shores, rock ledges and damp woods	ND

ND = not determined

Table 3
Wetland Crossings by Covertypes

Wetland Covertypes ¹	Number of Wetland Crossings
PFO1	108
PFO1/PEM	10
PFO1/PSS	23
PFO1/PSS/PEM	3
PFO1/PFO4	16
PFO1/PFO4/PEM	1
PFO1/PFO4/PSS	5
PFO1/PFO4/PSS/PEM	2
PFO4	9
PFO4/PSS	2
PFO4/PEM	1
PSS	67
PSS/PEM	38
PSS/PEM/POW	4
PEM	94
PEM/OW	1
Total	384

¹PFO = Palustrine Forested Deciduous
PFO4 = Palustrine Forested Coniferous
PSS = Palustrine Scrub Shrub
PEM = Palustrine Emergent
POW = Open water

ATTACHMENT 1
AGENCY CORRESPONDENCE