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**FINAL  
ENVIRONMENTAL  
ASSESSMENT**

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**ENVIRONMENTAL ASSESSMENT FOR DEPARTMENT OF  
ENERGY LOAN GUARANTEE TO RECORD HILL WIND LLC  
FOR CONSTRUCTION OF A WIND ENERGY PROJECT IN  
ROXBURY, MAINE**

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U.S. Department of Energy  
Loan Guarantee Program Office  
Washington, DC 20585

**July 2011**

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## **EXECUTIVE SUMMARY**

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### **INTRODUCTION**

The U.S. Department of Energy (DOE) is proposing to issue a loan guarantee to Record Hill Wind LLC (Record Hill) for the construction of a 50.6 megawatt (MW) wind energy project located in Roxbury, Maine.<sup>1</sup>

DOE has prepared this Final Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321, et. seq.) Council on Environmental Quality regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508) and DOE NEPA regulations (10 CFR Part 1021). The EA examines the potential environmental impacts associated with the proposed action, as well as alternatives considered prior to application, and determines whether the proposed action has the potential for significant environmental impacts. The information contained in the EA would enable DOE to fully consider the potential environmental impacts of issuing a loan guarantee for the Record Hill project.

### **PURPOSE AND NEED**

The Energy Policy Act of 2005 (EPAAct 2005), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009 (ARRA), established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of EPAAct 2005 authorizes the Secretary of Energy to make loan guarantees to eligible projects that “(1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of green house gases; and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.” (42 USC 16513). The two principal goals of the loan guarantee program are to encourage commercial use of new or significantly improved energy-related technologies in the United States and thereby achieve substantial environmental benefits. EPAAct 2005 was amended by the Recovery Act to create Section 1705 authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects. The purpose and need for agency action is to comply with the DOE’s mandate under EPAAct 2005 by selecting eligible projects that meet these goals. The DOE is using the NEPA process to assist in determining whether to issue a loan guarantee to Record Hill to support the proposed project.

Turbine Load Control technology would be utilized to increase the productivity of the wind farm by reducing the amount of curtailment (turbine shut downs) in this region where trees and other objects that increase turbulence are present. The decrease in curtailment results in an increase of annual energy production when compared to other commercial technologies in the United States that need to stop generating electricity in certain wind conditions where the loads in the wind turbine exceed their design limits.

The Record Hill project anticipates generating approximately 1115,000 megawatt hours (MWh) of clean energy annually during the expected operational life of the project. Over its estimated 20-year projected life, Record Hill expects the proposed wind energy facility to produce approximately 2.3 million MWh of electricity under peak conditions. Assuming that this capacity

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<sup>1</sup> The amount requested for the loan guarantee is not being disclosed at this time because it is business sensitive. Moreover, should the DOE approve a loan guarantee; the amount may differ from the original request.

displaces electricity produced by conventional power plants and combined-heat-and-power plants, DOE estimates that the proposed development would reduce greenhouse gasses (carbon dioxide and nitrogen oxides) and other air pollutants on an annual basis by approximately:

- 58,710 tons of carbon dioxide;
- 97 tons of sulfur dioxide; and
- 82 tons of nitrogen oxides

#### **PROPOSED ACTION AND ALTERNATIVES**

The DOE's proposed action is to issue a loan guarantee to Record Hill to support the construction of the proposed wind energy project, and an associated Central Maine Power Company (CMP) substation and transmission line upgrade. The Record Hill project would consist of an array of 22 Siemens SWT-2.3-93 wind turbines and associated electrical interconnection infrastructure located along approximately 3.5 miles of ridgeline. Also located on the ridgeline would be two permanent 80-meter meteorological towers. Power generated by the turbine array would be collected by two 34.5-kilovolt (kV) lines and carried approximately 2.9 miles southeast to a 20,700 square foot project collector substation. There the voltage would be increased to 115 kV and then transferred to an adjacent CMP system and ultimately delivered to the New England grid. The site of the project collector substation also would include a project office located in an existing 2,700-square foot home and a proposed 7,200-square foot project Operations and Maintenance building. The total nameplate capacity of the project would be 50.6 MW.

An initial phase of construction for the wind energy project on the ridgeline began in September 2009 and included the marking of sensitive natural resources, installation of erosion control measures, clearing of turbine sites, and initiation of access road construction.

To provide electrical transmission service for the project and to meet potential future regional transmission needs beyond this project, CMP would construct a new substation adjacent to the collector substation to supplement the existing Frye Substation, replace the existing 8-mile Section 59 transmission line (CMP refers to the replacement line as Section 270), and construct a new crossover transmission line of approximately 1,000 feet.

In addition to the proposed action of issuing the loan guarantee to Record Hill for the proposed project, a No Action Alternative also was evaluated in the EA. Under the No Action Alternative, DOE would not issue the loan guarantee to Record Hill for the project. Without the DOE loan, Record Hill would not implement the project unless it was able to acquire alternative commercial financing.

The decision for DOE's consideration as presented in this EA is whether to approve the loan guarantee for the proposed Record Hill project. Prior to submitting its application Record Hill considered alternative sites throughout the state of Maine. Record Hill determined that the proposed site was the most viable location for the proposed project based on the existing needs for renewable energy, evaluation of wind resources in the area, and a thorough consideration of alternative sites.

#### **SUMMARY OF RESOURCE AREAS EXAMINED**

The EA evaluates the potential environmental effects that could result from implementing the Proposed Action and No Action Alternative. Table S.1 provides a summary of the potential environmental consequences that could result from implementing the Proposed Action and from the No Action Alternative.

Table S.1 Summary of Impacts

Area of Concern	No Action Alternative	Proposed Action
Climate	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> Construction of the facility would result in a slight increase in greenhouse gas emissions; however this would be temporary and insignificant.</p> <p><u>Operational Period:</u> There would be some emissions associated with operation of the facility such as heating of the office and O&amp;M building; however these would be insignificant and would be more than offset by the reduction in fossil fuel consumption and greenhouse gas emissions from the displacement of electricity produced by conventional power plants.</p>
Topography	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> The completed cut and fill activities conducted during access road construction and future planned activities have caused or would cause minor alterations of local topography, but would not alter major topographic features.</p> <p><u>Operational Period:</u> Activities affecting topography are not anticipated during operations, but if needed would be minor.</p>
Geology, Soils and Geologic Hazards	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> The completed cut and fill activities conducted during access road construction and future planned activities have altered or would alter existing soils, but an erosion control plan developed using Best Management Practices (BMPs) would control and minimize soil erosion. No geologic hazards are known to occur in the area.</p> <p><u>Operational Period:</u> Activities affecting geology, soils, and geologic hazards are not anticipated during operations.</p>

Area of Concern	No Action Alternative	Proposed Action
Water Resources	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> A total of 13,564 square feet of wetlands would be permanently filled. To date, approximately 10,689 square feet of permitted wetland fill has been completed for construction of the access roads and turbine pads. Approximately 66,197 square feet of forested wetlands would be converted to shrub and/or herbaceous communities. Another 4,300 square feet of temporary wetland impacts from the use of construction mats would occur. The U.S. Army Corps of Engineers has issued Section 404 permits and the State of Maine Department of Environmental Protection (DEP) has issued land use permits for these wetland impacts.</p> <p>In addition, approximately 20,652 square feet of Maine designated critical terrestrial habitat associated with a significant vernal pool would be cleared. The State of Maine DEP has issued a permit for this impact.</p> <p><u>Operational Period:</u> Potential impacts to surface water and groundwater resources would be avoided and minimized through the use of BMPs to control and minimize runoff and soil erosion. Stormwater modeling completed for the project indicates that there would be no significant increase in discharge rate from the site following construction, and that there should be no adverse impacts to adjacent waterbodies or properties if the stormwater management plan is properly implemented.</p>
Air Quality	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> Construction of the project would result in minor emissions of air pollutants from construction and employee vehicles. Because these would be temporary and in small quantities, impacts to air quality would be minimal.</p> <p><u>Operational Period:</u> The proposed project would result in minor emissions of air pollutants related to employee vehicles and other equipment needed for maintenance as well as heating of the project office and O&amp;M building. These emissions would be low and would not result in adverse long-term impacts to air quality. The project would benefit air quality by reducing air pollutants that</p>

Area of Concern	No Action Alternative	Proposed Action
		would otherwise be produced by fossil fuel consumption typically used to produce power.
Noise	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> Construction of the project would produce short-term noise within the project area that would be similar to noise produced when commercial timber harvesting is occurring on the property. Noise produced by construction would adhere to established state requirements.</p> <p><u>Operational Period:</u> Sound from the project is not expected to result in a significant impact to the surrounding community. Results of this analysis indicate that sound levels at full sound power production would be below the nighttime state-established sound level limits at the nine nearest receiver points. Post-construction monitoring would be required to determine if noise models adhere to state-established sound level limits.</p>
Historic, Archaeological and Cultural Resources	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	Three National Register eligible properties are located within the Area of Potential Affect that was surveyed for the project. Two of the properties (Austin Farmstead and Knapp Farmstead) located on Swift River Road in Byron would have views of approximately 14 turbines at distances ranging between 1.7 and 3.3 miles. The third property, the Mitchell Farmstead, located on Roxbury Road in Mexico would have views of most of the 22 turbines at distances ranging between 3.7 and 5.9 miles. Maine Historic Preservation Commission (MHPC) determined that the wind energy project would have an adverse effect on these properties. Under the terms of a Memorandum of Agreement between MHPC, DOE, and the U.S. Army Corps of Engineers, the three properties must be documented to the standards of the Maine Historic Building Report.
Visual Resources	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> During construction, visual affects of the project would be limited to construction vehicles traveling to and from the site and to cranes used to construct the turbines.</p> <p><u>Operational Period:</u> The project turbines and met towers would introduce new</p>

Area of Concern	No Action Alternative	Proposed Action
		vertical elements into the landscape and other project components including the electrical lines, O&M building and substation would be visible from some locations. The turbines would be visible from Old Blue Mountain on the Appalachian Trail, but otherwise would be screened by intervening topography and vegetation.
Shadow Flicker	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	Shadow flicker analysis determined that no nearby receptors would be affected.
Public Health and Safety	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> During construction there would be limited use or storage of materials considered hazardous such as antifreeze. Other hazards would be related to holes, uneven surfaces and active construction areas. The risk of harm would be minimized by employing BMPs.</p> <p><u>Operational Period:</u> Twenty of the 22 proposed turbines would be located more than the required minimum setback distance of 622.5 feet (1.5x maximum blade height) from residences. Two parcels are located at less than this setback distance, however neither parcel is currently used for residential purposes and neither property owner has posed objections. For the limited hazardous materials that would be stored at the project O&amp;M building, a Spill Prevention, Countermeasure and Control Plan would be developed.</p>
Land Use	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> The project would not limit access to the remaining property, which would continue to be used for commercial timber production.</p> <p><u>Operational Period:</u> The project would not limit access to the remaining property, which would continue to be used for commercial timber production.</p>
Biological Resources	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<u>Construction Period:</u> Approximately 19 acres of vegetation would be cleared on the ridgeline for the wind turbines and associated infrastructure; and 49 acres of vegetation would be cleared for the Section 270 transmission line. There would be no effect on the Atlantic salmon and no impact on its designated essential fish habitat. The construction phase is not

Area of Concern	No Action Alternative	Proposed Action
		<p>expected to significantly impact bird and bat species, although breeding songbirds may be temporarily displaced depending upon the timing of activities.</p> <p><u>Operational Period:</u> Wind turbines pose a threat to migratory birds and bats. However, based upon surveys conducted on the project ridgeline, this threat is not expected to be significant. Record Hill Wind will prepare an Eagle Risk Minimization Plan 60 days prior to commencement of operations. Post-construction monitoring would be employed to assess mortality resulting from collisions with wind turbines.</p>
Socioeconomics	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> Short-term impacts would include temporary construction employment opportunities as well as increased activity at local businesses such as hotels and restaurants during construction of the proposed project.</p> <p><u>Operational Period:</u> Long-term benefits would include three to five full-time jobs for employees to operate the facilities as well as seasonal work associated with road maintenance. The project also would provide long-term tax benefits and would offer local residents energy assistance.</p>
Environmental Justice	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> No disproportionate high and adverse human health or environmental impacts are expected on minority and low income populations and no impacts on children.</p> <p><u>Operational Period:</u> No disproportionate high and adverse human health or environmental impacts on minority and low income populations and no impacts on children are expected.</p>
Transportation	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> No significant impacts are expected to existing traffic patterns or public roads.</p> <p><u>Operational Period:</u> No significant impacts are expected to existing traffic patterns or public roads.</p>
Utilities	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	<p><u>Construction Period:</u> No significant impacts to public utilities are expected. During construction, water would be provided by the contractor.</p> <p><u>Operational Period:</u> No significant</p>



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Area of Concern	No Action Alternative	Proposed Action
		impacts to public utilities are expected. Water for the project office would be provided by a private well and an on-site septic system would handle wastewater. A licensed waste hauler would periodically collect and transport waste to a licensed waste disposal facility
Cumulative Impacts	The impacts associated with the proposed action would not occur unless alternative financing was obtained.	The project area is subject to periodic timber harvesting. Potential cumulative impacts to vegetation and soil erosion could occur during the construction phase of the wind energy project if it overlaps with timber harvesting. There would be no potential incremental contribution to other cumulative environmental impacts.

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Appendix A - U.S. Army Corps of Engineers Section 404 Programmatic General Permits  
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<b>ACRONYMS AND ABBREVIATIONS</b>	<b>Full Phrase</b>
ACHP	Advisory Council on Historic Preservation
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
AT	Appalachian National Scenic Trail
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CAA	Clean Air Act
CMP	Central Maine Power Company
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
dBA	Decibel
DOE	U.S. Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EPAct 2005	Energy Policy Act of 2005
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
FSC	Forest Stewardship Council
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organization
ISO-NE	ISO New England
kV	Kilovolt
MBTA	Migratory Bird Treaty Act
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
MHBR	Maine Historic Building Record
MHPC	Maine Historic Preservation Commission
MMBC	Maine Model Building Code

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MNAP	Maine Natural Areas Program
M.R.S.A.	Maine Revised Statutes Annotated
MW	Megawatt
NMFS	National Marine Fisheries Service
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act of 1966
NOI	Notice of Intent
NPCC	Northeast Power Coordinating Council, Inc.
NRPA	Natural Resource Protection Act
OSHA	Occupational Safety and Health Administration
O&M	Operations and Maintenance
PBR	Permit By Rule
RGGI	Regional Greenhouse Gas Initiative
ROI	Region of Influence
SDR	Short Duration Repetitive Sounds
SFI	Sustainable Forestry Initiative
SPCC Plan	Spill Prevention, Control and Countermeasures Plan
TDML	Total Daily Maximum Loads
USC	United States Code
USF	Underdrain Soil Filters
USFWS	U.S. Fish and Wildlife Service

**Scientific Names for Animals and Plants that appear in this Environmental Assessment**

<b>Fish</b>	
long-nose dace	<i>Rhinichthys cataractea</i>
brook trout	<i>Salmo trutta</i>
rainbow trout	<i>Oncorhynchus mykiss</i>
slimy sculpin	<i>Cottus cognatus</i>
Atlantic salmon	<i>Salmo salar</i>
<b>Birds</b>	
ovenbird	<i>Seiurus aurocapillus</i>
dark-eyed junco	<i>Junco hyemalis</i>
chestnut-sided warbler	<i>Dendroica pensylvanica</i>
white-breasted nuthatch	<i>Sitta carolinensis</i>
golden-crowned kinglet	<i>Regulus satrapa</i>
rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>
American robin	<i>Turdus migratorius</i>
blue jay	<i>Cyanocitta cristata</i>
black-capped chickadee	<i>Poecile atricapillus</i>
hairy woodpecker	<i>Picoides villosus</i>
northern flicker	<i>Colaptes auratus</i>
American redstart	<i>Setophaga ruticilla</i>
black-throated green warbler	<i>Dendroica virens</i>
red-eyed vireo	<i>Vireo olivaceus</i>
black-and-white warbler	<i>Mniotilta varia</i>
eastern wood-pewee	<i>Contopus virens</i>
tree swallow	<i>Tachycineta bicolor</i>
veery	<i>Catharus fuscescens</i>
white-throated sparrow	<i>Zonotrichia albicollis</i>
American kestrel	<i>Falco sparverius</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
broad-winged hawk	<i>Buteo platypterus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
merlin	<i>Falco columbarius</i>
northern goshawk	<i>Accipiter gentilis</i>
northern harrier	<i>Circus cyaneus</i>
osprey	<i>Pandion haliaetus</i>
peregrine falcon	<i>Falco peregrinus</i>
sharp-shinned hawk	<i>Accipiter striatus</i>
red-shouldered hawk	<i>Buteo lineatus</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
turkey vulture	<i>Cathartes aura</i>
roseate tern	<i>Sterna dougallii</i>
least tern	<i>Sterna antillarum</i>
piping plover	<i>Charadrius melodus</i>
<b>Mammals</b>	
white-tailed deer	<i>Odocoileus virginianus</i>
moose	<i>Alces alces</i>
black bear	<i>Ursus americanus</i>
coyote	<i>Canis latrans</i>
bobcat	<i>Lynx rufus</i>
red squirrel	<i>Tamiasciurus hudsonicus</i>
eastern chipmunk	<i>Tamias striatus</i>
snowshoe hare	<i>Lepus americanus</i>
deer mouse	<i>Peromyscus maniculatus</i>
porcupine	<i>Erethizon dorsatum</i>

short-tailed shrew	<i>Blarina brevicauda</i>
Canada lynx	<i>Lynx canadensis</i>
little brown bat (little brown myotis)	<i>Myotis lucifugus</i>
northern myotis (northern long-eared bat)	<i>Myotis septentrionalis</i>
eastern small-footed bat	<i>Myotis leibii</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>
big brown bat	<i>Eptesicus fuscus</i>
eastern red bat	<i>Lasiurus borealis</i>
hoary bat	<i>Lasiurus cinereus</i>
eastern pipistrelle (tricolored bat)	<i>Pipistrellus subflavus</i> ( <i>Perimyotis subflavus</i> )
<b>Amphibians and reptiles</b>	
spotted salamander	<i>Ambystoma maculatum</i>
red-back salamander	<i>Plethodon cinereus</i>
wood frog	<i>Rana sylvatica</i>
American toad	<i>Bufo americanus</i>
spring peeper	<i>Pseudacris crucifer</i>
eastern garter snake	<i>Thamnophis sirtalis</i>
eastern milk snake	<i>Lampropeltis t. triangulum</i>
<b>Plants</b>	
northern white cedar	<i>Thuja occidentalis</i>
witherod	<i>Viburnum nudum</i>
winterberry	<i>Ilex verticillata</i>
cinnamon fern	<i>Osmunda cinnamomea</i>
sensitive fern	<i>Onoclea sensibilis</i>
northeastern mannagrass	<i>Glyceria melicaria</i>
fowl mannagrass	<i>Glyceria striata</i>
fringed sedge	<i>Carex crinita</i>
red raspberry	<i>Rubus idaeus</i>
rough-stemmed goldenrod	<i>Solidago rugosa</i>
bluejoint	<i>Calamagrostis canadensis</i>
swamp dewberry	<i>Rubus hispida</i>
pointed broom sedge	<i>Carex scoparia</i>
steeple-bush	<i>Spiraea tomentosa</i>
red spruce	<i>Picea rubens</i>
balsam fir	<i>Abies balsamea</i>
sugar maple	<i>Acer saccharum</i>
yellow birch	<i>Betula alleghaniensis</i>
American beech	<i>Fagus grandifolia</i>
paper birch	<i>Betula papyrifera</i>
eastern hophornbeam	<i>Ostrya virginiana</i>
eastern hemlock	<i>Tsuga canadensis</i>
gray birch	<i>Betula populifolia</i>
striped maple	<i>Acer pensylvanicum</i>
hobblebush	<i>Viburnum lantanoides</i>
bracken fern	<i>Pteridium aquilinum</i>
bunchberry	<i>Cornus canadensis</i>
evergreen wood fern	<i>Dryopteris intermedia</i>
beaked hazelnut	<i>Corylus cornuta</i>
shining clubmoss	<i>Huperzia lucidula</i>
red maple	<i>Acer rubrum</i>
green ash	<i>Fraxinus pennsylvanica</i>
meadowsweet	<i>Spiraea alba</i> var. <i>latifolia</i>
sallow sedge	<i>Carex lurida</i>



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jewelweed	<i>Impatiens capensis</i>
small whorled pogonia	<i>Isotria medeoloides</i>
Japanese barberry	<i>Berberis thunbergii</i>
Honeysuckle	<i>Lonicera</i> sp.
Asiatic bittersweet	<i>Celastrus orbiculatus</i>
Common buckthorn	<i>Rhamnus carthatica</i>
Glossy buckthorn	<i>Frangula alnus</i>
Autumn olive	<i>Elaeagnus umbellata</i>

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## CHAPTER 1.0: PURPOSE AND NEED

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### 1.1 PURPOSE AND NEED FOR ACTION

The Energy Policy Act of 2005 (EPAAct 2005), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009 (ARRA), established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of EPAAct 2005 authorizes the Secretary of Energy to make loan guarantees to eligible projects that “(1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued” (42 United States Code [USC] 16513). The two principal goals of the loan guarantee program are to encourage commercial use of new or significantly improved energy-related technologies in the United States and thereby achieve substantial environmental benefits. EPAAct 2005 was amended by the Recovery Act to create Section 1705 authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects. The U.S. Department of Energy (DOE) believes that commercial use of these technologies would help sustain and promote economic growth, produce a more stable and secure energy supply and economy for the United States, and improve the environment. The purpose and need for agency action is to comply with the DOE’s mandate under EPAAct 2005, as amended by ARRA, in selecting eligible projects that meet these goals.

The DOE’s proposed action is to issue a loan guarantee to Record Hill Wind LLC (Record Hill) that would be used to construct a 50.6-megawatt (MW) wind energy project and an associated Central Maine Power Company (CMP) substation and transmission line upgrade located in Roxbury, Maine. The proposed facility would consist of an array of twenty two 2.3 megawatt (MW) Siemens SWT-2.3-93 wind turbines, two permanent 260-foot meteorological towers (met towers) and a network of unpaved access roads on the ridgeline, and a project collector substation, office and Operations & Maintenance (O&M) building located at a separate location. The Record Hill project would make 115,000 megawatt-hours of clean energy available to the local energy market and would avoid the emission of air pollutants and anthropogenic greenhouse gases that would be produced using nonrenewable energy sources.

Over its estimated 20-year projected life, Record Hill expects the proposed wind energy facility to produce approximately 2.3 million megawatt-hours of electricity under peak conditions. Assuming that this capacity displaces electricity produced by conventional power plants and combined-heat-and-power plants, DOE estimates that the proposed development would reduce greenhouse gasses (carbon dioxide and nitrogen oxides) and other air pollutants (sulfur dioxide) on an annual basis by approximately:

- 58,710 tons of carbon dioxide;
- 97 tons of sulfur dioxide; and
- 82 tons of nitrogen oxides.

As required by EPAAct 2005, the Record Hill project would avoid and reduce air pollutants and anthropogenic emissions of greenhouse gases.

DOE is using the National Environmental Policy Act (NEPA) process to assist in determining whether to issue a loan guarantee to Record Hill in support of the proposed project.

## **1.2 BACKGROUND**

Title XVII of EAct 2005 provides the basis of DOE's Loan Guarantee Program. This title provides broad authority to DOE to guarantee loans that support early commercial use of advanced technologies, if "there is reasonable prospect of repayment of the principal and interest on the obligation by the borrower." Loan guarantees are one way in which DOE promotes commercial use of innovative technologies. This tool is targeted at early commercial use only, rather than energy research, development, and demonstration programs. Accelerated commercial use of new or improved technologies will help sustain economic growth, yield environmental benefits, and produce a more stable and secure energy supply.

DOE published a Final Rule that established the policies, procedure, and requirements for the loan guarantee program (10 Code of Federal Regulations [CFR] Part 609). In July 2009, the DOE issued a solicitation announcement inviting interested parties to submit proposals for projects that employ energy efficiency, renewable energy, and advanced transmission and distribution technologies that constitute New or Significantly Improved Technologies (as defined in 10 CFR Part 609). Record Hill submitted an application to the DOE for a loan guarantee in December 2009. The NEPA review process was undertaken to assist DOE in deciding whether to issue the loan guarantee to Record Hill.

## **1.3 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT**

This EA presents information on the potential impacts associated with guaranteeing a loan to Record Hill and covers the construction and operation of the 50.6-MW wind energy project. The DOE has prepared this EA in accordance with NEPA, Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500–1508), and DOE NEPA Implementing Procedures (10 CFR 1021). No significant impacts were identified during preparation of this EA, thus DOE is issuing a Finding of No Significant Impact (FONSI).

This EA: (1) describes the affected environment and human resources that could be affected by the Proposed Action, No Action Alternative, and Alternatives Considered but Eliminated by the Applicant; (2) describes the Proposed Action; (3) analyzes potential impacts that could result from the Proposed Action and No Action Alternative; and (4) identifies and characterizes cumulative impacts that could result from the Proposed Action in relation to other ongoing or proposed activities within the surrounding area.

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## **CHAPTER 2.0: PROPOSED ACTION AND ALTERNATIVES**

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This chapter provides information on Record Hill's project and discusses the Proposed Action, No Action Alternative, and Alternatives Considered But Eliminated the Applicant. Rather than being directly responsible for the siting, construction, and operation of projects selected in response to projects applying under EPA's 2005 solicitations, DOE's action is limited to guaranteeing public financing for the project they have proposed in their application. Therefore, DOE's overall decision will be to either provide a loan guarantee or to decline to provide a loan guarantee. Alternatives eliminated from consideration by Record Hill prior to applying are discussed in Section 2.3.

### **2.1 PROPOSED ACTION**

The DOE's Proposed Action is to issue a loan guarantee to Record Hill Wind to support construction of the proposed wind energy project, and the associated CMP substation and transmission line upgrade. Record Hill Wind LLC is a limited liability company in the State of Delaware with a presence in the State of Maine.

The wind energy project would consist of an array of twenty two Siemens 2.3 MW SWT-2.3-93 wind turbines and associated electrical interconnection infrastructure located along approximately 3.5 miles of ridgeline near Roxbury, Maine. Also located on the ridgeline would be two permanent 260-foot meteorological (met) towers. Power generated by the turbine array would be collected by 34.5-kilovolt (kV) lines and carried approximately 2.9 miles southeast to a 20,700-square foot project collector substation located on Route 120 in Roxbury. At the collector substation, the voltage would be increased to 115 kV and then transferred to the adjacent Central Maine Power Company (CMP) system and ultimately delivered to the New England grid. The site of the project collector substation also would include a project office located in an existing 2,700-square foot home and a proposed 7,200-square foot project Operations & Maintenance (O&M) building. The total nameplate capacity of the project would be 50.6 MW. These project elements are described in Section 2.1.1.

To provide electrical transmission service for the project and to meet potential future regional transmission needs beyond this project, CMP would construct a new substation to replace the existing Frye Substation, replace the existing 8-mile Section 59 transmission line, and construct a new crossover transmission line of approximately 1,000 feet. CMP refers to the proposed Section 59 transmission line replacement as Section 270. These project elements are described in Section 2.1.2.

#### **2.1.1 WIND TURBINES AND ASSOCIATED INFRASTRUCTURE**

The proposed site for the Record Hill project is a ridgeline located north of Route 120 (also known as Roxbury Notch Road) in the town of Roxbury, Maine (See Figure 2-1). The project site, which is leased from the landowner under a wind energy ground lease agreement, is part of a larger property that is managed for commercial timber production. The wind turbines and infrastructure would occupy approximately 18.8 acres of new developed area, which would include 18.4 acres of new impervious surface, in addition to 0.7 acre of developed area in the form of existing logging roads. The new development would directly impact approximately one percent of the 1,568 acre ridgeline that was assessed by Record Hill's surveyors during the planning phase of development. The remainder of the ridgeline would not be developed, but would continue to be managed for commercial timber production.

##### **2.1.1.1 Wind Turbines**

The 22 Siemens SWT-2.3-93 wind turbines would be arranged in a single array separated into two sections by a topographic drainage referred to as Mine Notch. Seventeen turbines would be

aligned along the ridgelines of Record Hill and Flathead Mountain and five turbines would be located along the ridgeline of Partridge Peak. Each turbine site would consist of a turbine pad, pad-mounted transformer, power distribution panel, turbine tower, turbine rotor, and a nacelle. Some turbines would be located directly along the primary project access roads and others would be accessed from small access drives extending from the primary access roads. For construction, each turbine site would be approximately 1.6 acres in size and consist of the construction laydown area, crane pad and turbine foundation. Following construction the construction laydown area would be allowed to revegetate. The crane pad and turbine foundation totaling approximately 0.15 acres would remain as impervious area. The turbines would be constructed in a north-south orientation along the ridgelines of Record Hill, Flathead Mountain, and Partridge Peak. Each SWT-2.3-93 turbine measures approximately 262 feet in height from the ground to the center of the hub; the total height from the ground to the tip of a fully extended turbine blade is approximately 415 feet. Each crane pad would measure 70 feet by 83 feet and require a graded laydown area that would measure 315 feet in diameter. The crane pads would be constructed with approximately 16 inches of compacted gravel or processed rock. Impervious area associated with each crane pad is 6,170 square feet. The total amount of impervious area of the (22) crane pads is 3.2 acres.

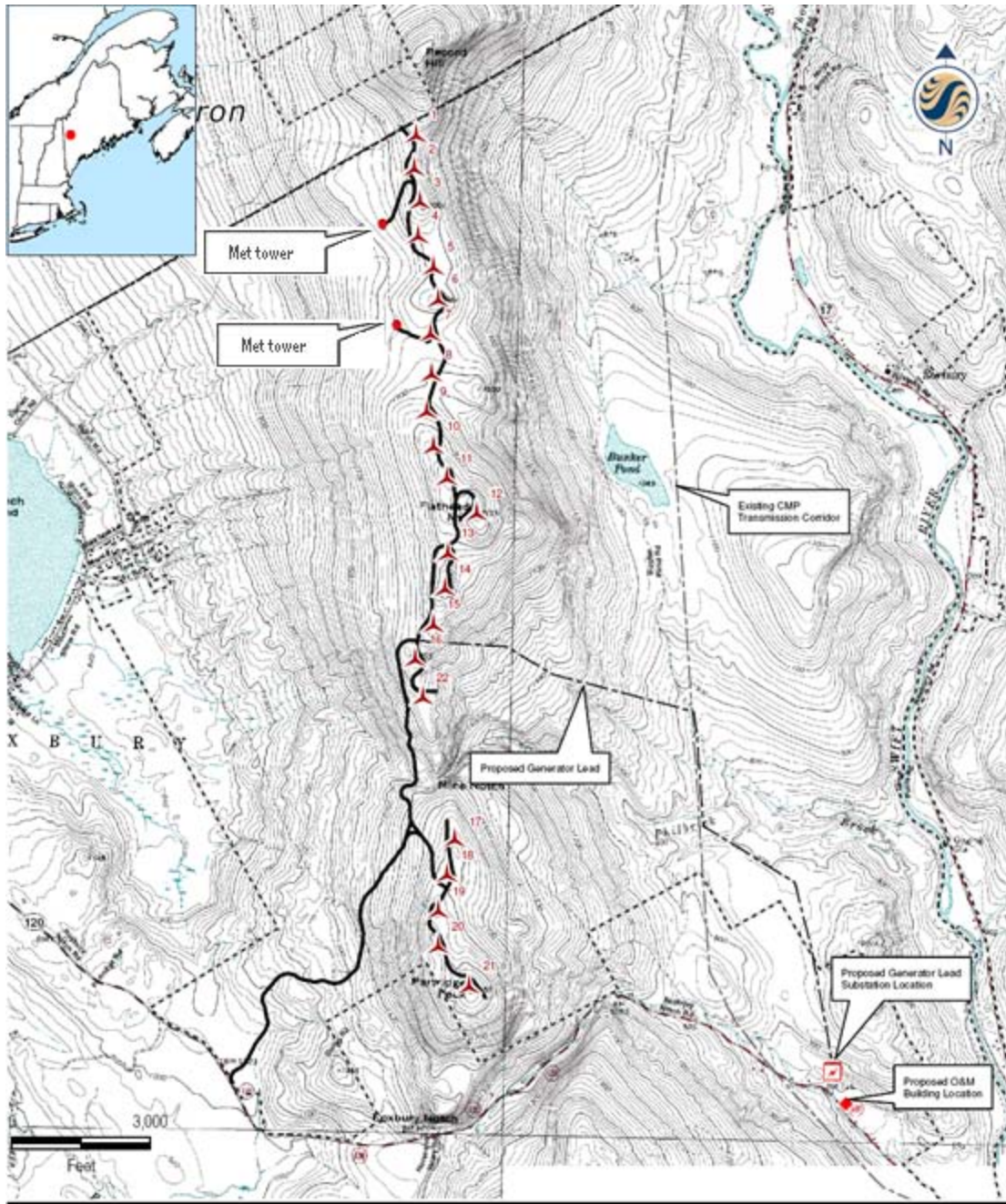
Approximately 6.1 miles of new access roads and crane path would be constructed for the project. The primary access to the ridgeline for component delivery, operations, and maintenance would be Mine Notch Road. Approximately 0.5 miles of Mine Notch Road would be upgraded to 16 feet wide; and the road would be extended by 1.1 miles to fully access the ridgeline. Portions of this access road would be widened to 29 feet to allow component delivery vehicles to negotiate sharp turns and to act as pull-off areas.

In addition to the primary access road, the project would include 5.0 miles of supplemental access road referred to as a crane path. The crane path would allow the assembly crane to access the individual turbine sites for the purpose of erecting the turbines. The crane path would be located along the ridgeline and would connect all of the turbine pads. Initially the crane path would be constructed to a width of 32 feet. Once assembly of the turbines is completed the crane path would be allowed to re-vegetate to a width of 16 feet. There would be approximately 12.7 acres of area associated with the access road and crane path.

#### 2.1.1.2 Meteorological Monitoring Towers

Meteorological (met) monitoring towers are tubular or lattice towers that contain sensors to measure wind speed and direction at a site. These towers can be secured to the ground with tensioned cable referred to as guy wires (guyed met tower) or free standing without the use of guy wires (unguyed met tower).

In August 2007, two temporary met towers were installed to collect wind resource data. One tower was installed on Record Hill and one on Flathead Mountain. These temporary met towers would be dismantled during the initial phase of construction to allow for construction of wind turbines. The project would include two permanent 260-foot unguyed met towers, which would be installed prior to the start of project operation. Proposed locations of met towers are shown in Figure 2-1.



 <b>Stantec</b> <small>©2015-2014 Stantec Consulting Services Inc.</small>	<b>Stantec Consulting Services Inc.</b> 30 Park Drive Topsham, ME USA 04086 Phone (207) 729-1199 Fax: (207) 729-2715 www.stantec.com	<b>Legend</b> <ul style="list-style-type: none"> <li> Proposed Turbine</li> <li> Proposed Access Roads and Crane Paths</li> <li> Proposed Permanent MET Tower</li> <li> Wagner Lands</li> </ul>	<b>Client/Project</b> Record Hill Wind, LLC Record Hill Wind Roxbury, Maine <hr/> Figure No. _____ <hr/> Title <b>Project Site Map</b> July 22, 2009
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Figure 2-1 Wind Turbines and Associated Infrastructure

### 2.1.1.3 Electrical Collection System

Electrical power generated by the turbines would be transformed and collected through a network of underground and overhead collection circuits. The pad-mounted transformers located at the base of each turbine would increase the voltage of electricity generated by each turbine to 34.5-kV. Power generated by the turbine array would be collected by a system of 34.5-kilovolt (kV) lines. Along the ridgeline approximately 4,500 linear feet of collector lines would be installed underground in the shoulder of the access roads. Overhead lines would then carry the electricity approximately 2.9 miles southeast to the project collector substation located on Route 120 in Roxbury. There the voltage would be increased to 115 kV and then transferred to the adjacent CMP system and ultimately delivered to the New England grid.

### 2.1.1.4 Collector Substation

The collector substation would be constructed on the east side of Route 120 (also known as Roxbury Notch Road) in Roxbury, on the same property where the project office and O&M building would be located. The substation would increase the voltage of the electricity collected from the project and transfer the electricity to the CMP system. The 20,700 square foot substation, which would be enclosed by a fence, would include a grounding transformer, circuit breakers, a transformer, bus support, take-off tower and oil/water separator.

### 2.1.1.5 Office and Operations and Maintenance (O&M) Building

The proposed project also would include an office that would be located in an existing single-family residence and the construction of a single-story 7,200-square foot O&M building to house maintenance equipment and other materials. A gravel parking lot would be constructed at the O&M building. Both of these buildings would be located on the same parcel of land as the collector substation on the east side of Route 120 (also known as Roxbury Notch Road) in Roxbury.

## 2.1.2 CMP TRANSMISSION LINE AND SUBSTATION

To provide electrical transmission service for the project and to meet potential future regional transmission needs beyond this project, Central Maine Power Company (CMP) will improve the existing Section 59 transmission line and expand its substation capacity in the area. These improvements are part of CMP's responsibility as the chief electric transmission entity to provide service in conformance with the reliability and security standards mandated and administered by the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council, Inc. (NPCC) and ISO New England (ISO-NE).

As permitted, the CMP improvement and expansion essentially is a replacement project as it will involve construction of a new substation to replace the existing Frye Substation in Roxbury and construction of a new transmission line to replace the existing Section 59 transmission line. Section 59 is the only transmission line serving the Frye substation where two transmission lines that serve the Andover and Rangeley areas originate.

### 2.1.2.1 CMP Roxbury Substation

The existing Frye Substation is located on the southwest side of Route 120 approximately 0.3 miles northwest of the proposed substation, and would remain in operation.

The proposed CMP Roxbury substation would be constructed on the same parcel as the project O&M building, office and collection substation. The full graded area for this substation would be approximately 2.4 acres with the substation components occupying approximately 1.15 acres of

this graded area. The substation would be enclosed by a fence and would include typical components such as a control house, transformers, and circuit breakers.

#### 2.1.2.2 CMP Section 270 Transmission Line

Currently, the Section 59 transmission line has a capacity of 34.5 kilovolts (kV). The eight mile line extends from the Frye 34.5 kV Substation on Route 120 in Roxbury south and southeast to the Rumford 115 kV Substation on Route 2 near Rumford Falls. The line was constructed in the 1960s and is comprised of single 30 to 40 foot tall pole structures with cross arms. Generally speaking, the corridor is 100 feet wide, although the clearing limits are variable. Many of the poles along this line are not in correct horizontal and vertical alignment or plumb, a situation that does not meet the current CMP requirements for transmission design. Overall the line is substandard relative to newer lines and those being rebuilt.

The replacement line for the existing Section 59 transmission line, identified as the new Section 270 by CMP, will extend approximately eight miles from the new CMP substation to the existing Rumford Substation on Route 2 near Rumford Falls (see Figure 2-2a and 2-2b). The Section 270 line will parallel the existing Section 59 transmission line for its length with the exception of a new crossover line from the new substation to the existing Section 59 transmission line near Pole 134. The new Section 270 will be 50 foot expansion of the existing line corridor, meaning that the existing corridor will be expanded to a total corridor width of 150 feet to meet current CMP standards. Section 270 will involve the installation of 121 new wooden single-pole structures to carry the transmission lines. The poles would be approximately 70 feet tall. At the new substation, two new lines will be installed; one line will be the terminus of the existing Section 59 from the Frye Substation and the other will be the terminus of Section 270.

The new crossover line corridor will be 250 feet wide to accommodate two electrical lines running to and from the substation. Beyond the crossover line, the new line will be an expansion of the existing transmission line corridor and will occur on the west side of the existing line until it reaches Pole 8 in Rumford near the Rumford Substation. Near Pole 8 the corridor expansion will occur on the north and east sides of the existing Section 59 transmission line. Developing the new line will include adjusting the alignment of the transmission line corridor and providing consistent clearing limits. Once the Section 270 line is energized and providing service, the poles and other materials associated with the Section 59 line will be removed. A 150 foot wide corridor will be maintained along the Section 270 line once this line is operational.

For construction, temporary light-duty construction access paths will be established along the existing transmission line corridor to provide access to the new Section 270. To reach the existing transmission line corridor, access will come either directly from public roads or across private land where permission can be attained (Refer to the Maine Natural Resource Protection Act permit application submitted for the Section 270 Transmission Line Upgrade). Establishment of the access path will be an ongoing process conducted throughout the course of the Section 270 construction. Access will be established to areas undergoing immediate construction and as construction progresses, new access paths will be established and paths that are no longer needed will be closed.

The new Section 270 line will require an additional 50 feet of vegetation clearing in areas supporting woody vegetation. This will result in approximately 49-acres of vegetation clearing. As with the existing clear corridor, the additionally cleared area will be maintained to remove trees capable of growing into the conductor safety zone during the four to five year maintenance cycle and that are greater than 8 to 10 feet tall. In general, it is unlikely that extensive grading will be necessary within the newly cleared area. Grading may be required for stabilizing access roads, excavation sites, and pull-pad sites where terrain is uneven such that construction equipment access would not be safe without grading. Conductor pull-pad setup locations may require leveling by limited grading in an approximately 100-foot by 75-foot area to assure equipment



stability. Pole placement will disturb a 10 foot by 10 foot area, although these areas will be allowed to restore naturally.

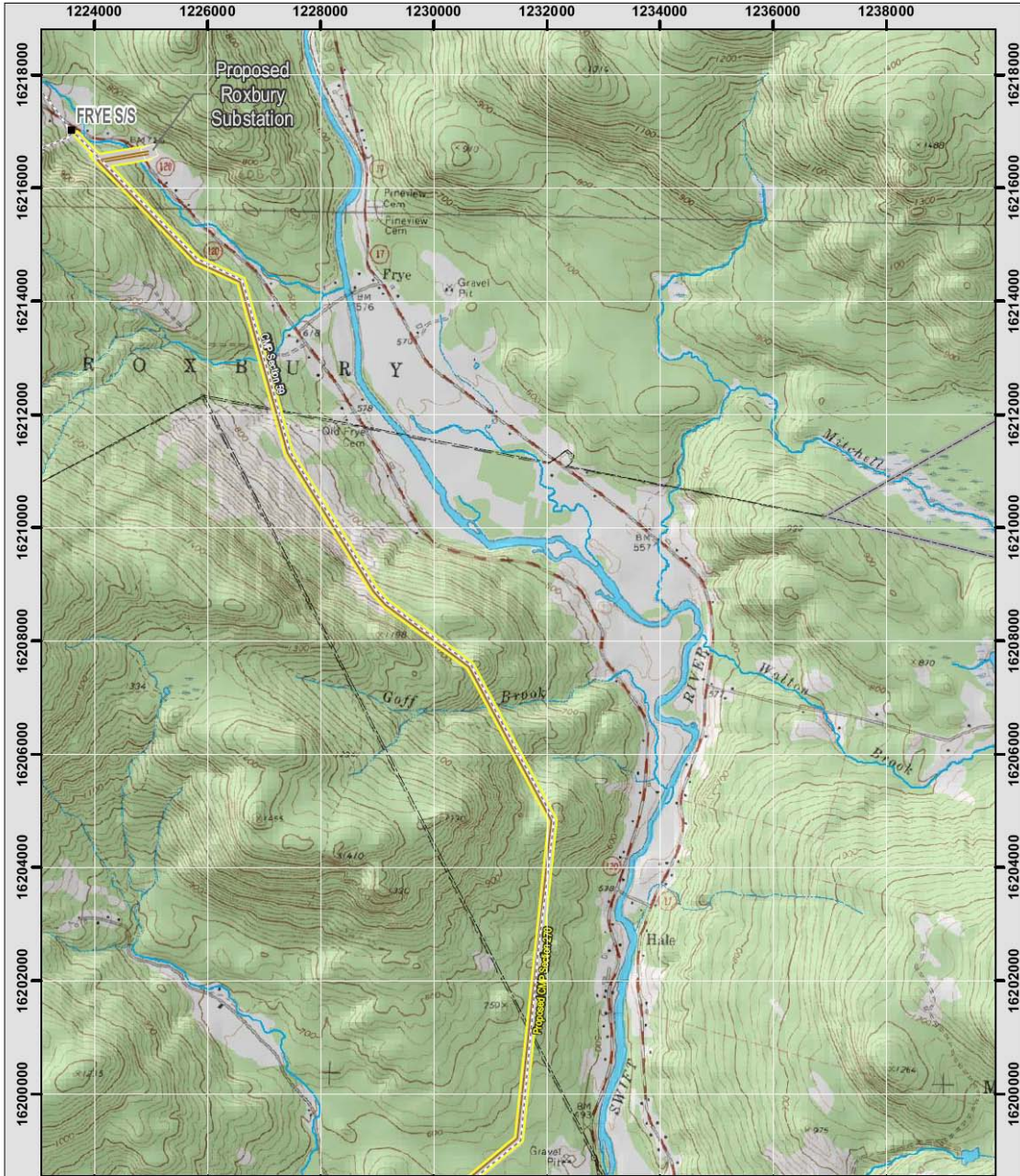


Figure 2-2a CMP Section 270 Transmission Line

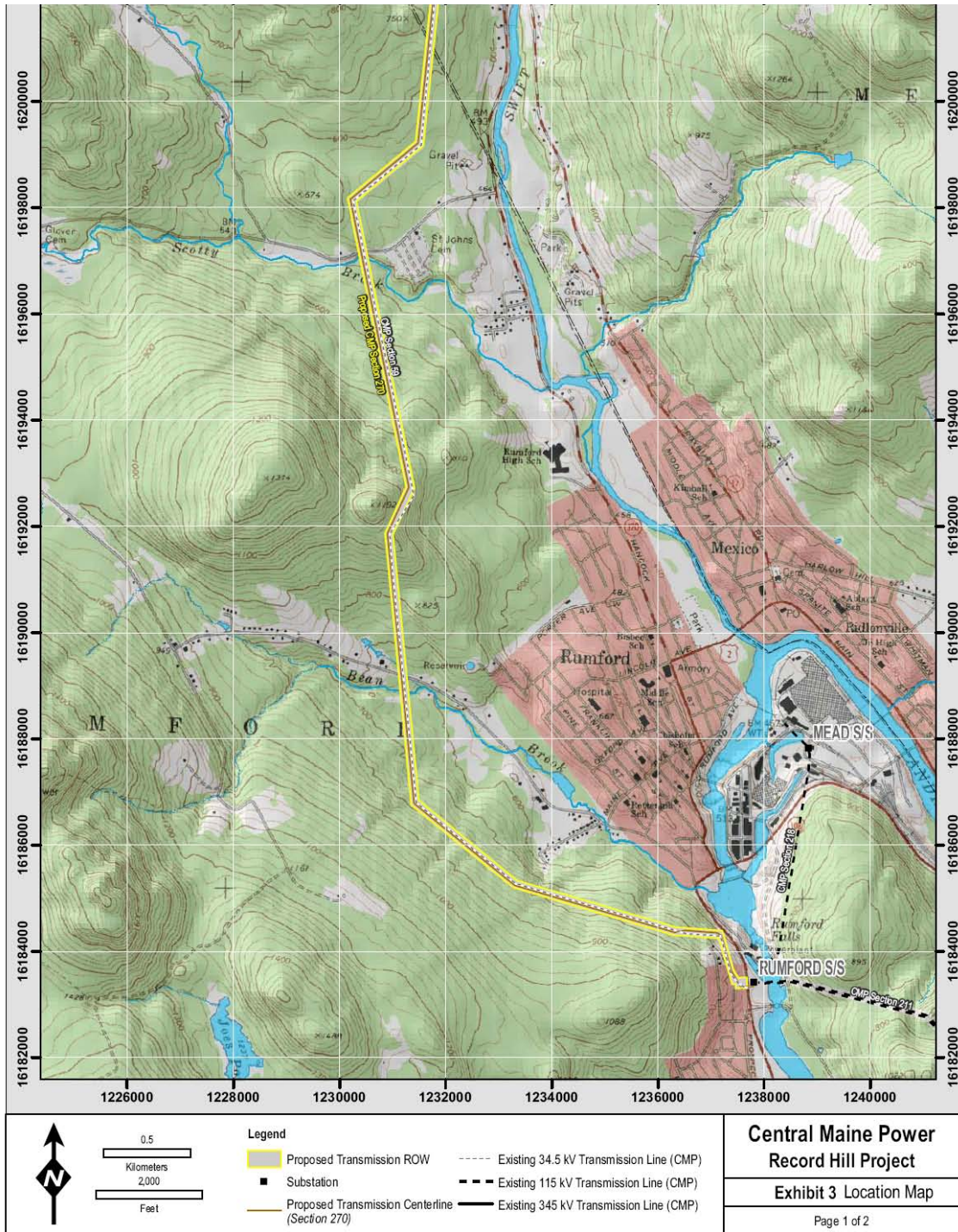


Figure 2-2b CMP Section 270 Transmission Line

### 2.1.3 CONSTRUCTION SCHEDULE

Construction of the Record Hill project would take approximately eight months and would occur in two phases, with the project fully operational in late 2011. The two-phased approach allows a construction schedule that maximizes the use of dry construction seasons and minimizes environmental impacts associated with spring-time construction. Phase 1 began in September 2009 and included the marking of sensitive natural resources, installation of erosion control measures, clearing of turbine sites, and initiation of access road construction.

Initial work efforts focused only on development of the access roads and crane path portions of the generating facility. Prior to commencing work on the site, the project contractor divided the access road, crane path, and turbine pad portions of the project into six distinct work areas. Such a division allowed for easy planning, and also allowed simple staging of the various construction steps. The first step in construction was clearing the site for earthwork. Following a plan that generally had work starting at the base of the access road and working up the ridge and then split north and south along the ridge, this clearing effort was substantially completed by the end of October 2009. By the end of 2009, the full turbine corridor had been cleared.

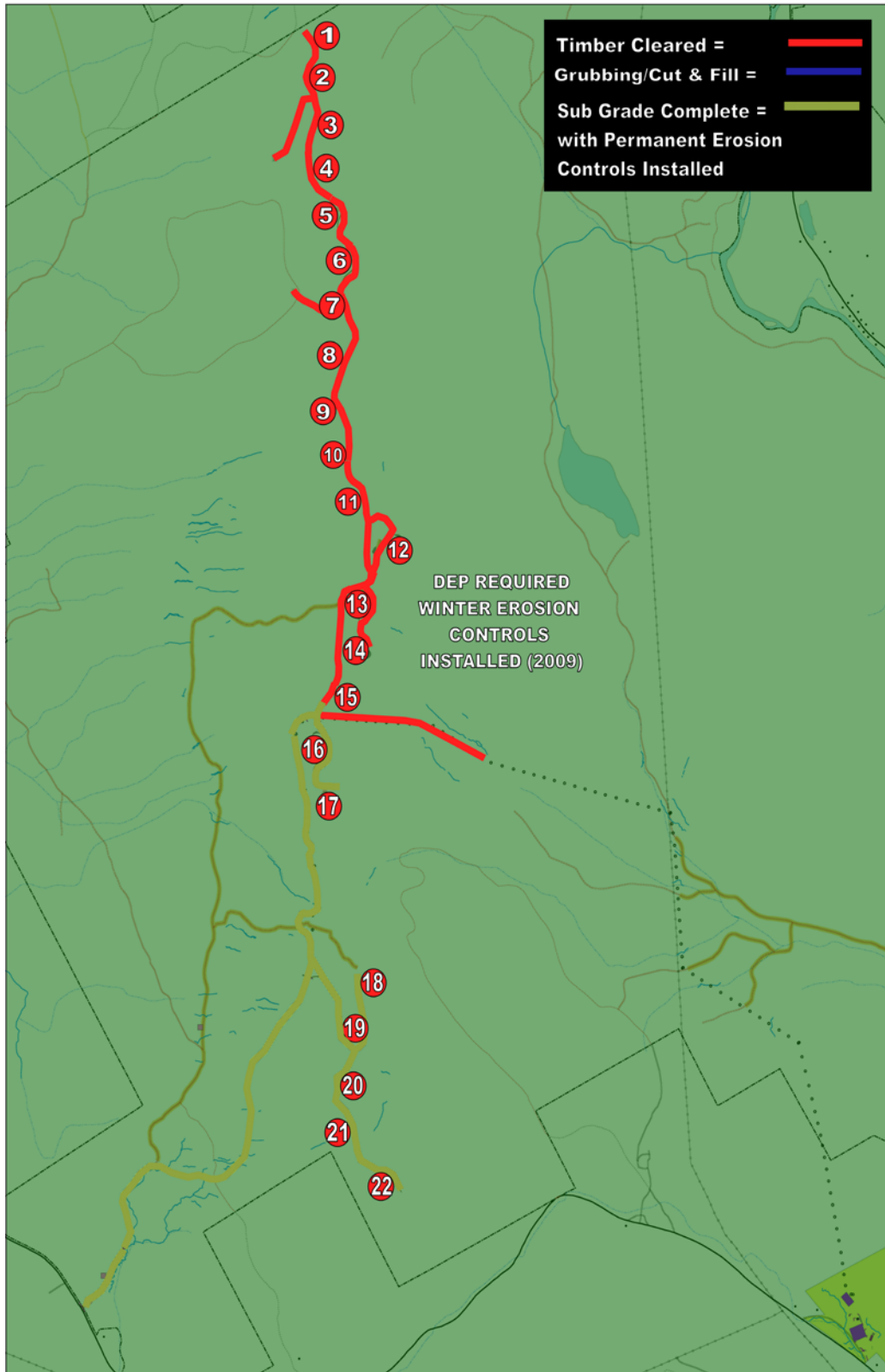
Site grubbing, road subbase establishment, and rough grading followed the site clearing. This effort progressed from the base of the access road up to the ridgeline. The crane path and turbine pads from Turbine 15 through Turbine 22 also were roughly graded to a point that would allow passenger vehicle traffic. No grading has taken place north of Turbine 15. During the subbase establishment and grading process the project was visited regularly by an independent, state-required, third-party inspector. Shortly following the completion of the grading effort described above, the contractor installed permanent erosion and sedimentation controls from the project entrance all the way up to the ridgeline, and then along the crane path from turbine 16 south through turbine 22. This effort was completed in late December 2009. After the site was closed for the winter the project area was again visited by the third-party inspector to confirm the adequacy and integrity of the erosion and sedimentation controls installed at the site. Periodic visits from the third-party inspector have continued since site closure to monitor the long-term effectiveness of the erosion control measures. As of January 2010, the access road and crane path had been cleared of timber and approximately 3.7 of those 6.1 miles also had the sub-grade completed (see Figure 2.3, Activities Completed at Record Hill Wind Project).

Record Hill Wind has not yet begun work on the generator lead, project substation, or transmission line upgrade portions of the project. No turbine components or electrical infrastructure have been purchased or delivered to the site. Under Phase 2 beginning in April 2011, all remaining elements of the project would be constructed. Table 2-1 displays the anticipated schedule for the project.

It is estimated that construction of the Section 270 transmission line will take about four to five months to complete. CMP anticipates beginning construction in February 2011 and completing the work in the second half of 2011.

Figure 2-3, Activities Completed at Record Hill Wind Project

### Record Hill Wind Project, Status as of January 2010



**Table 2-1: Construction schedule for the Record Hill project including tasks completed under Phase 1 and tasks scheduled under Phase 2.**

Activity	Date Completed	Scheduled Completion
<b>Phase 1</b>		
Marking of sensitive resources	October 2009	
Installation of erosion control	November 2009	
Initial construction of access roads	January 2010	
<b>Phase 2</b>		
Installation of ridgeline electrical collector system		Second Quarter of 2011: April to June
Final grading for access roads and turbine areas		Third Quarter of 2011 July to September
Construction of turbine foundations		Third Quarter of 2011 July to September
Turbine component delivery		Third Quarter of 2011 July to September
Installation of collector system from ridgeline to substation		Third Quarter of 2011 July to September
Construction of collector substation and O&M building		Third Quarter of 2011 July to September
Energization of substation and collector system		Third Quarter of 2011 July to September
Assembly of turbines		Fourth Quarter of 2011 October to December
System testing		Fourth Quarter of 2011 October to December
Start of Commercial operations		Fourth Quarter of 2011 October to December

#### 2.1.4 PERMITS AND AUTHORIZATIONS

The permits and approvals listed below were required before beginning construction of the Record Hill project. Note that the State of Maine has two separate authorities that review development projects in organized versus unorganized areas; therefore, there is some distinction in the regulations and rules that apply to development projects. Because the proposed project is located in an organized town, all details related to State permitting reflect the regulations and rules administered by the Maine Department of Environmental Protection (MDEP). State and federal permits and authorizations are further addressed in Section 3 under the respective affected resources.

#### **State of Maine MDEP Natural Resource Protection Act**

The State of Maine MDEP Natural Resource Protection Act (NRPA) [38 M.R.S.A. §§ 480–A et seq.] requires a permit for any activity located in, on, or over any protected natural resource or for any activity located adjacent to a coastal wetland, great pond, river, stream or brook or significant wildlife habitat contained within a freshwater wetland or certain freshwater wetlands. Two types of permits can be issued under the NRPA: an NRPA Tier Permit and an NRPA Permit By Rule (PBR). For this project, three separate NRPA permits were issued. One PBR was issued for activity within the Maine designated critical habitat of a Significant Vernal Pool, a type of significant wildlife habitat. A second PBR was issued for activity within the critical habitat of a Significant Vernal Pool and for four separate stream crossings. These PBR approval numbers are #47468 and #47469, respectively. A Tier 2 NRPA permit, combined with a Site Location and Development Permit (see below) was issued for impacts involving fill within freshwater wetlands

and vegetation removal (conversion) within freshwater wetlands. To date, permitted wetland fill has been completed for construction of the access roads and turbine pads. In addition, at two of the significant vernal pools, permitted impacts have already occurred within the protected portion of the critical terrestrial habitat, which is the area surrounding the actual vernal pool.

#### **State of Maine MDEP Site Location of Development Law**

This law [38 M.R.S.A. §§ 481–et seq.] requires review of developments that may have a substantial effect upon the environment. This includes, but is not limited to, developments occupying more than 20 acres, metallic mineral and advanced exploration projects, large structures and subdivisions, and oil terminal facilities. A permit is issued if the project meets applicable standards addressing potential resource impacts such as stormwater management, groundwater protection, infrastructure, wildlife and fisheries, noise, and unusual natural areas. The combined Site Location of Development/NRPA permit number for this project is L-24441-24-A-N/L-24441-TF-B-N. CMP received a Site Location of Development permit and an NRPA permit for the Section 270 transmission line and associated substation: L-24663-24-A-N, L-24663-TF-B-N, and L-24663-VP-C-N.

#### **State of Maine Water Quality Certification following Section 401 of the Federal Water Pollution Control Act**

Maine's Stormwater Management Law [38 M.R.S.A. §420-D] provides stormwater standards for projects located in organized areas that include one acre or more of disturbed area. For this project, water quality certification was provided concurrently with the combined Site Location of Development/NRPA permit.

#### **Section 404 of the Federal Clean Water Act**

Section 404 of the Clean Water act regulates the discharge of dredge or fill material into waters of the United States, including wetlands. An Individual Permit is required for potentially significant impacts, and a General Permit is issued for projects that would have only minimal adverse effects. In the state of Maine, the US Army Corps of Engineers (Corps) works under a Section 404 Programmatic General Permit (PGP), which was developed in conjunction with state and federal regulatory and review agencies. The purpose of the PGP is to expedite the Corps' review of minimal impact work in coastal and inland waters and wetlands. Activities with minimal impacts as defined in the PGP are either:

- Category 1, Non-reporting, which are projects eligible without screening by the Corps provided necessary state authorization and permits are received; or
- Category 2, Reporting, which are projects that require screening and written determination of eligibility by the Corps after coordination with the U. S. Fish and Wildlife Service (USFWS), the U. S. Environmental Protection Agency (EPA) and the National Marine Fisheries Service (NMFS).

In order for a PGP authorization to be valid, all required state permits and approvals also must be obtained.

For the construction of the wind turbines and associated infrastructure, Record Hill was issued a PGP (Section 404 Permit #NAE-2008-03763). For the Section 270 transmission line upgrade and new electrical substation, CMP was issued a PGP (Section 404 Permit #NAE-2009-1866). These two PGP permits (copies of the permits are in Appendix A) cover all wetland and Waters of the U.S. impacts for the entire project, and NEPA review has been completed by the Corps for these impacts through the Section 404 permitting process.

## Federal Aviation Administration Determination of No Hazard to Air Navigation

The Federal Aviation Administration (FAA) conducted an aeronautical study under the provisions of 49 U.S.C. 44718 for the wind turbine structures. Record Hill received Determinations of No Hazard to Air Navigation for the wind turbines under the condition that the structures are marked and lighted in accordance with FAA Advisory Circular 70/7460-1 K Change 2, Obstruction Marking and Lighting. FAA requires that the structures be painted white and be fitted with synchronized red lights.

### 2.1.5 DECOMMISSIONING

MW-scale wind turbines, including the Siemens SWT-2.3-93 selected for this project, are designed and certified by independent agencies for a minimum expected operational life of 20 years. Record Hill intends to maximize the operational lifespan of the wind turbine generators by employing a proactive maintenance regimen to ensure turbines are in good repair for at least the 20 years of expected life. As the wind turbines approach the anticipated end of life, it is expected that technological advances will economically drive the replacement of existing turbines with newer models.

If decommissioning is required, Record Hill will follow standards set by the MDEP. Currently, these standards dictate that decommissioning will be required if the project has not generated electricity for a period of 12 continuous months, unless the company produces evidence of mitigating circumstances. Such evidence may include delays surrounding long lead time for spare part procurement, or a force majeure event that interrupts the generation of electricity. As used here, a "force majeure" event means instances such as fire, earthquake, flood, tornado, or other acts of God and natural disasters; strikes or labor disputes; war; any law, order, proclamation, regulation, ordinance, action, demand or requirement of any government agency; suspension of operations of all or a portion of the project for routine maintenance, overhaul, upgrade, or reconditioning; or any other act or condition beyond the reasonable control of Record Hill. DOE conducted an independent evaluation of Record Hill's decommissioning and financing plans and found the plans to be adequate to accomplish decommissioning in the event that it is needed. Decommissioning would be financed and executed by Record Hill as stipulated in the Maine DEP permit. In the event that ownership of the project is transferred to DOE or any other entity, they would be responsible for decommissioning activities.

At decommissioning, the turbines will be dismantled in the reverse of the erection sequence, following standard Best Management Practices (BMPs). Turbine components will be removed from the site and transported to appropriate facilities for reconditioning, salvage, recycling, or disposal. Depending upon the ultimate destination, some components may need to be disassembled on-site to maximize reuse or ensure compliance with applicable disposal regulations.

Decommissioning of the non-turbine aspects of the project will follow MDEP permitting guidelines. Currently, these provisions call for foundations, anchor bolts, rebar, conduit, and other subsurface components to be removed to a minimum of 24 inches below grade. Items not known to be harmful to the environment and that are buried greater than 24 inches below grade may be left in place, at the sole discretion of Record Hill. Once removal is complete, the excavation will be backfilled with material of quality comparable to the immediate surrounding area. Unless specifically requested in writing by the landowner, the disturbed soils of the site will be rehabilitated, including appropriate grading and re-seeding using native grasses.

Following applicable regulations, the project collector system, substation, and interconnection facilities will be removed and salvaged, recycled, or repurposed to the maximum amount economically practical. Any other components will be transported to approved disposal sites. Any trenches or holes that remain after removal will be backfilled, and the surface areas will be restored. Restoration shall include, as reasonably required, leveling, terracing, mulching, and



other necessary steps to prevent soil erosion to ensure establishment of suitable grasses and forbs and to control noxious weeds and pests. Road improvements and stream crossings will not be removed. Improvements to town and county roads that were not removed after construction at the request of the Town or County will remain in place.

## **2.2 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the DOE would not issue a loan guarantee for the proposed Record Hill project. Without the DOE loan the final construction and operation of the proposed project would likely be delayed until Record Hill is able to obtain alternative financing, thereby delaying the reduction in air emissions that Record Hill has the potential to provide.

The decision for the DOE's consideration covered by this NEPA review is whether to approve the loan guarantee for the Record Hill project. Record Hill's decision process in selecting the chosen site is described in Section 2.3 and supported by state and federal approvals (see Section 2.1.4). Further, there are no unresolved conflicts concerning alternative uses of available resources associated with the project area that would suggest the need for other alternatives (40 CFR 1508.9(b)).

## **2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED BY THE APPLICANT**

### **2.3.1 SITE SELECTION**

Record Hill conducted a site selection analysis to identify the appropriate location for the Project. The project site was selected by Record Hill Wind because it best meets the company's goal of establishing an environmentally acceptable, commercial scale wind energy project in Maine that would deliver inflation-resistant, clean, renewable energy to customers in Maine and New England. Record Hill examined practical alternatives in selecting the site for the project. The objective of this analysis was to select a facility location that would avoid and minimize environmental impacts to the most practicable extent. The factors included in this analysis were wind quality, proximity to transmission infrastructure, general site topography and accessibility, land use compatibility, and overall environmental impacts. Initially, over 20 sites were screened. The geographic scope of this survey covered the entire State of Maine, although the survey focused principally on portions of Maine south of Aroostook County because of the extreme transmission capacity limits in northern Maine. Some wind energy developments in Maine have involved the construction of over 20 miles of new transmission lines, the cost and environmental impact of which Record Hill sought to avoid. Roxbury is one of the few places in Maine where robust infrastructure meets strong wind characteristics. The project site has the benefit of an existing CMP-owned transmission line that passes through the project area and heads south to a nearby power distribution center. As a result, only an approximately 2.9-mile electrical generator lead will be required to connect to a CMP substation.

### **2.3.2 ALTERNATIVE SITE LAYOUTS**

#### **2.3.2.1 Turbine Siting**

Record Hill determined the optimum configuration for the turbine layout based on met data collected in the project area and on an analysis of the wind resources in the area. Wind turbines were sited where they would produce the most energy based upon the wind resources and topography, and where possible avoiding impacts to sensitive resources such as wetlands and streams. An area much larger than was needed (approximately 1,568 acres on the project ridgelines) for the proposed development was surveyed to identify wetland and stream resources, which allowed much of this avoidance to occur early in the project planning phase. The general layout of the turbines changed little during the conceptual development of the project, although some turbines were shifted to reduce natural resource impacts. For example, the five northern

most turbine pads were shifted to reduce impacts to a wetland and its associated vernal pool. The access road design was altered during the course of planning. Initially the project access road followed Mine Notch Road and then split into two distinct segments, one to Record Hill and Flathead Mountain and one to Partridge Peak. This design alternative required seven stream crossings, required cutting over two miles of new road, and passed immediately adjacent to a complex of high functioning vernal pools. The selected design required only one perennial and three intermittent stream crossings, reduced the length of new road needed and does not impact any significant vernal pools.

The locations of the project collector substation and O&M building changed from initial to final design. Originally the project collector substation was going to be located adjacent to Bunker Pond Road to the east of the project ridgelines and the O&M building was going to be located northwest of Mine Notch Road near the intersection with Route 120. Under the final design a single parcel was selected where the project collector substation, project O&M building, project office, and CMP substation would all be located. This design change avoided impacts to vernal pool critical terrestrial habitat that would have been associated with the original O&M building location. The relocation of the project collector substation also necessitated a change in the electrical collector system. Four potential routes that would extend from the down-mountain side of the project ridgelines to the collector substation location were selected for investigation. Each of these routes was co-located with an existing CMP-owned transmission line for a distance before diverging. Two of the routes were eliminated from consideration because of potential impacts to natural resources and/or construction constraints. Of the remaining two corridors, Record Hill chose the alternative where wetland fill impacts associated with pole placement could be avoided.

#### 2.3.2.2 Transmission Line Corridor

CMP considered two possible transmission alternatives. One alternative involved establishing a new 100-foot wide corridor (i.e., greenfield line). The second alternative involved expanding the width of the existing corridor from 100 feet to 150 feet. Developing a greenfield line would have required obtaining rights to the necessary transmission line right-of-way, and then designing and constructing the new line. Because a greenfield line would create a new corridor in the landscape, it likely would have changed existing habitats and land uses, and would have altered wetlands, streams and other sensitive resources not otherwise impacted by this or similar development. The chosen alternative will be an expansion of an existing transmission line corridor. The amount of clearing required will be less than for a new corridor and impacts to natural resources will, for the most part, affect resources already altered for the existing corridor. In addition, the existing Section 59 line that parallels the new transmission line will be removed thereby allowing for future improvements/expansions without having to construct a new corridor. The cost of constructing a new line would have been significantly more, would have taken more time, and would have resulted in greater impacts to protected natural resources. Therefore, the greenfield line alternative was determined to be the less desirable alternative both from an economic perspective and from an environmental perspective.

CMP considered and evaluated two principal options for the substation:

- Expand the existing Frye Substation; or
- Build a new substation at a different location.

The existing Frye Substation has the capacity to serve the three existing 34.5 kV transmission lines (section 52, 54, and 59), but does not have room for expansion within the developed fenced footprint due to the surrounding topographic conditions (step slopes) and proximity to the existing road. Topographic conditions at the Frye Substation would require extensive excavation, blasting, and removal of soil and rock. Combined with extensive fill and grading requirements, these conditions make expansion of this site expensive and impractical. Expansion would have required filling a minimum of approximately 0.2 acre of wetlands and one stream. For these two

reasons CMP eliminated this alternative from consideration and chose to review options for building a new substation.

Four potential sites were assessed to select the location for the new substation, known as the "Roxbury Substation."

1. Bunker Pond Road site;
2. Bayroot/Wagner site;
3. Sutton parcel, Lot 2-42; and
4. Haseltine parcel, Lot 12-18.

The Bunker Pond Road site is located on Bunker Pond Road approximately two miles north of Frye Crossover Road, the nearest paved road. Because of its proximity to the project generator facility, the Bunker Pond Road site initially was considered a good candidate site; however, limitation on site access, security, and operation and maintenance eliminated it from further consideration. Three existing bridges on Bunker Pond Road were inspected during the site evaluation and abutments on each bridge appeared unable to support crossings by oversized vehicles. CMP also determined that access along Bunker Pond Road would be limited from fall to early spring because of the distance to the nearest paved road, which negatively affected maintenance and security of the substation.

The Bayroot/Wagner site is located on the west side of Bunker Pond Road approximately one-half mile north of the Frye Crossing Road. Only one of the three bridges referenced above would need to be crossed to reach the site, but the condition of the bridge would affect access by oversized vehicles. In addition, topography of this site is steep and it includes several wetlands, streams and potential vernal pool habitats. The steep site topography would have necessitated significant blasting, filling and grading, which would make developing the site cost prohibitive. Finally, a longer crossover line from the substation to Section 270 would be required, which would include additional wetland clearing and crossings. Because issues related to access, cost for site development, and impacts to natural resources, this site was eliminated from further consideration.

The Sutton parcel, Lot 2-42, is located northwest of the existing Frye Substation. The Sutton parcel contains several wetlands and a coldwater stream. Development of this site would involve wetland fill, and either direct impacts to the stream and its buffer, or a bridge crossing with some permanent conversion. For these reasons the parcel was eliminated from further consideration.

The Haseltine parcel, Lot 12-18, the chosen substation location, is located on Route 120 on the same parcel as the project collector substation, office and O&M building. The parcel includes a single family home with outbuildings and open lawns as well as wetlands and streams. Development for the substation will not involve any direct wetland or stream impacts, and the crossover line to Section 270 will require only one stream crossing and some clearing along a small tributary stream. Site access, security, and operation and maintenance associated with this site are all acceptable, and impacts to natural resources are less than the other evaluated sites, therefore it was selected by CMP.

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## **CHAPTER 3.0: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

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### **3.1 INTRODUCTION**

This chapter describes the existing physical, biological, and socioeconomic conditions of the project area and the potential environmental effects that could result from implementation of the proposed action or No Action Alternative described in Chapter 2. A discussion of potential cumulative effects also is provided in this Chapter.

### **3.2 CLIMATE**

#### **3.2.1 REGULATORY FRAMEWORK**

In 2004, the Maine State Legislature enacted legislation designed to encourage low-emission power production facilities. The Electric Restructuring Act includes a renewable portfolio standard, which requires retail power suppliers to include 30 percent of renewable or efficient sources in their portfolios. In 2007, the Legislature enacted an Act to Stimulate Demand for Renewable Energy, which added the requirement that retail power suppliers include certain percentages of new renewable resources. The requirement begins with 1 percent in 2008 and increases by 1 percent per year to 10 percent in 2017 (Maine Public Utilities Commission 2005, 2008). Through this legislation, Maine's goal was to return greenhouse gases to 1990 levels by 2010 and reduce these levels by an additional 10 percent by 2020. To achieve this goal, the combined legislation was intended to foster an environment conducive to development and use of an energy portfolio that includes more environmentally favorable sources and to encourage development of such sources by requiring suppliers to include this power in their portfolios. Additional legislation passed in 2009, the Act Regarding Maine's Energy Future, P.L. 2009, ch. 372 (M.R.S.A. 35-A Chapter 97), furthered the intent to reduce greenhouse gases by setting a goal to cut consumption of liquid fossil fuels by 30 percent by 2030.

In 2008, the Maine Legislature made a significant statement of its preference and desire to attract wind power in the State through its adoption of recommendations of the wind power task force. This emergency legislation, An Act to Implement the Recommendations of the Governor's Task Force in Wind Power Development, P.L. 2007, ch. 661 (M.R.S.A. 35-A Chapter 34), referred to loosely as the "Maine Wind Energy Act" (the Act), mandated the State to "take every reasonable action to encourage the attraction of appropriately sited development related to wind development" and includes measures designed to streamline and standardize the regulatory process for wind farm development. It was deemed to be "immediately necessary for the preservation of the public peace, health and safety." (M.R.S.A. 35-A Chapter 34). The Act goes further to state that the encouragement of wind energy may displace power generation through fossil fuels and thus "improve environmental quality (M.R.S.A. 35-A Chapter 34)." In addition to specific provisions governing the permitting of wind power in Maine, the Act establishes a goal of developing at least 2,000 MW of installed wind power capacity in Maine by 2015, and 3,000 MW of installed capacity by 2020. Currently, there is 99 MW of installed commercial wind power capacity operating in Maine, although there is an additional 208 MW of wind power capacity that has been permitted and is currently under construction.

#### **3.2.2 PROJECT SETTING**

Maine has been characterized as having 15 biophysical regions (also known as ecoregions) based upon common climatic conditions, surficial geology and soils, and woody vegetation (McMahon 1990). The Record Hill project area lies within the Western Mountains Region. The Western Mountain Region is characterized by cool summer temperatures, low annual precipitation, and high snowfall. This region has an average maximum July temperature of 75° F, which is lower than the rest of the state with the exception of one coastal region. The region's

average minimum temperature in January is -1° F, which is comparable to that of northern Maine (McMahon 1990). The average annual precipitation is generally low at 39 inches, although some of the higher mountains produce a rain shadow effect with precipitation as high as 50 inches on windward slopes and less than 35 inches on the leeward side. The average annual snowfall in the Western Mountain Region is 110 inches (McMahon 1990).

### 3.2.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The proposed Record Hill project does not have the potential to affect regional temperatures, rainfall, or other meteorological parameters. The wind turbines used for the project would extract some energy from winds passing over the ridgelines, but any changes in wind speed and/or velocity are expected to be limited and should not affect existing uses of the surrounding area.

In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) stated that warming of Earth's climate system is unequivocal, and that warming is very likely due to anthropogenic greenhouse gas concentrations (IPCC 2007). DOE is not aware of any methods to correlate exclusively the carbon dioxide emissions resulting from the proposed project to any specific impact to global warming; however, studies such as the IPCC report support the premise that carbon dioxide emissions from the project, together with global greenhouse gas emissions, would likely result in a cumulative impact to global warming. Although the project would result in some greenhouse gases emissions and related climate change when combined with other projects globally through the emissions described in Section 3.6.2, greenhouse gas emissions from the project would be minimal and limited to increases in carbon dioxide and nitrogen oxides, with overall beneficial impacts from low pollution wind energy.

In 2009, approximately 70 percent of New England's installed generator capacity was fossil fuel-based (i.e., natural gas, oil and coal), and only about 14 percent of electricity was generated by renewable resources such as hydro-and wind-power (ISO New England 2009). The actual generation of electricity in 2008 utilized fossil fuels for approximately 57 percent of the electrical energy produced. In the past decade, Maine and New England have set statewide and regional goals and policies designed to address greenhouse gas emission concerns. The primary policy designed to address these concerns is the Regional Greenhouse Gas Initiative (RGGI). The RGGI is designed to help cap and control carbon dioxide emissions from power production facilities without increasing the energy cost passed onto consumers. The RGGI meets these goals by setting a cap on total emissions. Unlike fossil fuel-based power production facilities, wind power projects can provide power without any carbon dioxide emissions, or acid-rain producing sulfur dioxide, and therefore provide a means for meeting increasing energy demands consistent with the goals and objectives of the RGGI.

The proposed Record Hill project is expected to have a beneficial impact on the climate by decreasing fossil fuel consumption and decreasing emissions of greenhouse gases. Over the estimated projected life, Record Hill expects the proposed wind energy facility to produce approximately 2.3 million megawatt-hours of electricity under peak conditions. Assuming that this capacity displaces electricity produced by conventional power plants and combined-heat-and-power plants, Record Hill estimates that the proposed development would reduce greenhouse gasses (carbon dioxide and nitrogen oxides) and other air pollutants (sulfur dioxide) on an annual basis by approximately: 58,710 tons of carbon dioxide; 97 tons of sulfur dioxide; and 82 tons of nitrogen oxides. Table 3-1 displays the emissions that would result from the Record Hill project.

**Table 3-1 Lifetime (25-year) Carbon Dioxide Equivalent Emissions from Construction, Operation, and Transportation**

Activity	Lifetime Carbon Dioxide Equivalent (CO <sub>2</sub> e) Emissions.				
	Type (Unit)	Quantity (units)	lb CO <sub>2</sub> e per unit	Total (lb)	Total (tonnes)
Transportation	Diesel Fuel	8,008	22.33	178,819	81

	(Gallons)				
Support Vehicles	Diesel Fuel (Gallons)	2,669	22.33	59,606	27
Construction – Utilities	Electricity (MWh)	40	1,004	40,160	18
Construction Vehicles	Fuel (Gallon)	135,000	22.33	3,014,550	1,367
Operations – Utilities	Electricity (MWh)	1,200	N/A	N/A	N/A
Maintenance Fleet	Fuel (Gallon)	14,600	17.56	256,318	116
<b>Total CO<sub>2</sub>e Emissions</b>				<b>3,549,453</b>	<b>1,609</b>

### 3.2.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.3 TOPOGRAPHY

### 3.3.1 PROJECT SETTING

The Record Hill project area is located within the Western Mountains Region of Maine, which extends from Bald Mountain near the Canadian border, to the Mahoosuc Range in southwestern Maine (McMahon 1990). This region includes the Boundary Mountains in the northern portion of the region and the Longfellow Mountains in the southern portion of the region. Located between these mountains are large lakes, including Lake Umbagog, Upper and Lower Richardson lakes, Rangely, Lake and Flagstaff Lake. Topography in this region averages between 1,000 feet to 2,000 feet (305 to 610 meters).

The project area ridgelines, which include Record Hill, Flathead Mountain and Partridge Peak, range in elevation from 1,900 ft to 2,400 feet (580 to 731 meters) above mean sea level (AMSL), while the bases of the mountains are at elevations of approximately 800 feet (244 meters) to the west along Ellis Pond and 700 feet (213 meters) to the east along the Swift River. The actual peak of Record Hill, which is located north of the project area, is approximately 2,410 feet (732 meters) in elevation. The portion of Record Hill within the project area reaches 2,000 (+/-) feet (610 meters) at its highest point. The peak of Flathead Mountain occurs at approximately 2,155 feet (657 meters) and Partridge Peak at approximately 1,985 feet (605 meter) in elevation. The Record Hill ridgeline within the project area forms a relatively flat and broad plateau that rises gradually south to Flathead Mountain. The ridgeline of Flathead Mountain has a narrower plateau that slopes south to Mine Notch, a topographic drainage that extends east from the project ridgeline. Partridge Peak rises south from Mine Notch and forms a short plateau before descending south toward Route 120 (also known as Roxbury Road). Topography of Record Hill and Flathead Mountain generally slopes gradually west, but descends more steeply to the east. In contrast, topography of Partridge Peak slopes more gradually to the east and drops steeply to the west and south. Based upon the site specific soil surveys, slope gradient ranges on the ridgelines included areas from 0-3 percent slope to areas of more than 20 percent slope.

Slope gradient ranges for the property where the project office, O&M building, and collector substation would be located include areas from 0-3 percent slope to areas of more than 15 percent slope. However, proposed buildings/facilities would be located in areas that are relatively flat. This site occurs at an elevation of approximately 700 feet (213 meters).

Topography along the proposed Section 270 is variable ranging from relatively flat immediately north of Isthmus Road to relatively steep along the outer edges of North Twin and South Twin mountains.

### 3.3.2 POTENTIAL IMPACTS OF THE PROPOSED ACTION

Construction of the turbine pads and access roads on the project ridgelines would require changes in the existing topography including both cuts and fills depending upon site conditions. Work on constructing access roads began in the fall of 2009. During this initial phase of construction, the sub-grade was completed along about 3.7 of the 6.1 miles of proposed access roads. This work as well as future construction of these project components would cause minor alteration of local topography, but would not alter major topographic features. Therefore, the project is not expected to significantly alter the site's natural topography.

Site grading would be required to construct the project O&M building and collector; however because of the relatively flat topography that exist changes in topography should be limited. For the construction of the Section 270 transmission line, it is unlikely that extensive grading would be required. Grading may be required for stabilizing access roads, excavation sites, and pull-pad sites where terrain is uneven such that construction equipment access would not be safe without grading. Conductor pull-pad setup locations may require leveling in an approximately 100-foot by 75-foot area to assure equipment stability.

### 3.3.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.4 GEOLOGY, SOILS AND GEOLOGIC HAZARDS

### 3.4.1 REGULATORY FRAMEWORK

Geologic resources and hazards are governed primarily by state and local jurisdictions. Seismic hazards are addressed by state and local requirements for identifying and avoiding faults when considering new development.

#### ***Maine Public Law 2003, Chapter 580: Maine Model Building Code***

In 2004, the Maine Model Building Code (MMBC) was adopted under Maine Public Law 2003, Chapter 580. Under this law, if towns, cities and municipalities in Maine choose to adopt a residential building code or non-residential building code, it must be the MMBC. Adoption of the MMBC is a voluntary decision and is not required as part of this law. The MMBC is composed of the International Residential Code and the International Building Code, and within these codes are standards related to seismic design.

#### ***MDEP Site Location of Development statute (38 M.R.S.A. § 484 et seq)***

The MDEP Site Location of Development statute (38 M.R.S.A. § 484 et seq) does not specifically address geology and seismicity except as these relate specifically to metallic mineral mining or advanced exploration activity. The standards of this statute do require that any proposed development be constructed on suitable soils.

### 3.4.2 PROJECT SETTING

In the Western Mountain Region of Maine the underlying bedrock is variable and complex with numerous intrusions of igneous rock (plutons) of differing ages and composition. At elevations above 2,500 feet, soils are generally cold, acidic, and well-drained. Mineral soils are derived from mica schist and phyllite with some granite and gneiss. There also are some areas of thin organic soil present. Soils at mid-slope are typically deep, somewhat poorly drained coarse loamy sands. Valleys tend to include ice-contact glaciofluvial deposits and stream alluvium.

According to site-specific soil surveys conducted for the project, the ridgeline portion of the project area generally consists of glaciated uplands with areas that are shallow to bedrock and well to excessively well drained at the highest elevation. The side slopes consist of shallow to bedrock areas and include areas of moderately well drained to somewhat poorly drained soils in locations. Soil series encountered during the survey included Becket, Brayton-Peacham Association, Dixfield-Colonel Complex, Dixfield-Marlow Association, Hermon-Monadnock, Lyman-Turnbridge Complex, Lyman-Turnbridge-Becket Complex, Lyman-Turnbridge-Monadnock Complex, Lyman-Turnbridge-Skerry Complex, Mahoosuc, Naskeag, Naumburg, Ricker, Skerry, and Skerry-Colonel Association.

For the property where the project office, O&M building, collector substation, and CMP substation would be located, soil series included Colton, Lyme, Lyman, Naskeag, Skerry, Turnbridge with some Udorthents (fill) and Rock Outcrops (Statewide Surveys, Inc. 2009) . These soils were of variable depths and ranged from “very deep” (>60” over bedrock) to “shallow” (<10 to 20” over bedrock), and drainage classes ranged from somewhat excessively drained to poorly drained. The results of the Class B High Intensity Soil Survey conducted for this site can be found in Section 11 of the MDEP NRPA-Site Location Supplement (July 2009) that was submitted for this project.

Maine is located near the middle of the North American tectonic plate (Maine Geological Survey 2008). Although there are numerous old faults present in the rocks of New England, seismologists have not found a correlation between these old faults and modern day earthquakes (Maine Geological Survey 2008). None of the historic faults in Maine have been identified as active. For many of these faults, there has been no significant motion since about 20,000 years ago, and some appear to have been inactive since the formation of the Appalachian Mountains over 300,000,000 years ago (Maine Geological Survey 2008). In Maine, there is a low but steady occurrence of earthquakes. These earthquakes are typically of small magnitude and are often too small to be felt. Based upon current records, no earthquake in Maine has caused significant damage, and the largest accurately recorded earthquake had a Richter magnitude of 4.8. Based upon available data, there does not appear to be a notable geologic hazard present in the project area.

For the Section 270 transmission line, soil series include Croghan, Hermon, Monadnock, Rumney and Skerry as well as multiple associations and complexes (Refer to the Maine Site Location of Development Act permit application submitted for the Section 270 Transmission Line Upgrade). Many of these soils are characterized as potentially highly erodible or highly erodible, with drainage classes ranging from somewhat excessively drained to poorly drained.

### 3.4.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

Because there are no active fault lines in Maine and recorded earthquakes have produced only minimal damage, there is no significant geological or seismic risk associated with the proposed project. High Intensity Soils Surveys conducted for the project indicated that soils are generally appropriate for the proposed construction activities, and any limitation related to soils can be compensated for using standard engineering practices. During construction ground vibration resulting from blasting for turbine foundations, roads and underground power line trenches would conform to U.S. Bureau of Mines Report of Investigations 8501 [U.S. Department of Interior Rules 816.61-68 and 81 7.61-68, and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior], standards to limit vibrations at inhabitable structures in the area.

An Erosion and Sedimentation Control Plan was developed for the project based upon the *Maine Erosion and Sediment Control BMPS Manual (MDEP 2003)*. This plan defines the various erosion control measures to be employed, when and where these measures should be installed, how they are to be maintained, and when they are to be removed. Details include, but are not limited to, the following:



- Install erosion control measures (i.e., silt fence, straw bales, erosion control mix berm) prior to soil disturbance.
- Conduct weekly inspection of the site until surfaces are stabilized.
- Complete visual inspections of erosion control measures as needed, including after each rainfall event and prior to predicted rainfall events expected to exceed one inch.
- Treat, re-vegetate or otherwise stabilize all areas not under active construction.
- Protect all soil stockpiles expected to remain for more than 15 days from potential erosion using hay bales or other appropriate measures.
- Remove hay bales and silt fencing once up-stream areas are stabilized. This includes removal or redistribution of all sediment trapped by these measures in a manner that would not result in erosion to adjacent areas.

CMP has developed standard manual, *Environmental Guidelines for Construction and Maintenance Activities on Transmission Line and Substation Projects*, that it uses as a routine part of all transmission and substation projects. The manual is largely based on *Maine Erosion and Sediment Control BMPS Manual* (MDEP 2003), and Chapter 500, Stormwater Management. It contains erosion and sedimentation control requirements, standards, and methods that would be used to protect soil and water resources during construction of the substation and Section 270 transmission line.

#### 3.4.4 POTENTIAL IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

### 3.5 WATER RESOURCES

#### 3.5.1 REGULATORY FRAMEWORK

##### 3.5.1.1 Applicable Federal Plans, Policies, and Regulations

The Clean Water Act, as amended (33 USC §1251 *et seq.*), regulates surface water quality in Waters of the United States. The CWA gave the EPA authority to set standards for discharge of point source pollutants, as well as set water quality standards for all contaminants in surface waters. The EPA publishes surface water quality standards and toxic pollutant criteria at 40 CFR Part 131. Under Section 404 of the CWA, entities, including federal agencies, must apply for and receive a permit from the Corps to conduct dredge or fill activities within waters of the U.S. Under Executive Order 11990, Protection of Wetlands, all federal agencies are directed to the extent practicable to avoid adverse impacts associated with the destruction or modification of wetlands. Similarly under Executive Order 11988, Floodplain Management and Protection, federal agencies are required to evaluate potential effects of any project conducted within a floodplain. This includes, where possible, avoiding activity within a floodplain and avoiding and minimizing adverse impacts for projects sited within a floodplain. In addition, DOE's wetland and floodplain review requirements outlined in 10 CFR Parts 1021 and 1022 ensure that the requirements of the Executive Orders are implemented.

The CWA mandates water quality-based control measures. Water quality standards define the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect waterbodies from pollutants (EPA 2008). Water quality standards are set by states, territories and authorized tribes. Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters that do not meet water quality standards and establish total daily maximum loads (TDML) for specific pollutants.

The Wild and Scenic Rivers Act (16 USC 1271 et seq.) was created to identify and preserve rivers that possess outstanding scenic, recreational, geological, fish and wildlife, historic, and cultural attributes. Rivers designated under this Act are protected to enhance the value for which they were designated. In Maine only the Allagash River is designated under this Act. The Allagash River is located approximately 120 miles northeast of the proposed project and is not expected to be impacted.

### 3.5.1.2 State Water Quality Standards

The MDEP Bureau of Water Quality is responsible for the regulation of activities that may affect the quality of state waters (38 M.R.S.A. § 464).

### 3.5.2 PROJECT SETTING – SURFACE WATER AND WETLANDS

Seventy-seven small intermittent and perennial streams were identified within the ridgeline portion of the project area and along the electrical generator lead. See Appendix A for maps. Those streams on the western side of the ridge are part of the Ellis Pond watershed, and those on the eastern portion of the ridge are part of the Swift River watershed. Five streams occur on the property that would include the O&M building, project office and collector substation.

There are approximately 245 delineated jurisdictional wetlands (see Appendix A) on the ridgeline, including those wetlands within the down-mountain electrical generator lead, proposed electrical line corridor that would extend from a point near the summit of Flathead Mountain down its eastern slope. Wetlands on the ridgeline include primarily forested, scrub-shrub, and emergent wetlands. These wetlands are generally small and in most cases have been altered by activities associated with timber harvesting. In general, the scrub-shrub and emergent wetlands are previously forested areas where the canopy was removed during timber harvesting. In the forested wetlands, commonly occurring tree species include yellow birch, balsam fir, red maple, green ash, northern white cedar, and eastern hemlock. The shrub layer consists primarily of these same tree species with a limited presence of shrub species such as hobblebush, witherod, and winterberry. Commonly occurring herbaceous species include cinnamon fern, evergreen wood fern, sensitive fern, northeastern mannagrass, fowl mannagrass, and fringed sedge.

Scrub-shrub wetlands are present in scattered locations throughout the project area and often appear in conjunction with either forested or emergent wetland communities. The shrub layer is dominated by tree species such as red maple, yellow birch, gray birch, and striped maple. Red raspberry, a common early successional species, also is present in many of these wetlands. The herbaceous layer includes species such as sensitive fern, cinnamon fern, rough-stemmed goldenrod, fowl mannagrass, northeastern mannagrass, bluejoint and swamp dewberry. The emergent wetlands, which are common throughout the project area, are typically referred to as wet meadows. Wet meadows are dominated by herbaceous species that are adapted to saturated soil conditions but not adapted to long periods of inundations as would be common in marsh habitats. The emergent wetlands within the project area are typically dominated by herbaceous species such as wool-grass, fowl mannagrass, bluejoint, sallow sedge, fringed sedge, pointed broom sedge, sensitive fern, jewelweed, and rough-stemmed goldenrod. These wetlands also support red raspberry, steeple-bush, and seedlings of the tree species mentioned above.

Surveys conducted on the ridgeline and at the property where the project facilities would be located identified a total of 32 vernal pools. Of these pools, 14 were man-made and occurred within either a roadside ditch or a rut created by heavy equipment. The remaining 18 pools were naturally occurring and supported breeding activity by wood frogs and/or spotted salamanders. Five pools met the criteria to be considered significant vernal pools based upon the level of amphibian breeding activity.

The property where the O&M building, project office, collector substation, and CMP substation would be located includes areas of forested and shrub uplands, as well as areas of upland field/maintained lawn. Wetlands present on this property included forested, scrub-shrub, and emergent communities. Vegetation species present in both uplands and wetland are the same as those identified on the ridgeline. There are seven delineated wetlands on the property where the project facilities would be located. These wetlands are generally small in size and have been altered by existing residential development and associated land management (i.e., mowing).

Seventy one wetlands were identified within the existing transmission line corridor, and the adjacent Section 270 expansion area. Forty small intermittent and perennial streams were identified within the Section 270 transmission line corridor, including two of the five streams present on the project O&M building, office and collector substation. Three of the perennial streams are named resources: Bean Brook, Scotty Brook, and Goff Brook. Surveys conducted along the proposed Section 270 identified one significant vernal pool and associated critical terrestrial habitat (forested wetlands and upland areas).

### 3.5.2.1 Potential Impacts of the Proposed Action

#### *Construction Phase*

Clearing and grading during project construction could temporarily expose soil to erosive forces such as rain and surface runoff, which could affect water quality of wetlands and other surface waters in the project area. Common impacts to water quality could include nutrient loading with sediments that could alter water quality, and small petrochemical spills and leaks from construction equipment. Wetlands and other surface waters adjacent to clearing and grading would be at a higher risk from these potential impacts. To protect water quality during construction, an Erosion and Sedimentation Control Plan was developed for the project. This plan was developed following the *Maine Erosion and Sediment Control BMPS Manual* (MDEP 2003). This plan defines the various erosion control measures to be employed, when and where these measures should be installed, how they are to be maintained, and when they are to be removed. Erosion control details are included on the final construction plans to aid the construction contractor. In addition, the project would employ a third party inspector to monitor compliance with permit conditions during construction including ensuring that the implementation of the Erosion and Sedimentation Control Plan.

#### Wind Turbines and Associated Infrastructure

There are approximately 245 delineated wetlands in the ridgeline project area, including those wetlands within the down-mountain electrical generator lead, and there are 7 delineated wetlands on the property where the project facilities would be located. To avoid wetland impacts, a large area was delineated (approximately 1,568 acres on the project ridgelines) so that to the extent practicable, the project could be designed around existing resources. A total of 17 wetlands, 15 on the ridgeline and 2 at the project facilities location, would be directly impacted by fill. See Appendix A for maps. The areas of the individual fills range from approximately 40 square feet to 3,600 square feet, and the total area of permanent wetland fill is approximately 13,364 square feet. These impacts include a few scattered fills associated with the access road and fills associated with five turbines and the O&M building. Impacts would occur as a result of upgrades to the existing access road, as well as construction of new access roads. Existing roads were utilized where practicable. Where new roads were necessary, large higher functioning wetlands were avoided. The unavoidable impacts generally affect small, isolated, and relatively low-functioning resources. Similarly, impacts associated with the turbines also affect small, low-functioning wetlands. The wetlands that are filled would have a reduced functional capacity, but on a landscape level, there should not be a significant change in wetland functions or values. To date, approximately 10,689 square feet of permitted wetland fill has been completed for construction of the access roads and turbine pads.

Impacts to wetlands along the proposed collector lines corridor and generator lead would consist primarily of a change in cover type. There would be approximately 30,172 square feet of vegetation clearing within wetlands. No permanent fill would occur within wetlands in association with the poles. The primary cover change would result from clearing forested wetlands. In time, these forested wetlands would convert to an early successional stage scrub-shrub wetland. This cover type change would not significantly change the overall functions and values of the impacted wetlands, with the exception of a change in wildlife habitat. Other wetlands that would be crossed by the collector lines are either scrub-shrub or emergent, so there should be no change in cover type. In general, there should be only limited change in the functions provided by these wetlands.

One perennial stream and three intermittent streams would be crossed by the new portion of the access road which would impact 392 square feet of streams as a result of culvert installations. The other streams within the project area were avoided in an effort to minimize impacts. Impacts to streams along the proposed electrical generator lead would be minimal. The generator lead would cross one intermittent stream and six small perennial streams, and as a result, there would be clearing of vegetation at these points. The clearing, however, should not impact the overall character of the streams. There also would be a temporary bridge crossing of one of the perennial streams to allow for construction access. A minimum 75-foot buffer would be established on each side of the perennial streams crossed by the electrical generator lead and those adjacent to new access roads.

As previously mentioned, Record Hill was issued a PGP (Section 404 Corps Permit #NAE-2008-03763) for the wetland and stream impacts described above that would result from the construction of the wind turbines and associated infrastructure. Mitigation required as part of permitting these impacts consists of In-Lieu-Fee Mitigation where Record Hill will pay \$15,025.66 to the Natural Resource Mitigation Fund. The Corps has satisfied its NEPA requirements through the Section 404 permitting process.

The project avoided direct impacts to all of the identified vernal pools, including the significant vernal pools. At two of the significant vernal pools, permitted impacts have already occurred within the protected portion of the critical terrestrial habitat, which is the area surrounding the actual vernal pool. At one of these significant vernal pools, the impact to the critical terrestrial habitat was *de minimus* and was associated with the upgrade of Mine Notch Road. At the second significant vernal pool, approximately 18 percent of the critical terrestrial habitat was altered to construct the ridgeline access road and one of the turbine pads. In their review of the project, the MDIFW found that based upon the established purpose of the project, the proposed design represents the least environmentally damaging alternative and that the project would not “*degrade any significant wildlife habitat, unreasonably disturb the subject wildlife, or unreasonably affect use of the site by the subject wildlife...*”

#### Section 270 Transmission Line and Substation

Construction of the Section 270 transmission line would involve 200 square feet of permanent wetland fill affecting two wetlands. Wetland 59-133-1, a wet meadow, would be impacted by the installation of new Pole 112 and its associated guy wire anchors. Wetland 59-112-1, also a wet meadow, would be impacted for the installation of guy wire anchors for Pole 95. Placement of all other poles would avoid direct wetland impacts. Construction also would involve temporary wetland fill to allow access for construction vehicles. This would be accomplished using construction mats of either fiberglass composite or timber composition. An estimate of 4,300 square feet (0.01 acres) of temporary impacts would occur from the use of construction mats. In addition to permanent and temporary fill placement, expanding the width of the existing transmission line corridor would require the conversion of 35 to 50 feet of forested areas to shrub and herbaceous communities along the length of the corridor. An estimated 36,025 square feet (0.83 acres) of forested wetlands would be converted to shrub and/or herbaceous communities. The wet meadow communities impacted by the permanent fill would have a slight reduction in their functional capacity and those wetlands impacted by temporary fill would have a short-term

change in their functional capacity. In general, there should be only limited change in the functions provided those forested wetlands that undergo conversion.

Thirty-two streams would be crossed using temporary bridges made of construction mats. At these temporary bridges, supporting mats would not be placed below the normal high water and would not impact the stream banks. This technique allows water to flow freely under the temporary crossings and limits adverse effects to the streams. Crossings of Bean Brook and Scotty Brook would be accomplished using existing permanent bridges or crossings of these streams would be avoided. After construction, vegetation management within the corridor would maintain a 100-foot buffer on six of the perennial streams identified within the corridor and a 50-foot buffer on each of the other streams (Refer to NRPA/Site Location permit issued for the Section 270 Line Upgrade). Within this buffer, only capable tree species would be removed and all other vegetation would remain uncut.

The MDEP determined that the design of the Section 270 line and associated substation avoided and minimized wetland impacts to the greatest extent practicable, and that it represents the least environmentally damaging alternative that meets the overall purpose. The Maine designated critical terrestrial habitat associated with the SVP along Section 270 would be impacted under the proposed action. Approximately 7,248 square feet of forested wetlands and 13,404 square feet of forested uplands, totaling 20,652 square feet of critical terrestrial habitat would be cleared. Mitigation required as part of permitting these impacts consists of In-Lieu-Fee Mitigation, where CMP will pay \$104,110.16 to the Natural Resources Mitigation Fund.

As previously mentioned, CMP was issued a PGP (Section 404 Corps Permit #NAE-2009-1866) for the wetland impacts described above that would result from the construction of the Section 270 transmission line and substation. Mitigation required as part of permitting these impacts consists of In-Lieu-Fee Mitigation where CMP will pay \$119,130.71 to the Natural Resource Mitigation Fund. The Corps has satisfied its NEPA requirements through the Section 404 permitting process.

#### *Operation Phase*

During project operations, storm water discharges from new impervious surfaces and other developed areas could convey storm water with low levels of pollutants to adjacent wetlands and other surface waters. Typical pollutants could include sediment, petrochemicals, and heavy metals. The proposed project would include approximately 18.4 acres of new impervious area and 18.8 acres of new developed areas, in addition to 0.7 acres of developed area in the form of existing logging roads. As part of the MDEP Site Location of Development (38 M.R.S.A. §§ 481–490) permit, Record Hill developed a comprehensive stormwater management and control plan for the project ridgeline. This plan was developed in conjunction with concurrent filing of a Notice of Intent (NOI) for coverage under the Maine Construction General Permit. In general, the stormwater control plan is designed to minimize the concentration of stormwater flows off the project site. The primary components of the plan include minimizing the permanently impacted areas of the project site and incorporating appropriate BMPs in the project design. The primary effort in stormwater management would be minimizing the permanent impacts associated with the project through a systematic re-vegetation program for disturbed areas. The impacts to site hydrology from the proposed project also would be minimized by the use of appropriate stormwater management BMPs such as culverts with outlet protection and level spreaders. In addition, the use of a “rock sandwich” design would be employed. The “rock sandwich” design allows water presently flowing from uphill areas to continue flowing under the road in a thin layer of coarse rock. This technique is preferred over culverts in some instances because the flows are distributed instead of concentrated, minimizing the potential for erosion. Rock sandwich construction would be used as appropriate in areas where there are seeps or other hydrologic conditions warrant this application.

In general, the stormwater management plan was intended to maintain existing flow paths and discharge points to the extent possible; to cause no adverse impact to peak runoff flow rates beyond the property line; to provide MDEP prescribed levels of water quality treatment for a minimum of 75 percent of the roadway and developed area; and to avoid disturbance of existing wetlands to the maximum extent possible. Stormwater modeling completed for the project indicates that there would be no significant increase in discharge rate from the site following construction, and that there should be no adverse impacts to adjacent waterbodies or properties if the stormwater management plan is properly implemented. In addition to the stormwater management plan, a phosphorous control plan was developed for the project, as required by Maine's Site Law. This plan was developed using the MDEP's *Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development*. Methods proposed to control stormwater would help remove phosphorous from runoff, and the Phosphorous Restriction Zone, totaling 155 acres, also would help control phosphorous in stormwater runoff. The Phosphorous Restriction Zone would consist of a 100-foot wide maintained vegetative buffer along some of the project roads where no grubbing or soil disturbance would be permitted. The Permitted Phosphorus Export for this project is 6.37 pounds of phosphorus per year. In their review of the project, the MDEP determined that the proposed stormwater management plan is designed in accordance with the General Standards of Chapter 500, Stormwater Management, rules.

A combined stormwater management and control plan was developed for the site where the O&M building, on-site office, project collector substation and CMP substation would be located. This plan includes detention basins, as well as underdrain soil filters (USF) to treat the runoff. The USF should provide both water quality treatment and temperature control of the runoff. These BMPs would control runoff from 96 percent of the impervious area and 95 percent of the developed area.

Following a review of these plans, the Division of Watershed Management within the MDEP determined that the plans provide adequate provisions to meet the General Standards established in MDEP's Chapter 500, Stormwater Management Rules.

#### 3.5.2.2 Potential Impacts of No Action Alternative

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

#### 3.5.3 PROJECT SETTING - FLOODPLAINS

Although most typically associated with streams and rivers, floodplains or flood-prone areas are defined as "any land area susceptible to being inundated by waters from any source" (44 CFR Part 59). In the United States, the National Flood Insurance Program, which is a series of local and federal laws, regulates development in mapped 100-year floodplains. The 100-year floodplain or Special Flood Hazard Areas as depicted on national Flood Insurance Rate Maps (FIRM) define those areas that would be inundated by a flood event having a one percent chance of being equaled or exceeded in any given year.

Based upon FIRM maps for the town of Roxbury, there are no mapped flood zones within the proposed project area, including the electrical generator lead and the property where the O&M building, project office, and collector substation and CMP substation would be located. The Federal Emergency Management Agency's (FEMA) mapped floodplains for the region surrounding the project area are shown in Figure 3-1.

The only component of the Section 270 line upgrade that is located in proximity to a mapped 100-year floodplain is Pole 27. A detailed assessment was completed using two-foot contour elevations at Pole 27 to determine if it was located within the 100-year floodplain of Bean Brook. Based upon this assessment, it was determined that Pole 27 would be located approximately 15 feet in elevation above this projected floodplain. Typically pole installation does not increase ground elevations and would not affect any flood elevations. Construction and maintenance of

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the proposed transmission line would not cause or increase flooding or cause a flood hazard to any neighboring structures.

#### 3.5.3.1 Potential Impacts of the Proposed Action

No mapped FEMA flood zones are crossed by the project, so there should be no adverse impact to floodplain resources. In their review of the project, the MDEP found that the project is “*unlikely to cause or increase flooding or to cause an unreasonable flood hazard to any structure.*”

Based upon its review, the MDEP determined that the proposed Section 270 line upgrade would be unlikely to cause or increase flooding or cause an unreasonable flood hazard to any structure.

#### 3.5.3.2 Potential Impacts of No Action Alternative

Because there are no mapped FEMA flood zones crossed by the project, the No Action Alternative would have the same effect as the proposed action.

#### 3.5.4 PROJECT SETTING - GROUNDWATER

No groundwater wells occur within the ridgeline portion of the project area, and there are no known public drinking water supply wells within 100 feet of the proposed transmission line or turbine locations. In addition, there are no EPA-designated sole source aquifers located in the project area (EPA 2008). There is currently one residential groundwater well at the site of the proposed project office. Use of this well would be discontinued, and a new bedrock well would be drilled to serve site facilities. The nearest mapped groundwater aquifer is located near the Swift River more than a mile east of the ridgeline project area (Maine Geological Survey 2008). Based upon site specific soil surveys, groundwater depths on the ridgeline portion of the project area are highly variable and range from at or just below the surface in poorly drained soils to depths of greater than six feet below the surface in better drained soils. Groundwater conditions are similar at the site of the proposed O&M building, project office, and substation where depths range from at or near the surface in poorly drained soils to within five feet of the surface in better drained soils. The State of Maine receives an average of 41.21 inches of precipitation annually (U.S. Department of the Interior, U.S. Geological Survey 2009).

There is a mapped Significant Groundwater Aquifer in proximity to the Section 270 line that is associated with Scotty Brook and the Swift River; however, the transmission line corridor is

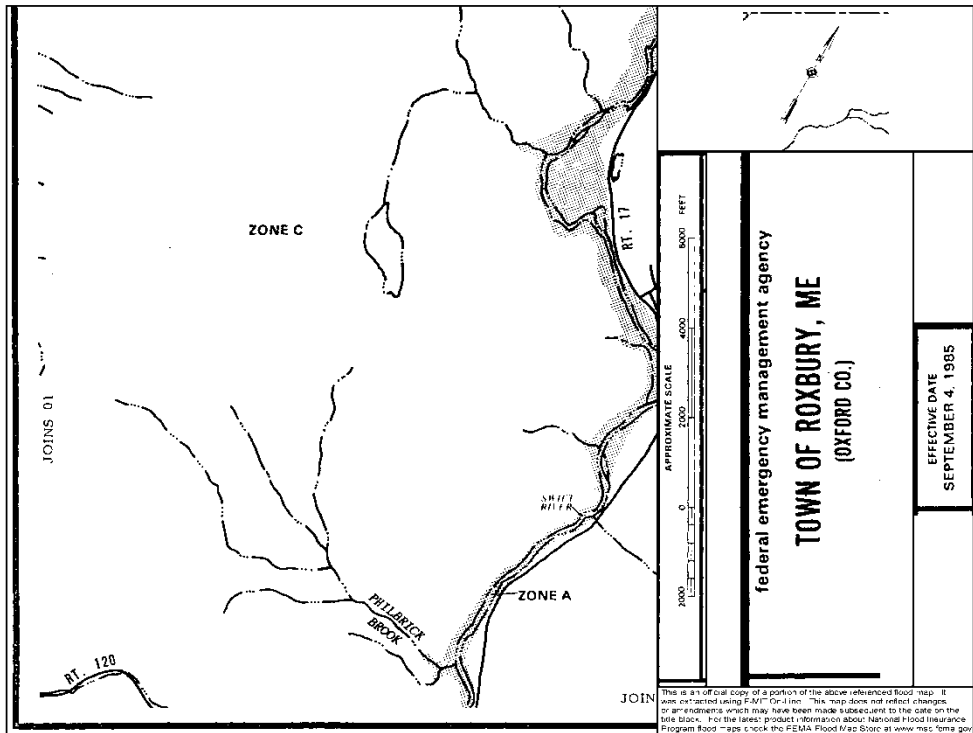
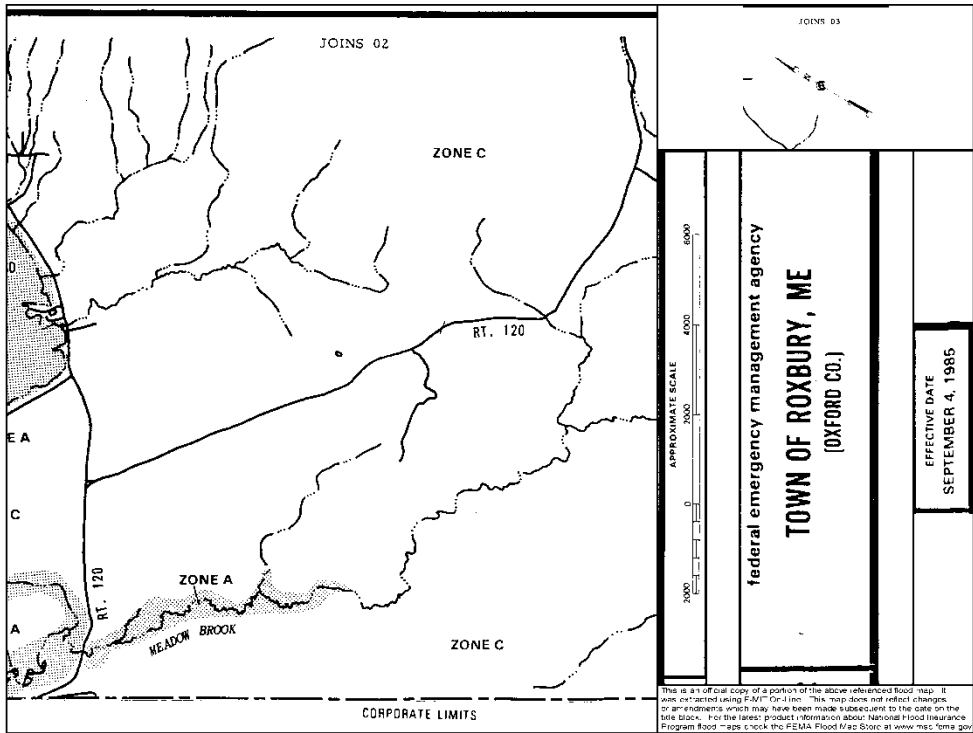


Figure 3-1. FEMA Floodplain Maps for Record Hill Project Area



located outside of the footprint of this aquifer (Refer to Section 15 of the Site Location of Development permit application submitted for the Section 270 Transmission Line Upgrade). No private water wells or septic systems occur within the existing or proposed up-grade of the transmission line.

#### 3.5.4.1 Potential Impacts of the Proposed Action

Non-potable water used in the construction of the wind turbines and associated infrastructure (e.g. dust abatement) would not be withdrawn from ground water sources, rivers, or streams, rather it would be withdrawn from local lakes in accordance with Maine law (Maine DEP rules, Chap. 587(6), available at <http://www.maine.gov/sos/cec/rules/06/chaps06.htm>). Up to 20,000 gallons of water per day would be withdrawn from the local lakes using a 4,000 gallon tanker truck. The tanker truck would access the lakes via existing municipal boat ramps. Given the limited volume of this withdrawal relative to the size of the local lakes, the water withdrawal would not change the naturally occurring water levels of the surrounding lakes. Potable water (drinking water) during construction of the wind turbines and associated infrastructure would be provided by the contractors (e.g. bottled water or in water coolers).

The only water supply required during operation of the facility would be potable water for the project office and O&M building. This would be supplied by a single bedrock well that would be drilled near the project office. This well would not affect any significant sand and gravel aquifers and the MDEP's Division of Environmental Assessment determined that there are adequate groundwater resources for the proposed project. A septic system including a septic tank with standard stone bed was designed to handle wastewater disposal at the project facilities (office and O&M building). Based on the maximum number of employees likely to be working at the project facilities, there would be approximately 135 gallons of wastewater generated daily. A review conducted by the MDEP's Division of Environmental Assessment determined that soils are appropriate for the proposed wastewater disposal system.

Work on constructing access roads for the turbine site began in the fall of 2009. During this initial phase of construction, the sub-grade was completed along about 3.7 of the 6.1 miles of proposed access roads. Construction and operation of the new Section 270 line would not require the use of groundwater. To date, approximately 10,689 square feet of permitted wetland fill has been completed for construction of the access roads and turbine pads, as verified by ACOE.

During the construction phase, potential sources of groundwater contamination would be limited to fuel, and hydraulic and lubrication oils used in the operation of vehicles and construction equipment. To minimize spill potential, no fueling or vehicle maintenance would be performed within 100 feet of wetlands, streams or other sensitive natural resources. The procedures to prevent groundwater degradation during construction, operation, and maintenance of the proposed line are provided in CMP's *Environmental Control Requirements for Contractors and Subcontractors* (Refer to Section 15 of the Site Location of Development permit application submitted for the Section 270 Transmission Line Upgrade), and CMP's oil and hazardous material contingency plan. These procedures establish a set of minimum requirements for spill prevention and response. For example, employees operating construction vehicles are trained to promptly contain, report, and clean up any spill in accordance with standard procedures. As a standard operating procedure, all operational vehicles carry an oil spill kit that contains materials for conducting initial containment and clean-up of spills. In the event of a spill of oil or hazardous material, on-site personnel would immediately invoke standard spill reporting and clean-up procedures. Spills that are properly cleaned-up should not pose any risk to groundwater quality.

Maintenance of the Section 270 line would involve selective herbicide application to control the growth of capable tree species. CMP follows a program whereby herbicide application occurs in an area once every four years. Herbicide is selectively applied using a backpack applicator to treat individual plants. Herbicides are applied by applicators certified by the Maine Pesticide

Control Board, and no herbicides are used within 25 feet of any waterbody or wetland with standing water.

In their review, the MDEP found that the proposed Section 270 line upgrade would not have an unreasonable adverse effect on groundwater quality or quantity.

#### 3.5.4.2 Potential Impacts of No Action Alternative

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

#### 3.5.5 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The potential impacts of the proposed action are presented above as a subsection under each specific water resource (Surface Water and Wetlands, Floodplains, and Groundwater).

#### 3.5.6 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

The potential impacts of the no action alternative are presented above as a subsection under each specific water resource (Surface Water and Wetlands, Floodplains, and Groundwater).

### 3.6 AIR QUALITY

The region of influence (ROI) for air quality varies according to the type of air pollutant being discussed. Pollutants such as carbon monoxide and directly emitted particulate matter have a localized region of effects that are generally restricted to the immediate vicinity of the emission source. Other pollutants such as NO<sub>2</sub>, a precursor to ozone, have a broader region of effects. This section presents general air quality information and regional air quality information.

#### 3.6.1 REGULATORY FRAMEWORK AND PROJECT SETTING

##### ***Clean Air Act***

The Clean Air Act (CAA) of 1970, as amended (42 United States Code [USC] §§ 7401 et seq.), regulates emissions from stationary, mobile, and area sources and established National Ambient Air Quality Standards for pollutants that can harm human health or the environment. Under the CAA, the EPA is responsible for revising these standards when necessary as new data on air quality and related impacts on the human environment become available.

##### ***National Ambient Air Quality Standards***

EPA has adopted National Ambient Air Quality Standards for six "criteria" pollutants (pollutants for which EPA has documented the health and welfare impacts as the "criteria" for inclusion in the regulatory regime): ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and airborne lead. Some National Ambient Air Quality Standards include both primary and secondary standards, and others only include a primary standard. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The average time periods specified in the National Ambient Air Quality Standards vary by criteria pollutants based on potential health and welfare effects of each pollutant. The National Ambient Air Quality Standards are enforced by the states via local air quality agencies. States may choose to adopt their own air quality standards, but state standards must at least meet federal minimum standards. Table 3-2, National Ambient Air Quality Standards, lists the National Ambient Air Quality Standards.

**Table 3-2: National Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Times</b>	<b>Ambient Concentration Standard<sup>1</sup></b>	<b>Primary (P) or Secondary (S) Standard<sup>2</sup></b>
Ozone	8 hours	0.075 ppm (147 µg/m <sup>3</sup> )	P, S
Carbon monoxide	1 hour	35 ppm (40 mg/m <sup>3</sup> )	P
	8 hours	9 ppm (10 mg/m <sup>3</sup> )	P
PM <sub>10</sub>	24 hours	150 µg/m <sup>3</sup>	P, S
PM <sub>2.5</sub>	24 hours	35 µg/m <sup>3</sup>	P, S
	Annual	15 µg/m <sup>3</sup>	P, S
Nitrogen dioxide	1 Hour	0.100 ppm (190 µg/m <sup>3</sup> )	P
	Annual	0.053 ppm (100 µg/m <sup>3</sup> )	P, S
Sulfur dioxide	1 Hour	0.075 ppm (200 µg/m <sup>3</sup> )	P
	3 hours	0.5 ppm (1,300 µg/m <sup>3</sup> )	S
Lead Lead	Rolling 3-Month Average	0.15 µg/m <sup>3</sup>	P, S
	Quarterly Average	1.5 µg/m <sup>3</sup>	P, S

<sup>1</sup> ppm = parts per million; mg/m<sup>3</sup> = milligrams per cubic meter; µg/ m<sup>3</sup> = micrograms per cubic meter

<sup>2</sup> P = primary standard (health-based); S = secondary standard (welfare-based)

<sup>3</sup> On January 6, 2010 USEPA proposed to reduce the 8-hour ozone standard to a level within the range of 0.060 to 0.070 ppm. The proposed rule is pending.

<sup>4</sup> EPA has revoked the quarterly average lead standard except in areas that have not demonstrated compliance with the quarterly average lead standard.

Source: 40 CFR Part 50

The EPA evaluates whether the criteria air pollutants levels within a geographic area meet National Ambient Air Quality Standards. Areas that violate air quality standards are designated as nonattainment areas for the relevant pollutants. Nonattainment areas are sometimes further classified by degree (marginal, moderate, serious, severe, and extreme for ozone, and moderate and serious for carbon monoxide and PM<sub>10</sub>). Areas that comply with air quality standards are designated as attainment areas for the relevant pollutants. Areas that have been redesignated from nonattainment to attainment are considered maintenance areas. Areas of uncertain status due to insufficient air quality monitoring data are generally designated as unclassifiable, but are treated as attainment areas for regulatory purposes.

Federal law requires states to develop plans, known as state implementation plans, describing how they would attain National Ambient Air Quality Standards. State implementation plans are approved by the EPA and are federally enforceable.

### **Clean Air Act Conformity Regulations**

Section 176(c) of the federal CAA contains requirements that apply specifically to federal agency actions, including actions involving federal funding. This section of the CAA requires federal agencies to ensure that their actions are consistent with the CAA and with applicable state air quality management plans. Federal agencies are required to evaluate their proposed actions to ensure that they would not cause or contribute to new violations of any federal ambient air quality standards, that they would not increase the frequency or severity of any existing violations of federal ambient air quality standards, and that they would not delay the timely attainment of federal ambient air quality standards.

The EPA has announced separate rules that establish conformity analysis procedures for transportation-related actions and for other (general) federal agency actions. The general conformity rule requires a formal conformity determination document for federally sponsored or funded actions in nonattainment or maintenance areas when the net increase in direct and indirect emissions of nonattainment or maintenance pollutants exceeds specific *de minimis*

thresholds. The conformity rules apply only in nonattainment and maintenance areas. Because the project is located in an attainment area the conformity rules do not apply to the project.

### **State Plans and Ambient Air Quality Standards**

Maine has an approved State Implementation Plan for air quality management. The Maine Ambient Air Quality Standards are equal to or more stringent than the comparable federal standards. In addition to the six criteria pollutants designated under the CAA, Maine also has established a standard for chromium.

Currently, there are no designated nonattainment areas in Maine, and the project site is located in an area that meets Maine Ambient Air Quality Standards. Two regions in Maine, Portland and the Midcoast, are designated as maintenance areas for 8-hour ozone and one small area, downtown Presque Isle in Aroostook County, is designated as maintenance for PM<sub>10</sub> (Maine Department of Transportation 2009). The Record Hill project area does not occur in or in proximity to any of these maintenance areas.

The Maine Ambient Air Quality Standards are presented in Table 3-3, Maine Ambient Air Quality Standards.

**Table 3-3: Maine Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Times</b>	<b>Ambient Standard<sup>1</sup></b>	<b>Concentration</b>
Photochemical oxidant (ozone)	1 hour	160 $\mu\text{g}/\text{m}^3$	
Hydrocarbon (ozone)	3 hour	160 $\mu\text{g}/\text{m}^3$	
Carbon monoxide	1 hour	40 $\text{mg}/\text{m}^3$	
	8 hours	10 $\text{mg}/\text{m}^3$	
PM <sub>10</sub>	24 hours	150 $\mu\text{g}/\text{m}^3$	
	Annual	40 $\mu\text{g}/\text{m}^3$	
Nitrogen dioxide	Annual	100 $\mu\text{g}/\text{m}^3$	
Sulfur dioxide	3 hours	1,150 $\mu\text{g}/\text{m}^3$	
	24 hours	230 $\mu\text{g}/\text{m}^3$	
	Annual	57 $\mu\text{g}/\text{m}^3$	
Lead	24 hours	1.5 $\mu\text{g}/\text{m}^3$	
Total Chromium	24 hours	0.3 $\mu\text{g}/\text{m}^3$	
	Annual	0.05 $\mu\text{g}/\text{m}^3$	

<sup>1</sup> ppm = parts per million;  $\text{mg}/\text{m}^3$  = milligrams per cubic meter;  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter  
Source: MDEP, Bureau of Air Quality Control, Chapter 110 – Ambient Air Quality Standards

### 3.6.2 POTENTIAL IMPACTS OF THE PROPOSED ACTION

#### *Construction Phase of Turbine Installation*

Grading and other construction activities would result in short-term adverse air quality impacts such as dust generated by clearing and grading, exhaust emissions from gas- and diesel-powered construction equipment, vehicular emissions associated with delivery of the turbine components and commuting construction workers. These effects would be minimal because the project is located in a rural area where there are relatively few other sources producing emissions and because the construction is only expected to last eight months. As stated in the NRPA-Site Location permit issued for the Record Hill project, the MDEP identified no significant source of air emissions associated with the construction of this project, although dust from construction vehicles traveling along unpaved logging roads is mentioned as a potential source of air emissions. Production of fugitive dust would depend on such factors as soil properties (e.g., moisture content, volume of spoils, and soil fines content), meteorological variables, and construction practices employed. Since grading activity would be limited during the construction

of the transmission line, fugitive dust would be likely to occur only at the substation construction site. Best management construction practices would be employed to minimize emissions of fugitive dust, including:

- Use of water or other wetting agents on areas of exposed and dry soils;
- Use of covered trucks for transport of soils or other dry materials;
- Controlled storage of spoils on the construction site, which may include mulching storage piles with hay or covering with tarps in concert with containing the piles with erosion control mix and or silt fencing; and
- Final grading and landscaping of exposed areas as soon as practical.

No license for air emissions is required for the project.

#### *Operation Phase of Turbines and Associated Facilities*

During operation, emissions would include vehicles used by the three or four staff members and operation of the project office (a converted single-family home) and the O&M building.

Gasoline- and diesel-powered vehicles that would be used by employees to commute to the site and to check operations of the facility would emit several criteria pollutants and greenhouse gases. The project is located in an area that meets National Ambient Air Quality standards, and the limited vehicle use associated with operation of the facility is not expected to result in non-attainment status.

Operation of the project office and O&M building would involve the use of fossil fuel energy (i.e., electricity and heating); however, this would not have a significant impact on greenhouse gas emissions. The emissions from the operation of these two buildings would be offset by the clean renewable energy produced by the wind power generating component of the project.

Over its estimated 20-year projected life, Record Hill expects the proposed wind energy facility to produce 2.3 million megawatt-hours of electricity under peak conditions. Assuming that this capacity displaces electricity produced by conventional power plants and combined-heat-and-power plants, Record Hill estimates that the proposed development would reduce greenhouse gasses (carbon dioxide and nitrogen oxides) and other air pollutants (sulfur dioxide) on an annual basis by:

- 58,710 tons of carbon dioxide;
- 97 tons of sulfur dioxide; and
- 82 tons of nitrogen oxides.

As stated in the NRPA-Site Location permit issued for this project, the MDEP identified no significant source of air emissions associated with the operation of this project.

#### *Construction Phase of Section 270 Transmission Line*

Construction of the Section 270 line and substation would result in short-term emissions such as dust generated by clearing and grading, exhaust emissions from gas- and diesel-powered construction equipment, vehicular emissions associated with delivery of components and commuting construction workers. These effects would be minimal because the Section 270 line and substation are located in a rural area where there are relatively few other sources producing emissions and because of the short duration of construction. Best management construction practices would be employed to minimize emissions of fugitive dust, as discussed for the construction phase of turbine installation.

#### *Operation Phase of Section 270 Transmission Line*

During operation, emissions would be limited principally to vehicles used by CMP employees/contractors to conduct maintenance and safety checks at the substation and along the Section 270 line. The substation and transmission line are located in an area that meets National Ambient Air Quality Standards, and the limited vehicle use associated with operation is not expected to result in non-attainment status.

As stated in the NRPA-Site Location permit issued for this project, the MDEP identified no significant air quality impacts from the proposed substation or line upgrade.

### 3.6.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.7 NOISE

Noise is defined by the American National Standards Institute as any unwanted sound. Sound may consist of a single frequency known as a pure tone, but is generally a disorderly mixture of many frequencies. When measuring sound, the A-weighted sound levels are typically used in order to simulate the hearing response of the human ear to varying sound level frequencies. A-weighted sound levels are expressed as dBA. Figure 3-2 shows a comparison of sound pressure and decibel levels for some typical sound environments.

### 3.7.1 REGULATORY FRAMEWORK

The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 USC 4901–4918), delegates to the states the authority to regulate environmental noise. It also directs government agencies to comply with local community noise statutes and regulations and to conduct their programs to promote an environment free of any noise that could jeopardize public health or welfare. In Maine, the MDEP Site Location of Development statute (38 M.R.S.A. § 484 et seq) is intended to insure that developments, which substantially affect the environment, would have a minimal adverse impact on the natural environment within the development site and the surrounding area, and to protect the health, safety and general welfare of people. During the review of a Site Location of Development permit application, the affect of noise from a commercial or industrial development on both the natural environment and the health and welfare of nearby residents is taken into consideration. The Site Location of Development rules (Chapter 375) set sound level limits for the routine operation of developments, for the construction of developments, for site maintenance activities, and for blasting activities. Table 3-4 provides a summary of sound level limits as established by MDEP.

**Table 3-4: Summary of MDEP Sound Level Limits. Resource Systems Engineering. 2008. Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine**

Location	Daytime Limit (Hourly $L_{Aeq}$ )	Nighttime Limit (Hourly $L_{Aeq}$ )	Total Sounds	Short Duration Repetitive Sounds (SDRS)
Facility Property Line	75 dBA	75 dBA	No 5 dBA assessment	No 5 dBA assessment or $L_{Amax}$ limit
Protected Location Zoned: Commercial, Industrial or Transportation	70 dBA	60 dBA within 500 feet of sleeping quarters otherwise 70 dBA	5 dBA assessment applies to Tonal Sounds	5 dBA assessment and possible $L_{Amax}$ limit for SDRS
Protected Location Zoned: Residential, Rural or Similar Land Use	60 dBA	50 dBA within 500 feet of sleeping quarters otherwise 60 dBA	5 dBA assessment applies to Tonal Sounds	5 dBA assessment and possible $L_{Amax}$ limit for SDRS
Quiet Area –	55 dBA	45 dBA within	5 dBA	5 dBA

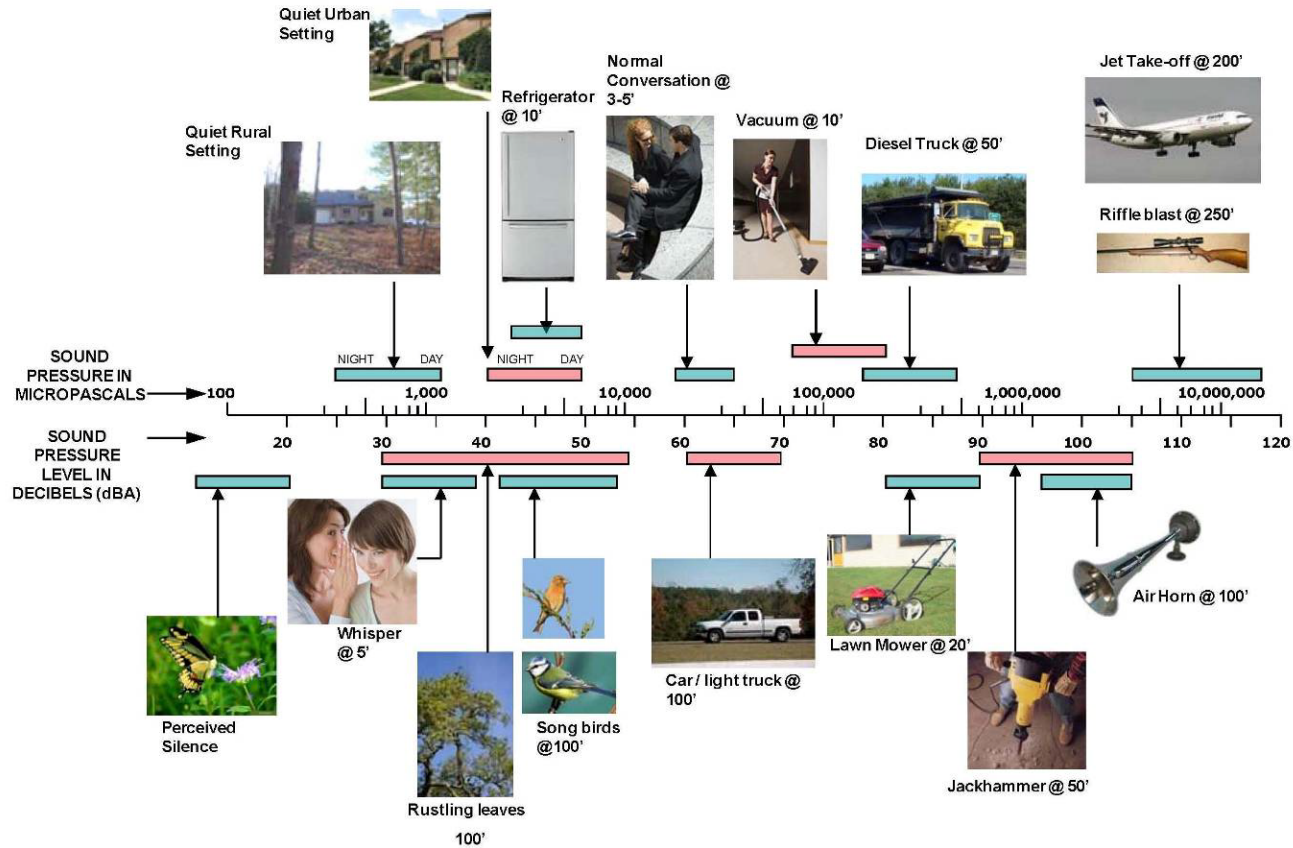
<b>Location</b>	<b>Daytime Limit (Hourly <math>L_{Aeq}</math>)</b>	<b>Nighttime Limit (Hourly <math>L_{Aeq}</math>)</b>	<b>Total Sounds</b>	<b>Short Duration Repetitive Sounds (SDRS)</b>
Protected Location where existing daytime sound level is $\leq 45$ dBA and nighttime sound level is $\leq 35$ dBA		500 feet of sleeping quarters otherwise 60 dBA	assessment applies to Tonal Sounds	assessment and possible $L_{Amax}$ limit for SDRS
Noisy Area – Protected Location where existing daytime or nighttime sound level exceeds standard daytime and/or nighttime limits	Pre-development daytime sound level minus 5 dBA (per election of applicant)	Pre-development nighttime sound level minus 5 dBA (per election of applicant)	5 dBA assessment applies to Tonal Sounds	5 dBA assessment and possible $L_{Amax}$ limit for SDRS
$L_{Aeq}$ = Equivalent Sound Level				
$L_{Amax}$ = Maximum Sound Level				

### 3.7.2 PROJECT SETTING

Existing sources of on-site noise would be limited to commercial timber harvesting operations, which occur periodically as timber stands reach harvestable size. Typical earth moving equipment and cranes generate sound levels of 75 to 88 decibels (dBA) at a distance of 50 feet, which would be comparable to equipment used during harvesting operations. Record Hill conducted pre-construction noise surveys. The nearest sensitive receptors to the proposed wind turbine locations include the property line for an occupied residential parcel located 3,100 feet south along Route 120 and the property line for a residential parcel located 6,000 feet to the east along Route 17. In both instances, the location of the actual residence was further from the turbine location than the property line. On July 7 to 10, 2008 and then again on August 5 to 13, 2008, Resources Systems Engineering simultaneously measured existing ambient sound levels at five monitoring positions (RH 1 to 5) in the vicinity of the Record Hill project. The locations of the monitoring positions are shown on Figure 3-3 and Tables 3-5 through 3-7 provide the results of the existing ambient sound levels.

An ambient noise monitoring survey was conducted at the site of the proposed CMP and project collector substations. The primary source of man-made noise in the area is occasional vehicular traffic on Roxbury Notch Road. Natural sounds included birds and some wind noise, as well as continuous water noise from two brooks that run parallel to the road. Noise levels were measured continuously over two periods: a three day period between June 5, 2009 through June 7, 2009, and a six day period from July 2, 2009 to July 7, 2009. The hourly average daytime noise levels were 48.9 dBA and 53.0 dBA for the June and July periods, respectively. The nighttime average levels were 47.3 dBA and 52.0 dBA, respectively.

RELATION BETWEEN SOUND PRESSURE IN PASCALS AND  
TYPICAL SOUND PRESSURE LEVELS IN DECIBELS



Compiled by RSE from Multiple Sources Including: RSE measurements; U.S.E.P.A. "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," Dec. 1971.; Handbook of Acoustical Measurements and Noise Control, Third Edition, edited by C.M. Harris, McGraw-Hill, 1991.; "FHWA Highway Traffic Noise Prediction Model," U.S. Dept. of Transportation, Federal Highway Admin, Washington D.C., FHWA-RD-77-108, December 1978.; U.S.E.P.A. "Information on Levels Noise Recusite to Protect Health and Welfare with an Adequate Margin of Safety," March 1974.; Handbook of Environmental Acoustics, J.P.Cowan, Van Nostrand Reinhold, 1994.

Figure 3-2: A comparison of sound pressure and decibel levels for some typical sound environments. Resource Systems Engineering. 2008. *Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine*



**Table 3-5: Ambient daytime and nighttime sound levels (dBA), July 7 to 10, 2008. Resource Systems Engineering. 2008. Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine**

Monitoring Position	Range of Hourly $L_{Aeq}$ s		Average Hourly $L_{Aeq}$	
	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am
RH-1	42 to 61	36 to 56	49	45
RH-2	34 to 51	28 to 48	41	36
RH-3	38 to 62	34 to 58	43	40
RH-4	39 to 87	26 to 53	52	39
RH-5	35 to 47	30 to 50	40	36

**Table 3-6: Ambient daytime and nighttime sound levels (dBA), August 5 to 13, 2008. Resource Systems Engineering. 2008. Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine**

Monitoring Position	Range of Hourly $L_{Aeq}$ s		Average Hourly $L_{Aeq}$	
	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am
RH-1	44 to 71	36 to 46	49	41
RH-2	38 to 84	37 to 70	48	45
RH-3	40 to 60	41 to 48	44	44
RH-4	41 to 68	34 to 61	56	46
RH-5	38 to 60	36 to 52	45	43

**Table 3-7: Ambient daytime and nighttime sound levels (dBA), July 7 to 10 and August 5 to 13, 2008 (~211 hours). Resource Systems Engineering. 2008. Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine**

Monitoring Position	Range of Hourly $L_{Aeq}$ s		Average Hourly $L_{Aeq}$	
	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am	Daytime 7 am to 7pm	Nighttime 7 pm to 7 am
RH-1	42 to 71	36 to 56	49	42
RH-2	34 to 84	28 to 70	45	42
RH-3	38 to 62	34 to 58	43	42
RH-4	39 to 87	26 to 61	54	43
RH-5	35 to 60	30 to 52	44	42



### 3.7.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

#### *Construction – Turbine Installation*

Construction activities would generate temporary increases in ambient noise levels, which would vary depending upon the phase of construction and the equipment involved. Most construction equipment operates intermittently, and the type of equipment varies with each construction phase. A variety of construction equipment would be used to build the wind project, including earth-moving equipment for land clearing, excavation, and site grading and cranes to erect the wind turbines. Typical earth moving equipment and cranes generate sound levels of 75 to 88 dBA at a distance of 50 feet. Construction of this project would conform to Chapter 375 of the Site Location of Development law, which sets limits on sound related to construction activities. Daytime construction (7 am to 7 pm) has established sound level limits for specific durations, which cannot be exceeded at any protection location. For example, the hourly sound level limit for a 12-hour activity period is 87 dBA. Because development in proximity to the ridgeline is relatively limited, it is unlikely that typical construction activities would significantly impact adjacent properties. The nearest residential property lines are 3,100 feet and 6,000 feet from a proposed turbine location with the actual residences further away.

In addition to noise associated with construction equipment, there also would be periodic noise associated with blasting activities. Construction of this project would conform to Chapter 375 of the Site Location of Development law, which sets limits on when blasting can occur, the number of blasting events that can occur per day, and the sound levels associated with blasting. In all cases, blasting would be conducted in general conformance with the U.S. Department of Interior Rules 816.61-68 and 817.61-68, and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior. Noise and air blast effects would be mitigated using proper stemming techniques.

#### *Operation of Turbines*

A predictive sound level model was developed for the project to estimate sound levels from the operation of the wind energy generating portion of the project. The acoustic model was developed using the CADNA/A software program in accordance with the generally recognized standard for estimating the propagation of sound in the environment as put forth by the International Organization of Standardization (ISO) as Chapter 9613-2, Attenuation of Sound During Propagation Outdoors. The CADNA/A program uses three dimensional terrain, characteristics of the proposed turbines, and environmental factors to calculate outdoor sound propagation from the operation of the turbines. The sound levels for the simultaneous operation of the wind turbines were calculated for all of the 22 proposed turbine locations. Calculations were based on the apparent sound spectrum produced at full sound power.

Sound levels from wind turbine operation were modeled at nine residential receiver points in the vicinity of the proposed project. These receiver points were located closest to the wind turbines in the various directions where sound levels have the greatest potential to exceed sound limits. These points also were considered representative of locations where the most stringent nighttime sound limits would apply. Results of this analysis indicate that sound levels at full sound power production would be between 5 to 11 dBA below the nighttime sound level limit of 45 dBA at the nine receiver points. In addition, results of this analysis indicate that sound levels at full sound power production would be between 12 to 20 dBA below the daytime sound level limit of 55 dBA for these locations. Table 3-8 provides the results of estimated (modeled) sound levels for nine residential receiver points (PL1 to PL9) in the vicinity of the proposed project. The predictive sound level contours for the vicinity of project area are shown in Figure 3-5.

The proposed wind turbines also were analyzed for their potential to generate regulated tonal sounds. The results of this analysis indicated that tonal thresholds are not likely to be exceeded.

Following a review of the noise modeling conducted for the project by both the MDEP and a third party noise consultant chosen by MDEP, a sound compliance assessment plan was developed for the operation of the project to monitor short duration repetitive sounds (SDR). SDRs are a sequence of sound events, each of which is clearly discernible, that cause an increase of six dBA or more in the sound level detected before and after such an event. An SDR sound event typically lasts less than 10 seconds and occurs more than once an hour. During the operation of the wind turbines, SDR sound is related to the thumping noise produced by the turning blades. The sound compliance assessment plan would monitor sound levels at representative protected locations under conditions that are most favorable to the propagation of sound and maximum amplitude modulation. The intent of this monitoring is to ensure that the project would operate in compliance with the terms of the Site Location of Development/NRPA permit issues for the project. A similar approach was followed for the operational Stetson Wind Project located in northern Maine. Based upon post-construction monitoring conducted for the Stetson Wind Project, the noise model developed by the same consultants used on the Record Hill project was found to be conservative.

#### *Construction of Transmission Line Upgrade*

As with construction of the generating facility, construction activities at the substation site and along the Section 270 line would generate temporary increases in ambient noise levels, which would vary depending upon the phase of construction and the equipment involved. Most construction equipment operates intermittently, and the type of equipment varies with each construction phase. CMP does not anticipate the need for nighttime construction. If nighttime construction activity becomes essential to comply with outage sequencing or other external factors, CMP would meet the standards for nighttime construction under MDEP Site Location of Development regulations, Chapter 375(10) and any applicable municipal standards.

#### *Operation of Transmission Line Upgrade*

Noise produced at the new CMP substation would result principally from the operation of the transformers and fans. As seen in Figure 3-4 and Table 3-9, noise modeling indicates that noise levels from the operation of the substation would be below the MDEP noise standard ranging from 40.2 to 47.8 dBA. For the transmission line, noise would be limited to that produced by conductors, which would emit a slight crackling sound during very humid or stormy weather. Under these weather conditions, the sound produced by the conductors would be minimal and, in stormy conditions, is likely to be exceeded by the sound of the storm itself. Based on its review of the materials submitted during the permit application process, the MDEP determined that adequate provision for the control of noise was made for the Section 270 line upgrade.

#### 3.7.4 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the noise impacts associated with the Record Hill project would not occur unless alternative financing were realized.

**Table 3-8: Estimated (modeled) sound level from wind turbine operation. Resource Systems Engineering. 2009. Supplement to *Sound Level Assessment: Record Hill Wind LLC, Record Hill Wind Project, Oxford County, Roxbury, Maine***

Residential Receiver Position	Distance to Nearest Wind Turbine, Feet	Estimated Hourly Sound Level, $L_{Aeq-Hr}$		DEP Nighttime Limit, dBA	Difference between WTG Estimated Hourly Sound Level and DEP Nighttime Limit (dBA)	
		Siemens MK II	Clipper C96		Siemens MK II	Clipper C96
PL1	6,000	35	36	55	-20	-19
PL2	6,800	38	39	55	-17	-16
PL3	2,800	43	44	55	-12	-11
PL4	3,100	40	41	45	-15	-14
PL5	3,100	40	43	45	-5	-2
PL6	3,500	43	45	55	-12	-10
PL7	8,100	37	37	45	-8	-8
PL8	11,500	37	37	45	-8	-8
PL9	11,000	34	33	45	-11	-12

**Table 3-9: Noise Modeling Results. TRC. 2009. Roxbury and Collector Substation, Application for Site Location of Development Act/Natural Resource Protection Act Permit. Prepared for Central Maine Power.**

Noise Modeling Results		
Protected Area Location	Calculated Project Sound Level	Most Restrictive Hourly Noise Standard
1 – Residence 1 (Property Line) (R1)	44.0	50
2 – Residence 2 (Property Line) (R2)	47.8	50
3 – Residence 3 (Property Line) (R3)	43.3	50
4 – Residence 4 (Property Line) (R4)	40.2	50

**Figure 3-4: Operational Noise Contour Map. TRC. 2009. Roxbury and Collector Substation, Application for Site Location of Development Act/Natural Resource Protection Act Permit. Prepared for Central Maine Power.**

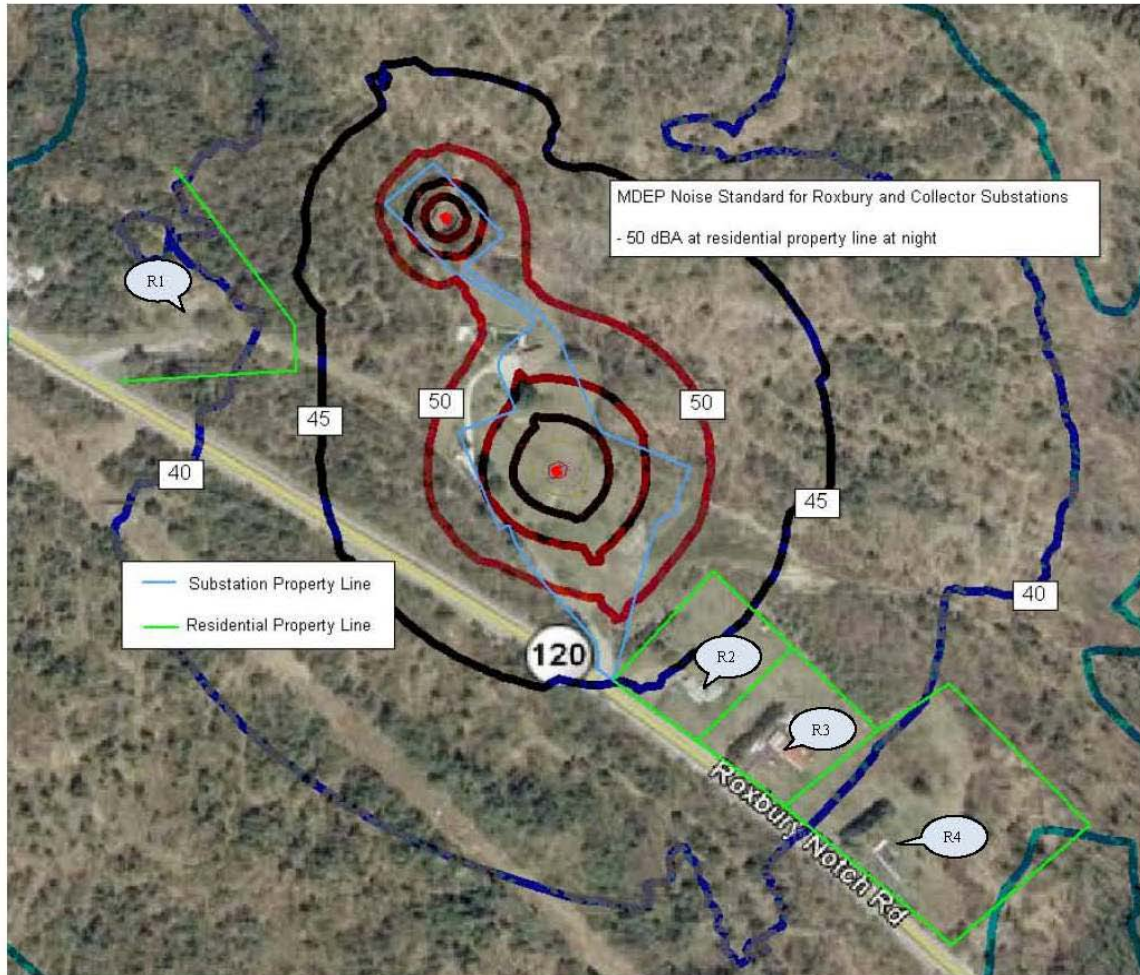
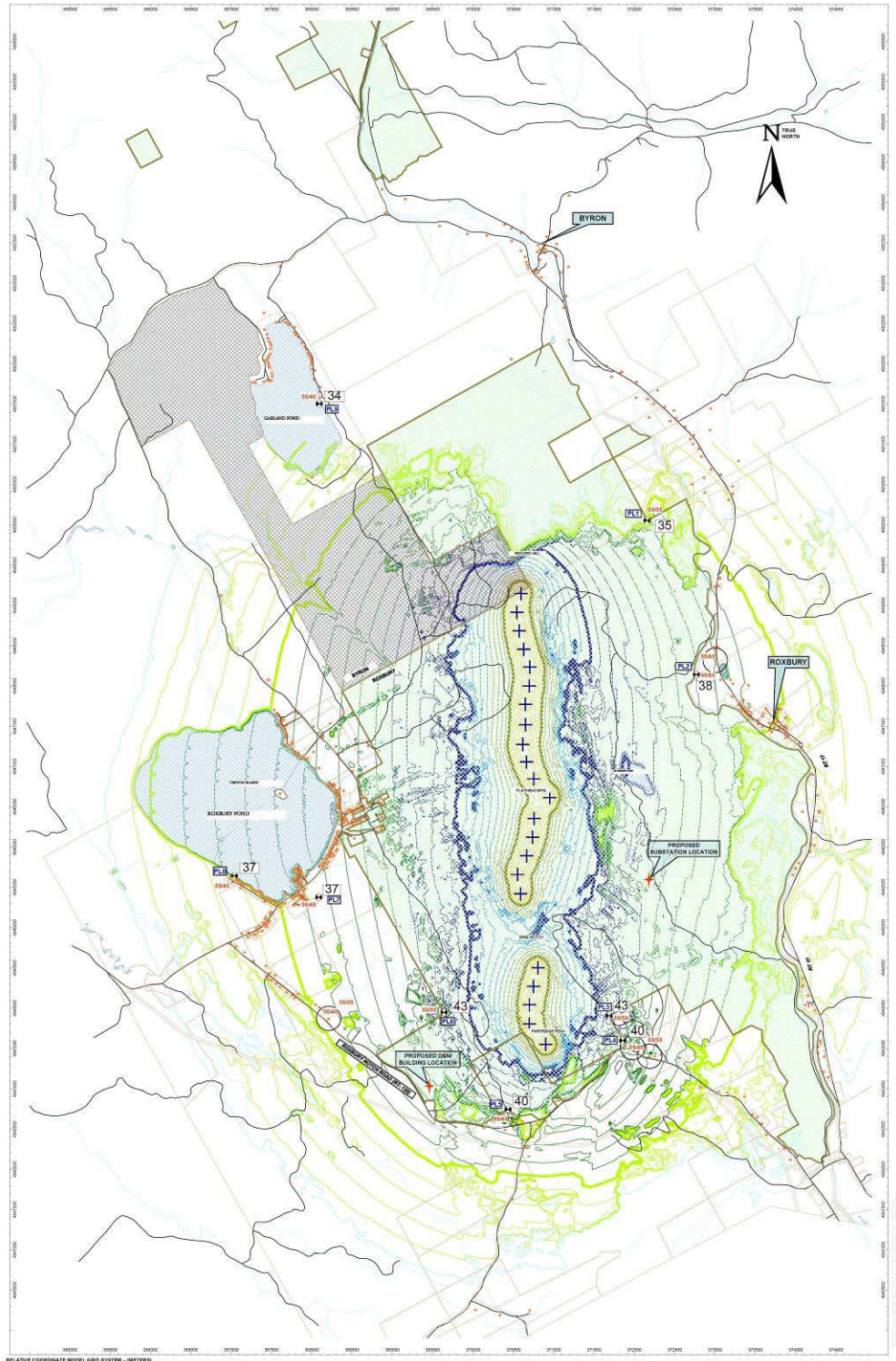


Figure 3-5: Sound Contour Levels for the Record Hill Project



- 35 dBA Sound Level Contour
- 45 dBA (Maine DEP Quiet Nighttime Limit)
- 55 dBA (Maine DEP Daytime Quiet Limit)

**Record Hill Wind**  
 Sound Level Contours  
 SIEMENS SWT 2.3 WIND TURBINES  
 CONTOURS RANGE 28-60 dBA  
 1 dBA INTERVALS

**LEGEND**

	WIND TURBINE LOCATION		WATERBODIES
	DRAWING BOUNDARY		PROJECT BOUNDARY
	PROPOSED LOCATION/RELOCATION		PROP. 605 BOUNDARY
	PROP. 605 BOUNDARY		LANDOWNER (LISTED OR UNLISTED)
	PROP. 605 BOUNDARY		EASEMENT (LISTED OR UNLISTED)

### 3.8 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

#### 3.8.1 REGULATORY FRAMEWORK

##### 3.8.1.1 NEPA

The National Environmental Policy Act of 1969 as amended (NEPA)<sup>2</sup> establishes a Federal policy of preserving important historic, cultural, and natural aspects of our national heritage during Federal project planning.

According to the Council on Environmental Quality (CEQ) NEPA regulations, in considering whether an action may significantly affect the quality of the human environment an agency should consider, among other things, unique characteristics of the geographic area such as proximity to historic or cultural resources<sup>3</sup> and the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP).<sup>4</sup>

The CEQ NEPA regulations also require that to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the National Historic Preservation Act (NHPA).<sup>5</sup>

##### 3.8.1.2 Section 106 of the National Historic Preservation Act

The NHPA establishes the federal government policy on historic preservation and the programs, including the NRHP, through which this policy is implemented. Under the NHPA, historic properties include any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP.<sup>6</sup> Section 106 requires that impacts on significant cultural resources, hereafter called historic properties, be taken into consideration in any federal undertaking. "Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria."<sup>7</sup>

The Section 106 process contains five steps including:

- Initiate Section 106 process;
- Identify historic properties;
- Assess adverse effects;
- Resolve adverse effects; and
- Implement project.

##### 3.8.1.3 Historic Property Criteria

NEPA and NHPA require federal agencies to consider the effect of their undertakings on historic properties. The criteria for listing a potentially historic property (archaeological site or an architectural resource) are defined by the NRHP. These criteria, defined in 36 CFR § 60.4, state

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<sup>2</sup> 42 U.S.C. 4321-4347.

<sup>3</sup> 40 CFR 1508.27(b)(3).

<sup>4</sup> 40 CFR § 1508.27(b)(8).

<sup>5</sup> 40 CFR § 1502.25(a).

<sup>6</sup> 16 U.S.C. 470w (5).

<sup>7</sup> 36 CFR § 800.16(l).



that a resource must be at least 50 years old (unless meeting exceptional criteria) and possess the quality of significance in American history, architecture, archaeology, engineering, and culture and is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- A. Is associated with events that have made a significant contribution to the broad patterns of history;
- B. Is associated with the lives of persons significant in the past;
- C. Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

If a particular resource meets one of these criteria and retains integrity, it is considered as an eligible "historic property" for listing in the NRHP.

#### 3.8.1.4 Application of the Criteria of Adverse Effect

To comply with Section 106 of the NHPA, any effects of the proposed undertaking on properties listed in or determined eligible for inclusion in the NRHP must be analyzed by applying the Criteria of Adverse Effect,<sup>8</sup> as follows:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long term preservation of the property's historic significance.

When Section 106 and NEPA are integrated, project impacts that cause adverse effects under Section 106 are usually considered to be significant.

In Maine, the NHPA is administered by the Maine Historic Preservation Commission (MHPC). Prior to applying for the DOE Loan Guarantee program, the applicant obtained permits (NAE-

<sup>8</sup> 36 CFR § 800.5(a).

2008-03763 and NAE-2009-01866) from the US Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act. As part of the permitting process, the Corps consulted with the MHPC regarding the eligibility of resources that would be adversely affected by the project, and executed a Memorandum of Agreement (MOA) (see Appendix A) that addressed the adverse effects on historic properties. These effect determinations and stipulations are being implemented. DOE reviewed the executed MOA and concurs with its findings and stipulations. Because DOE was not a signatory to the MOA, DOE has consulted with the ACHP, SHPO, and the Corps and has prepared a First Amendment, which amends the executed MOA to include DOE as a signatory. DOE has submitted the First Amendment to the executed MOA to the Corps, the SHPO, and ACHP for review and signature.

### 3.8.2 PROJECT SETTING - PREHISTORIC AND EUROAMERICAN ARCHAEOLOGICAL RESOURCES

The project's area of potential effect (APE) for archaeology was established to include the area of direct impact for the wind farm development area and the Section 270 transmission line and at the proposed substation location as well as all ancillary facilities. Initial research conducted at the MHPC indicated that no prehistoric or archaeological sites are located within one mile of the project area. A survey was conducted to assess the archaeological sensitivity of the project ridgeline and along the Section 270 line. Additionally, seventy test holes located along nine transects were surveyed and none produced evidence of prehistoric or historic period archaeological resources.

Prehistoric settlements within the interior of Maine typically have been associated with streams and rivers, or adjacent to lakes, ponds, and wetlands. Because the project ridgeline is an upland ridge that is far removed from any major water resource, it is unlikely that it was used for settlement. The most likely use by prehistoric peoples would be the procurement of quality stone for the manufacture of stone tools, or possibly mortuary sites. The types of stones used for tools generally had predictable fracture patterns when chipped or reduced. Exposed bedrock at the test location consisted of phyllite grading to phyllite schist with local intrusions of granitic rock and quartz. Although some quartz was present, inspection of the test site did not reveal any stone that might have been useful to prehistoric inhabitants for the manufacture of stone tools.

To assess the sensitivity of the APE for historic period archaeological sites, background research was conducted (a site file review of the known inventory of sites in the project area was conducted that included cartographic analysis and review of primary and secondary sources), and the development of a sensitivity model pertinent to the project environment was developed. This was followed by a site inspection to confirm the presence or absence of potential archaeological resources. The assessment was completed in late October and early November 2007 through map research and a visual inspection of portions of the project area. No indications were found that Euroamerican archaeological resources exist in the APE.

This area had a relatively low likelihood for Euroamerican archaeological resources because the land-use suggests that this corridor was not developed or settled in the nineteenth or twentieth centuries. Based upon a review of historic maps and a field assessment, it was determined that there were very few historic roads or other transportation corridors where settlement would have occurred. Based upon environmental conditions and the lack of known archaeological sites in the area, no additional archaeological investigations were recommended.

The MHPC reviewed the results of this survey and agreed with its findings that no archaeological properties would be affected by the proposed project. As documented in the ACOE wetland permit, the Maine SHPO concurred.

### 3.8.3 PROJECT SETTING - HISTORIC ARCHITECTURAL RESOURCES

A historic architectural reconnaissance survey was conducted to identify historic architectural properties within the project's APE. The APE for the built environment included the area of direct

impact, as well as an indirect APE extending five miles from the ridgeline where there could potentially be indirect impact to properties, primarily in the form of visual effects. No historic properties were identified within the direct impact APE. Therefore, the project would have no direct effects on historic aboveground resources.

The five-mile radius survey area of the wind farm did not include any properties that are listed on or have been formally determined eligible for listing in the National Register. A total of 289 individual structures determined to be at least 50 years old were identified within the 5-mile survey area. The majority of these properties were determined to be ineligible for listing in the National Register either individually or as contributing resources within a historic district. In general, the individual properties characterized as ineligible for the National Register are common, vernacular structures that lack architectural significance or apparent significant historical associations. A large number of the properties have lost architectural integrity due to alterations, including additions, removal of original architectural ornament, replacement of original materials, and replacement of original windows and doors.

An architectural survey was also conducted for the Section 270 line to identify properties listed in the NRHP and those that may be eligible for listing in the NRHP. The APE for direct effects of the Section 270 line was defined as the area of construction for the power line including the area of clearing. For indirect effects, the APE was defined as any area within 0.5 miles of the segment center line. The APE for indirect effects was expanded beyond 0.5 miles for those areas where it was reasonably expected that the transmission line would be visible because of limited intervening topography or tree cover. Four properties in Rumford located on either Congress Street or Hartford Street are listed in the NRHP. In addition, seven historic resources were previously determined to be eligible for listing. These seven resources include three bridges, a paper mill plant and office, an abandoned store, all of which are located in Rumford, and the Mitchell Farmstead, which is located in Mexico and is discussed above. The architectural survey conducted for the Section 270 line identified eight additional individual properties, and the Rumford Downtown Commercial Historic District as potentially eligible for listing in the NRHP. The individual properties that were identified included six homes, a fire station and a church. In their review the MHPC agreed with the eligibility of all the individual properties, but concluded that the buildings within the Rumford Downtown Commercial Historic District did not retain the architectural integrity needed for listing. The MHPC requested additional information on properties listed on Prospect Avenue to determine their potential eligibility, as well as additional information on the abandoned store, which is located within approximately 20 feet of the Section 270 line corridor. Based upon modifications or deteriorated conditions, the other properties on Prospect Avenue were determined not to be eligible for listing. Similarly, it was determined that the abandoned store was not eligible for listing in the NRHP because of the deteriorated condition of the building and because the building was likely not as old as originally estimated and many of the other associated buildings had previously been razed. The MHPC concurred with these findings.

#### 3.8.4 POTENTIAL IMPACTS OF THE PROPOSED ACTION

Nine properties identified during the project historic architectural survey were recommended as potentially eligible for listing in the National Register. Eight of these properties appear to be eligible at the local level as representative examples of local architectural types and for associations with rural agricultural and residential land uses. In addition, the Andover Earth Station may be eligible at the national level based on its historical association with the operation of the Telstar satellite. This list of potentially eligible sites was provided to the MHPC for their review, and the MHPC concurred with the eligibility findings.

Four of the nine properties evaluated as eligible for listing in the National Register have no potential for views of the project, and a determination of “*no effect*” was made for these properties. The Andover Earth Station may have views of the project at a distance of approximately 3.4 miles to the east, but the views would likely be substantially filtered by tall

vegetation on and around the property. Since the significance of the Andover Earth Station stems from innovations in communications and satellite engineering technology and the location of the property as a prime site to receive signals, the project should have no effect on the characteristics that qualify the property for National Register listing. On their review, the MHPC concurred with the finding of “no effect” for these five properties. A finding of “no adverse impact” was made for a sixth property where turbines would be visible, but the view would be screened by an intervening mountain. The MHPC also concurred with this finding.

The remaining three National Register eligible properties are nineteenth-century farmsteads that retain clusters of historic agricultural buildings set within rural landscapes defined by open fields bordered by mature natural forest. Two of the properties (Austin Farmstead and Knapp Farmstead) located on Swift River Road in Byron would have views of approximately 14 turbines at distances ranging between 1.7 and 3.3 miles. The third property, the Mitchell Farmstead, located on Roxbury Road in Mexico would have views of most of the 22 turbines at distances ranging between 3.7 and 5.9 miles. Figures 3-6 through 3-13 provide existing views and photo simulations of the project area from these properties. Based upon this information, the MHPC determined that the proposed project would have an “adverse effect” on these three properties. The Advisory Council on Historic Preservation (ACHP) chose not to participate in consultations related to the finding of “adverse effect”, and the MHPC and the Corps entered into a MOA in regard to the proposed project. Under the MOA, these three properties must be documented to the standards of the Maine Historic Building Record (MHBR). Record Hill LLC has submitted the documentation to the MHPC.

In addition to the historic architectural resources discussed here, the AT, which has been identified as eligible for listing in the National Register, is located within eight miles of the project area. The Old Blue Mountain viewpoint on the Appalachian National Scenic Trail is located 7.8 miles from the nearest turbine. A two-mile section of the AT is located within eight miles of the project, but there would be few views of the project from this section of trail because of intervening topography, including other mountain ridgelines. The turbines should have a minor impact on the view from Old Blue Mountain, but the rest of the trail is in forested land and would not have a view of the project. Due to their distance and relatively small apparent size, the turbines would not dominate the landscape or create an obvious contrast in scale. Correspondence between the Maine SHPO, the Corps, and the Applicant reviewed the potential effects on the AT, but due to the distance and limited views from the AT to the proposed project, no mitigation measures were required or incorporated into the MOA.

No Euroamerican archaeological resources or precontact archaeological sites (i.e., Native American resources) were identified in the APE; therefore, there would be no effect on these resources.

Based upon a review of the U.S. Department of Housing and Urban Development’s Tribal Directory Assessment Tool<sup>9</sup>, there are no Native American tribes/bands with an interest in the project area.

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<sup>9</sup> <http://www.hud.gov/offices/cpd/environment/tribal/>



**Figure 3-6: Existing panoramic view of project area from Austin Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-7: Photosimulation of project area from Austin Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-8: Photosimulation [normal view] of project area from Austin Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-9: Existing panoramic view of project area from Knapp Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-10: Photosimulation of project area from Knapp Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-11: Photosimulation [normal view] of project area from Knapp Farmstead. July 2009. Terrence J. DeWan & Associates**





**Figure 3-12: Photosimulation of project area from Mitchell Farmstead. July 2009. Terrence J. DeWan & Associates**



**Figure 3-13: Photosimulation of project area from Mitchell Farmstead. Because of cloud cover the model was superimposed over the photo. July 2009. Terrence J. DeWan & Associates**

### 3.8.5 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.9 AESTHETICS AND VISUAL RESOURCES

The term aesthetics typically refers to the perceived visual impression of an area, such as of a scenic view, open space, or architectural interest. The aesthetic value of an area is a measure of its visual character and *visual quality* combined with *viewer response* (Federal Highway Administration 1988). This combination may be affected by the components of a project (e.g., buildings constructed at a height that obstructs views, hillsides cut and graded, open space changed to an urban setting), as well as changing elements, such as light, weather, and the length and frequency of viewer exposure to the setting. Aesthetic impacts are thus defined as changes in viewer response as a result of project construction and operation. As described below, visual character, visual quality, and viewer response are key aspects used in the visual impact assessment process.

Visual character is the appearance of the physical form of the landscape, composed of natural and human-made elements, including topography, water, vegetation, structures, roads, infrastructure, and utilities; and the relationships of these elements in terms of form, line, color, and texture (U.S. Forest Service 1995; Federal Highway Administration 1988).

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity as modified by its visual sensitivity (Federal Highway Administration 1988; Jones et. al. 1975).

- *Vividness* is the visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape.

High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

Viewer response is the psychological reaction of a person to visible changes in the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., roadway or trail) (Federal Highway Administration 1988). The measure of the quality of a view must be tempered with the overall sensitivity of the viewer and viewer response. Viewer sensitivity is dependent on the number and type of viewers and the frequency (e.g., daily or seasonally) and duration of views (i.e., how long a scene is viewed). Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and the viewing duration. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middleground zone from the foreground zone to 3–5 miles from the viewer, and the background zone from the middleground to infinity (Jones et. al. 1975).

The concepts presented above are combined in a visual impact assessment process, which involves identification of the following:

- Visual character and quality of the project area,
- Relevant policies and concerns for protection of visual resources,

- General visibility of the project area within an eight mile area surrounding the proposed project area and site using descriptions and photographs, and
- Viewer response and potential impacts.

### 3.9.1 REGULATORY FRAMEWORK

#### 3.9.1.1 Federal

##### **National Historic Preservation Act**

Under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (36 CFR Part 800), federal agencies are required to take into account the effect that projects they undertake might have on historic properties. This includes both direct effects in the form of the taking or modification of an historic property, as well as indirect effects that might result from the project. There are nine structures eligible for listing on the National Register of Historic Places (National Register) within eight miles of the project area, refer to Section 3.8, Historic, Archaeological, and Cultural Resources. As structures eligible for or listed on the National Register, these are considered scenic resources of state or national significance under Maine Wind Power Development Law and are described in further detail below.

##### **Appalachian National Scenic Trail**

The Appalachian National Scenic Trail (AT) is a designated national scenic trail under P.L. 90-543, SEC. 5. [16 U.S.C. 1244] (a) of the National Trails System Act and is protected under this Act. Under the Act, a national scenic trail is established for "extended trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass. National scenic trails may be located so as to represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms which exhibit significant characteristics of the physiographic regions of the Nation" [P.L. 90-543, SEC. 3. [16 U.S.C. 1242] (a)].

#### 3.9.1.2 State

##### **Maine Wind Power Development Law**

Under the Maine Wind Power Development Law (S.P. 908), Public Law Chapter 661, the MDEP must determine if a proposed wind energy development project would "significantly compromise view from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance" [Sec. A-5. 35-A MRSA § 3402(2)(C)]. As defined in Sec. A-7. 35-A MRSA c. 34-A § 3451(9) scenic resources of state or national significance include:

- A national natural landmark, federally designated wilderness area or other comparable outstanding natural and cultural features, such as the Orono Bog or Meddybemps Heath;
- A property listed on the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966, as amended;
- A national or state park;
- A great pond that is identified as one of the 66 great ponds having outstanding or significant scenic quality in the *Maine's Finest Lakes* (Maine State Planning Office 1989) study published by the State Planning Office or one of the 280 great ponds that are designated as outstanding or significant from a scenic perspective in the *Maine Wildland Lakes Assessment* (Maine Department of Conservation 1987) published by the Maine Land Use Regulation Commission;
- A segment of scenic river or stream identified as having unique or outstanding attributes listed in Appendix G of the *Maine Rivers Study* (Maine Department of Conservation 1982)

- A scenic viewpoint located on state public reserve land or on a trail that is used exclusively for pedestrian use, such as the Appalachian Trail, that the Maine Department of Conservation designates by rule adopted in accordance with § 3457;
- A scenic turnout constructed by the Maine Department of Transportation pursuant to Title 23 § 954 on a public road that has been designated by the Commissioner of Transportation pursuant to Title 23 § 4206(1)(G) as a scenic highway; or
- Scenic viewpoints located in the coast area as defined by Title 38§1802(1) that are ranked as having state or nation significance in terms of scenic quality.

### 3.9.2 PROJECT SETTING

The general visibility of the proposed wind energy project lies within a surrounding eight mile area. This area is comprised of gently rolling forested terrain. Views of the project area are generally provided from local roadways, including the Rangeley Lakes Scenic Byway (SR17) that travels along the Swift River valley. Views along SR17, south of Roxbury, are most often limited to the roadway corridor by forested lands lining the roadway and two hills that parallel the roadway to the west. North of Roxbury, there are no intervening hills, the landform slopes gently up to Record Hill, and there are several wider floodplain areas that are in agricultural production. These flat, open portions of land allow views up to the Record Hill ridgeline and to the mountains and ridgelines east of the roadway.

The project area is a mix of pastoral and natural landscapes, and development is not a dominant visual feature. Dark green evergreen trees contrast against lighter green deciduous trees and understory shrubs that give way to hues of yellow, orange, red, and brown in the fall. Seasonal interest such as wildflowers in the spring, deciduous fall colors, and snow covered ground and mountains transform viewsheds throughout the year. The vividness, intactness, and unity of the project area moderately high due to the combination of mainly undeveloped, natural landscapes combined with developed areas that do not dominate the landscape. The project area landscape is scenic, as are areas surrounding the project area, and the presence of human activity upon the landscape does not greatly detract from the natural character, is generally centralized in specific areas, and does not dominate or greatly segment natural areas throughout the project area.

Table 3-10 summarizes the presence or absence of state or national scenic resources within eight miles of the proposed project.

**Table 3-10 Presence of State or National Scenic Resources within Eight Miles of the Proposed Project**

<b>State or National Scenic Resource</b>	<b>Feature</b>	<b>Location</b>
National Natural Landmarks	None	n/a
Historic Resources	Andover Earth Station	3.4 miles west of the proposed turbines, off Roxbury Notch Road
	Austin Farmstead	1.7 miles northeast of the proposed turbines, on Swift River Road in Byron
	Knapp Farmstead	1.8 miles northeast of the proposed turbines, on Swift River Road in Byron
	Mitchell Farmstead	3.7 miles southeast of the proposed turbines, on Roxbury Road in Mexico
National or State Park	Mount Blue State Park	over eight miles northeast from the closest turbine
	Appalachian Trail	7.8 miles west of the proposed turbines
Great Ponds	None	n/a
Scenic Rivers	Swift River	Between 1 and 2 miles east of the proposed turbines
	West Branch of the Ellis River	5.5 miles west of the proposed turbines
Scenic Viewpoints or Trails	Appalachian Trail at Old Blue Mountain	7.8 miles northwest of the proposed turbines
	Tumbledown Mountain and trails	6.4 miles northeast of the proposed turbines
	Little Jackson Mountain and trails	7 miles northeast of the proposed turbines
	Rangeley Lakes Scenic Byway, Height of Land turnout	State Route 17 in project area is part of Rangeley Lakes Scenic Byway. Height of Land Turnout is 11.5 miles northwest of proposed turbines.

Of the nine properties within eight miles of the wind energy project that are eligible for listing on the National Register, only four properties would have views of the project area, which are the Andover Earth Station, Austin Farmstead, Knapp Farmstead, and Mitchell Farmstead. These properties are described in detail in Section 3.8.

The closest unit of the National Park Service is the AT, which is located approximately 7.8 miles west of the nearest turbine. However, there would be few views of the project from this section of trail because of intervening topography, including other mountain ridgelines. The turbines would be visible from Old Blue Mountain, but the rest of the trail is in forested land and would not have a view of the project. In addition to the AT, scenic viewpoints from trails include trails near the summits of Tumbledown Mountain and Little Jackson Mountain.

While there are no great ponds in the project area, there are three ponds that occur in the project area that possess high quality scenic values. These include Ellis Pond (also known as Roxbury Pond or Silver Lake) and Little Ellis Pond (also known as Garland Pond) to the west of the proposed turbines and Bunker Pond to the east of the turbines. There are no camps on Bunker

Pond, but there are camps on both Ellis and Little Ellis Ponds. Camps on Ellis Pond are located on the eastern, southern, southwestern sides of the pond, and most camps are oriented inward toward the pond. The nearest homes are approximately one mile from the nearest turbine, along the eastern side of the pond, where camps are orientated with their backs toward the project area. Homes with the most direct views to the Record Hill ridgeline are on the southwestern side of the pond, where camps face the project area that is located two to three miles to the east. These views cross the pond surface to the rising, forested mountains in the middleground. For Little Ellis Pond, camps on the east side of the pond are generally orientated to the west away from the project and camps along the northwest have views toward the project area, in the middleground, through the shoreline buffer. All of the ponds are used for recreation and include passive recreational uses such as fishing, boating, and nature viewing. Views from the ponds are picturesque and include the ponds' water surface back dropped by the surrounding rising mountains. These scenes transform throughout the day, from sunrise to sunset; seasonally; and with weather conditions such as a clear versus foggy conditions. The project would be visible from the pond itself as viewers take in their surroundings when using the ponds.

The Swift River and the West Branch of the Ellis River are noted for their scenic value by the *Maine Rivers Study* (Maine Department of Conservation 1982). Both of these rivers are categorized by the study as "C" rivers, meaning that they are rivers that "possess natural and recreational values with regional significance." The Swift River parallels SR17 on the east side of the project area and is also noted for geologic-hydrologic features (e.g., waterfalls and rock formations) and whitewater boating. The Swift River Falls are located less than 2 miles south of Roxbury, 1 mile northeast of the proposed Roxbury Substation and approximately 2 miles east of the proposed turbines. Two of the most notable sections of the Swift River are the Coos Canyon section and Swift River Falls (also known as Three Falls). Dense riparian vegetation and intervening micro-topography limit views to the immediate river corridor; however, some views to areas beyond the immediate river corridor are available from Swift River Falls where there are gaps in vegetation. These views would be most open during the fall and winter months when deciduous trees drop their leaves; however, there would be fewer viewers during this time because of limited recreational use of the river in fall and winter. The existing transmission line is not visible from the falls and the Section 270 transmission line would not be visible. The West Branch of the Ellis River in Andover is also noted for geologic-hydrologic features.

The 42-mile section of the Androscoggin River between Rumford and the New Hampshire state line is rated as a "Class C" river by the *Maine Rivers Study* for its Critical/Ecologic and Canoe Touring resources. Under this study, the scenic resources of this section of the river were not considered unique or significant. Parts of the CMP Section 270 transmission line would be visible from the Androscoggin River.

The nearest scenic turnout constructed by the Maine Department of Transportation along a public road is the Height of Land on the Rangeley Lake Scenic Byway (Route 17), which is 11.5 miles north of the project. There would be no views of the project from this turnout therefore there is no expected visual impact.

Memorial Park is located on the south side of Route 108, at the end of Congress Street, and the Rumford (Pennacook) Falls overlook park is located below the Information Center on the west side of the Androscoggin River on Bridge Street. Memorial Park has foreground and mid-ground views that include the wooded hillside, power plant on the Androscoggin River, gaging station, several transmission lines, concrete abutments from the outflow channel, and buildings in downtown Rumford. Chain link fencing blocks most Androscoggin River views from inside the park.

### 3.9.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

#### Wind Turbines and Associated Infrastructure

Construction of the proposed project would create temporary changes in views of the project area. Construction activities would introduce heavy equipment and associated vehicles, including bulldozers, excavators, and trucks. Cranes would be used to erect the turbines and meteorological towers, and viewer groups would be able to see the turbines being raised by the cranes. Travelers on State Route 17 would not be accustomed to seeing construction activities of the cranes erecting the turbines; however, much of their focus is on driving and roadway conditions, and their sensitivity to such impacts would be moderately low. Impacts of construction on other viewer groups are not considered adverse because construction would take 6–12 months, and they would only experience a short-term change in the visual character.

In its review of the project, the MDEP found that the wind generating facilities (wind turbines) and associated facilities would not have “an unreasonable adverse effect on the scenic character or existing uses related to scenic character of scenic resources of state or national significance”. The project would, however, alter the existing visual environment and views within the project area. In their general review, the MDEP noted that although some of the turbines and the permanent meteorological towers would have nighttime safety lighting, no scenic resources of state or national significance within eight miles of the project are expected to have viewers after dark and would, therefore, not be affected by FAA hazard lighting. The MDEP also noted that the ridgeline access road, Mine Notch Road, would only be visible to the general public from the intersection of Mine Notch Road with SR120. Similarly, the crane paths that provide access along the ridgeline would be screened from most views by vegetation. The project meteorological towers would have limited visibility beyond one mile because of their profile and color. Finally, the electrical collector substation and O&M building would be visible from SR120 (the project office would be located in an existing single-family home, which also is visible from SR120).

The proposed project involves installing wind turbines along the ridgeline of Partridge Peak, Flathead Mountain, and Record Hill. It would introduce large, vertical, artificial structures with revolving turbine blades into the viewshed and would change the ridgeline from one that is predominantly natural to one with distinct artificial features that would be highly visible to residents and businesses, roadway travelers, and recreationists on the pond or on hiking trails. Relative to baseline conditions, these turbines would substantially alter the existing visual character and quality of views toward the ridge. As shown in the simulation for Ellis Pond (Figure 3-14), at close distances the turbines would be noticeable. The turbines become prominent visual features on the ridgeline and alter the visual character and quality for all viewer groups. In addition, movement of the turbines from this vantage would be fairly noticeable due to close proximity, and this motion would likely draw more focused viewer attention toward the structures than would stationary structures of equal size and visual mass. However, as shown in other simulations (Figures 3-6 to 3-13) the turbines would not be very noticeable from farther vantage points (e.g., Byron or Mexico) and would not affect the existing visual character. Moreover, movement of the turbines from this vantage would not be very noticeable due to distance.

Of the nine properties eligible for listing on the National Register, only four properties would have views of the project area, which are the Andover Earth Station, Austin Farmstead, Knapp Farmstead, and Mitchell Farmstead. The Andover Earth Station may have views of the project at a distance of approximately 3.4 miles to the east, but the views would likely be substantially filtered by tall vegetation on and around the property. The remaining three National Register eligible properties are nineteenth-century farmsteads that retain clusters of historic agricultural buildings set within rural landscapes defined by open fields bordered by mature natural forest. As shown in Figures 3-6 to 3-11, respectively, the Austin and Knapp Farmsteads that are located on Swift River Road in Byron would have views of approximately 14 turbines at distances ranging between 1.7 and 3.3 miles. The Mitchell Farmstead, located on Roxbury Road in Mexico, would

have views of most of the 22 turbines at distances ranging between 3.7 and 5.9 miles, as shown in Figures 3-12 to 3-13. Because of the impacts to visual resources from these vantage points, the MHPC determined that the proposed project would have an “*adverse effect*” on these three properties. The Army Corps of Engineers (ACOE) determined and the MHPC agreed that there were “*no prudent or feasible alternatives to avoid the adverse effect*” on these properties. The MHPC and the Corps entered into a Memorandum of Agreement (MOA) in regard to the proposed project. Under the MOA, these three properties must be documented to the standards of the Maine Historic Building Record (MHBR) and submitted into the MHBR on or before November of 2010.

The Swift River and West Branch of the Ellis River, are rivers identified in the *Maine Rivers Study* as having unique/significant scenic resource values that would be affected by the proposed project. The turbines would be visible from some section of this river. The turbines would not be visible from Coos Canyon and only limited views are likely from Swift River Falls because of dense vegetation and intervening micro-topography. While views from Swift River Falls would be more prevalent during the fall and winter when deciduous trees are bare, there are fewer recreational viewers on the river at this time of year. For these reasons, there is expected to be very limited visual impact on the Swift River as a result of the project.

Three scenic viewpoints or trails, including the AT, Tumbledown Mountain and its associated trails, and Little Jackson Mountain and its associated trails would have views of the proposed project. A two-mile section of the AT is located within eight miles of the project, but there would be few views of the project from this section of trail because of intervening topography, including other mountain ridgelines. The turbines should have a minor impact on the view from Old Blue Mountain, but the rest of the AT is in forested land and would not have a view of the project. Due to the distance from the AT and their relatively small apparent size, the turbines would not dominate the landscape or create an obvious contrast in scale. The maximum view of the project from Tumbledown Mountain would occur from the mountain’s west peak. This viewpoint would be approximately 5.7 miles from at nearest turbine, and all of the project turbines would be visible. Views from the summit of Little Jackson Mountain would be similar to the West Peak of Tumbledown Mountain although the turbines would appear small since Little Jackson Mountain is further from the project area.

Views from Ellis, Little Ellis, and Bunker Ponds would be affected by the proposed project. As describe above, most of the camps on Ellis Pond are located on the east side of the pond and therefore are orientated away from the project, but the project would be visible from the pond itself. The nearest homes are approximately one mile from the nearest turbine and those homes with the most direct view are on the west side of the pond where turbines would be seen at distances of two to three miles. For Little Ellis Pond, camps on the east side of the pond are generally orientated to the west away from the project and for camps along the northwest shoreline turbines would be seen through the shoreline buffer at distances of two-and-a-half to five miles. As with Ellis Pond, the project would be visible from the pond itself. Figure 3-14 provides a photo simulation of the project from Ellis Pond.

#### CMP Section 270 Transmission Line

The Section 270 line upgrade includes removing existing vegetation and widening the existing transmission line corridor from 100 feet to 150 feet and constructing a new transmission line parallel to the existing Section 59 transmission line that has wooden utility poles. The transmission line would visible from the following scenic resources:

- Memorial Park in Rumford and Rumford (Pennacook) Falls overlook park located below the River Valley Chamber of Commerce Information Center (Information Center) in Rumford;
- Bean Brook and Scotty Brook in Rumford;
- Swift River in Rumford, Mexico, and Roxbury and Swift River Falls;



- SR17, part of the state-designated Rangeley Lakes Scenic Byway in Roxbury; and
- One residential property in Mexico and one in Roxbury that are eligible properties for the National Register of Historic Places.

The new transmission line should have a relatively minor visual impact on the view from the Androscoggin River, because the current viewshed contains multiple transmission lines, a gaging station, a hydroelectric powerhouse, and the Route 2 substation near Rumford Falls where the new transmission line ends and the new transmission lines are in keeping with this existing visual character.

Memorial Park is located on the south side of Route 108, at the end of Congress Street, and the Rumford (Pennacook) Falls overlook park is located below the Information Center on the west side of the Androscoggin River on Bridge Street. Memorial Park has foreground and mid-ground views that include the wooded hillside, power plant on the Androscoggin River, gaging station, several transmission lines, concrete abutments from the outflow channel, and buildings in downtown Rumford. Chain link fencing blocks most Androscoggin River views from inside the park. From the east side of Memorial Park, two transmission structures (70-100' tall) and the conductors would be visible on the wooded hillside above Prospect Avenue at a distance of 0.25 miles. The addition of two transmission structures should have a minor visual impact on the view from the park and the surrounding area, because of similarity to existing structures in the area. The Rumford Falls overlook is located below the Information Center and is oriented to the south-southeast, facing the falls. The transmission corridor is located south of the overlook, and would be partially blocked by riverside trees from most locations. Where the new transmission structures are visible, they would be seen in the context of the power plant, the gauging station, and the other transmission lines that are located in the vicinity of the falls. Therefore, the transmission line would only be partially visible from these locations and there would not be a significant visual impact on either location. The visual impact on the view from the overlook area would be slight to moderate, depending upon the viewer's location.

Bean Brook is located south of Swain Road near the proposed Pole 26. An existing snowmobile bridge, the Ivan M. Churchill Memorial Snowmobile Bridge, crosses this stream within the cleared transmission line corridor. The proposed corridor clearing would occur on the west side of the existing corridor and away from the snowmobile bridge. Because trail users are accustomed to the existing cleared corridor, additional widening of the corridor and structure replacement would have a minimal visual impact. Scotty Brook is located south of Isthmus Road near the proposed Pole 49. The stream is located at the base of a steep grade and is generally not visible to people passing by on Isthmus Road. The additional clearing proposed for the upgrade would have minimal visual impact at Scotty Brook.

The Roxbury section of Route 17 is the southernmost extent of the State-designated Rangeley Lake Scenic Byway. The byway becomes a National Scenic Byway at the Byron/Township D line, north of the Section 270 line upgrade. There are no official pull-offs or scenic overlooks along Route 17. The existing transmission corridor is primarily located on the east side of a series of pronounced hills / small mountains. Despite its elevated location, it is barely visible in the middleground from Route 17 throughout its length, primarily due to the density of the surrounding forestland and an alignment that avoids the steepest topography. To someone who is looking for it, the existing transmission corridor may be seen as a subtle change in the color of the vegetation in a few locations on Route 17 on the east side of the Swift River in Mexico and Roxbury. The existing transmission structures are very difficult to see due to their color and limited height, especially in leaf-on conditions. The additional corridor width and taller structures for the Section 270 line would increase the corridor visibility somewhat, but views would still be intermittent from Route 17. Due to the limited visibility of the transmission line outside of the transmission corridor, there would be relatively minor contrasts in line from Section 270 to the scenic byway.

The two homesteads noted as eligible by the National Register of Historic Places that would have views of the Section 270 transmission line are the Mitchell Farmstead in Mexico and a farmstead

located at 1805 Roxbury Road in Roxbury. At its closest point, the Mitchell Farmstead is located approximately 0.75 miles east of the transmission line on Route 17. From Route 17 near the Mitchell Farmstead, the existing transmission line is visible as a faint line on the hills on the west side of the Swift River. Several of the existing transmission structures are visible, but blend in well with the surrounding trees because they are wooden and none of the structures break the horizon line. Section 270 would be slightly more visible due to the additional cleared width of the transmission corridor and the additional height of the transmission structures. With time, the contrasts in color, line, and texture would diminish as the transmission structures weather and the vegetation on the upper edge of the transmission corridor starts to fill in. Views looking west from the Mitchell Farmstead toward the transmission corridor are presently screened by stands of deciduous trees on the west side of Route 17 and as such the proposed transmission corridor upgrade would have a minimal visual impact. There would be no visual impact on the farmstead located at 1805 Roxbury Road. This farmstead is located 2.8 miles from the transmission line corridor and visibility would be screened by vegetation and intervening topography.

In addition to potential impacts to scenic resources, the visual analysis reviewed potential impacts at road crossings and to nearby residences. The Section 270 transmission line corridor would cross four public roads: Route 2 in Rumford, Swain Road in Rumford, Isthmus Road in Rumford, and Route 120 in Roxbury. The Route 2 crossing would connect Section 270 to the Route 2 substation. No visible changes are anticipated at the substation other than the installation of conductors between the substation and the Pole 1. It is likely that an unoccupied house and attached shed on Route 2 would be removed to accommodate this crossing. Other homes in-town Rumford would see little impact. The tops of one transmission structure and its associated conductors may be visible from one home at the northern end of High Street. Other homes at the north end of High Street are elevated above the existing transmission line corridor and views would be screened by dense vegetation surrounding the homes. The existing transmission line corridor crosses both Swain Road and Isthmus Road. The proposed widening and use of taller structures would have little affect along Isthmus Road because the crossing occurs at a sharp reverse curve, making the corridor only briefly visible to passing motorists. There are no homes with the view of the transmission line corridor on Isthmus Road. The changes associated with the upgrade would be more visible from Swain Road since the crossing occurs along a straightaway; however the overall effect would not be significant. There are two homes on Swain Road near the transmission line crossing. Existing vegetation that screens both of these homes would remain undisturbed by the proposed widening. The Route 120 crossing would be the new crossover line. The crossover line would be visible from Route 120 and the new substation would be visible to motorist traveling southeast at this crossing. The new substation would also be visible to northbound motorist along the site access drive. The site would be generally well-screened from Route 120 by existing vegetation, and plantings would be installed at the entrance to restore any vegetative buffer that is cleared for construction. The three homes west of the substation may have views of the substation from their backyards, but an existing buffer along the western boundary of the substation provides a relatively dense vegetative screen for the homes and portions of their backyards. However, some additional plantings may be needed to further minimize visual impacts.

#### 3.9.4 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

**Figure 3-14: Photosimulation from Ellis Pond. Terrence J. DeWan and Associates**



### 3.10 SHADOW FLICKER

#### 3.10.1 PROJECT SETTING

According to the Maine Site Location of Development Act, a proposed wind energy development must demonstrate that it has been designed to avoid unreasonable adverse shadow flicker effects. Shadow flicker caused by wind turbines is defined as alternating changes in light intensity caused by the moving blade casting shadows on the ground and stationary objects.

Shadow flicker from wind turbines is the effect resulting from the shadows cast by the rotating blades of the turbine on sunny days. Shadow flicker is generally experienced in areas near wind turbines where the distance between the viewer and blade is short enough that the glare from the sunlight is insufficient to conceal the blade. When the blades rotate, this shadow creates a visual pulsing effect with the sun known as shadow flicker. From longer distances, however, the wind turbine covers an increasingly smaller portion of the sun and light rays would "recombine" to eliminate the shadow flicker effect. Shadow flicker is greatest in the winter months as the angle of the sun is low and casts a longer shadow. The effect may be more or less pronounced depending on the intensity of the sun/shadow contrast and the distance from the turbines to a receptor. The effect is most pronounced during sunrise and sunset on clear days, and on receptors closer than 1,000 feet to a turbine.<sup>10</sup> At distances of 3,280 feet (1,000 meters) from turbines, the results of shadow flicker become unperceivable.

#### 3.10.2 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The 22 potential turbine sites were modeled using the WindPRO software model (EAPC 2008). This software is designed to simulate the path of the sun over the course of a year in order to predict the area where shadow flicker is likely to occur. It is a worst case prediction, assuming the sun is shining each day, and does not take into account vegetation screening between a turbine and a receptor. It also assumes that the turbines are always operating and facing perpendicular to the receptor. The project is situated such that no structures are located within 1,000 feet of a turbine with the nearest structure located approximately 2,345 feet from the turbine string. This nearest structure is abandoned and is not habitable. The shadow flicker analysis was designed to assess any potential impact to residences in the vicinity of the project; Figure 3-15 displays the results. This analysis quantified impacts out to 3,280 feet (1,000 meters). Based upon this analysis four potential receptors were identified. Each of these receptors is located south of the turbine string. Of the four potential shadow flicker receptors analyzed using the WindPRO software, none showed a possibility of any shadow flicker impact.

#### 3.10.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

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<sup>10</sup> Environmental Impacts of Wind Energy Projects, National Academies Press, 2007, p. 160.

EAPC Wind Energy Services, LLC

Client:  
Record Hill Wind LLC

November 2008

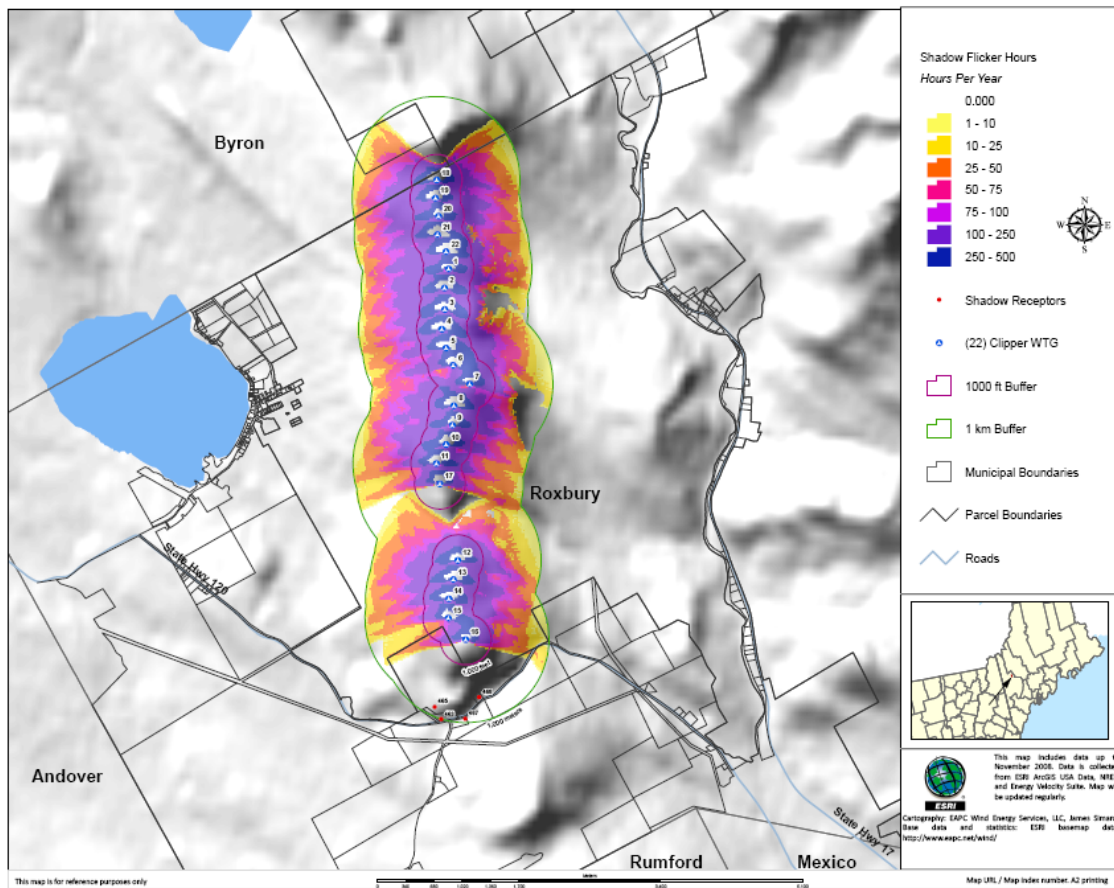
**RECORD HILL WIND FARM**  
SHADOW FLICKER HOURS- RECEPTORS**EAPC** WIND ENERGY SERVICES, LLC

Figure 3-15 Shadow Flicker Map

### 3.11 OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY

This section describes concerns related to the health and safety of the public, of construction workers building the wind power generation facility and associated components, and workers who would operate the facility once it is operational.

#### 3.11.1 REGULATORY FRAMEWORK

Occupational health and safety rights for both construction workers and workers at the completed wind generating facility are protected through the federal Occupational Safety and Health Act of 1970 (29 USC 651 *et seq*). Under this act, the U.S. Congress created the Occupational Safety and Health Administration (OSHA), an agency of the U.S. Department of Labor. OSHA's mission is to assure the safety and health of American's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. States may have additional laws and regulations that build on the Occupational Safety and Health Act.

In regard to commercial wind power development in Maine, the MDEP has specific set back recommendations related to the placement of wind turbines. For public safety, wind turbines should be set back a minimum of 1.5 times the maximum blade height of the wind turbine from any property line, occupied structure, or public areas.

### 3.11.2 PROJECT SETTING

Construction sites can be high-risk environments with the potential for falls, trips, impacts, exposure to hazardous materials, and other injuries. The disturbance of contaminated soils introduces an additional risk of hazardous material exposure, which could lead to various medical conditions depending upon the contaminant, the level of exposure, and the individual exposed to the contaminant. These medical conditions include, but are not limited to, headaches, nausea, respiratory illness, skin reactions, and increased risk of cancer. A search of the EPA's EnviroMapper website indicates that there is no documented contamination at the project ridgeline or the property where the office, O&M building, and collector substation would be located.

Construction sites also can pose a safety hazard for the general public who access the site without authorization. These sites may have open holes in the ground into which an individual could fall, and structures in various stages of completion that could pose a fall hazard if used for climbing. Workers at the Record Hill facility would be using very few products that would be characterized as hazardous materials. These materials include antifreeze, various petroleum products, and non-lead based paint. Relatively small amounts of these various materials would be stored at the project O&M building. All workers with the potential for exposure to hazardous materials would be trained as to proper handling procedures and would be provided with the appropriate personal protective equipment, as needed.

### 3.11.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

All project activities during construction, operation and decommissioning would be carried out in compliance with applicable OSHA requirements, which should reduce potential negative effects on workers. Access to the ridgeline portion of the project area would occur primarily from a single access point, Mine Notch Road, which should limit the likelihood of the general public being exposed to health and safety hazards during construction.

Since there is no contamination documented in the project area, the potential for construction workers to be exposed to contaminated soils is minimal.

Daily operations of the project would involve minimal storage and use of hazardous materials. Storage and handling of materials is addressed in the project SPCC Plan, which would be developed prior to initial operation.

The MDEP guidance recommends that turbines be setback 1.5 times the maximum blade height from any property line, occupied structure, or public areas. Based upon the blade height of the Siemens SWT 2.3-93 turbine, the setback for these structures should be 622.5 feet. Twenty of the 22 proposed turbines would be located more than this minimum setback distance of 622.5 feet. Two parcels are located at less than this setback distance, although neither parcel is currently used for residential purposes. One turbine would be located at 175 feet from a property boundary and one would be located approximately 450 feet from a property boundary. Both of the affected property owners provided waivers stating that they had no objections with the proposed location of these turbines.

### 3.11.4 INTENTIONALLY DESTRUCTIVE ACTS

Wind generation projects can be the subject of intentional destructive acts ranging from random vandalism and theft to sabotage and acts of terrorism intended to disable the facility. Acts of vandalism and theft are far more likely to occur than sabotage or terrorism. Theft usually involves equipment at substations and switchyards that contain salvageable metal when metal prices are high. Vandalism usually occurs in remote areas and is more likely to involve spontaneous acts such as shooting at equipment.

Protections against theft include fencing, warning signs, lighting, locks, and alarm systems around substations where material and equipment is housed. The presence of workers, security guards, or local residents also discourages theft, but substations, wind generators, and other equipment are increasingly remotely controlled and are unmanned. The presence of high-voltage electricity also presents a certain deterrent to theft. Prosecution of thieves and monitoring of metal recycling operations also may deter theft of metals and equipment. Similarly, prosecution of vandals damaging transmission system equipment may discourage vandalism if it should become a problem.

The risk of damage to the proposed Project from intentional destructive acts would be considered very low, in line with or less than the risk to similar generation facilities in the U.S. Theft or opportunistic vandalism is more likely than sabotage or terrorist acts, which are considered to be a negligible risk. The results of any such acts could be expensive to repair, but no substantial impacts to continued electrical service would be anticipated. No significant environmental impacts would be expected from physical damage to the proposed Project or from loss of power delivery.

#### 3.11.5 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

### 3.12 LAND USE

#### 3.12.1 PROJECT SETTING

The Record Hill project area is located within a large undeveloped property managed for commercial timber production. The property is located north of Route 120 (also known as Roxbury Notch Road), a paved two lane road, and west of the Swift River and Route 17 (also known as Roxbury Road). Prior to initiation of the Record Hill project, the area was undeveloped with the exception of gravel logging roads used for timber harvesting activities and a CMP transmission corridor that bisects the property from north to south. Access to the Record Hill project area occurs from Route 120 via Mine Notch Road. The project area includes the ridgelines of Partridge Peak, Flathead Mountain, Record Hill, and portions of the surrounding side slopes and valleys. Elevations of these mountains are generally less than 2,200 feet. Evidence of past and present timber management occurs on most of the ridgeline and side slopes. The project area includes forested uplands, forested wetlands, scrub-shrub wetlands, emergent wetlands, and streams. Other land uses within the surrounding project area include agriculture, rural residential, and recreation.

The approximately 8 mile Section 270 transmission line upgrade would be an expansion of an existing transmission line corridor. The line would extend from the new Roxbury substation on the northeast side of Route 120 in Roxbury south and southeast through Mexico to the existing Route 2 substation in Rumford. The expansion area would include forested uplands, forested wetlands, scrub-shrub wetlands, emergent wetlands, and streams as well as limited areas of residential, commercial and industrial development. The existing transmission line corridor receives limited recreational use by all-terrain vehicle and snowmobile riders, and hikers. The Interconnected Trail System (ITS) 82 snowmobile trail is co-located within the existing corridor near Swain Road in Rumford.

The property where the new Roxbury substation, project O&M building, office and collector substation would be located includes an existing single-family residence, associated outbuildings, gravel driveway and maintained lawn. Undeveloped areas on the property consist of forested and shrub uplands, upland fields, wetlands, including forested, scrub-shrub, and emergent communities, and small streams.

### 3.12.2 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The project encompasses the ridgeline between Partridge Peak, Flathead and a portion of Record Hill in Roxbury, Maine. Forest types are primarily northern hardwoods with dispersed small pockets of White Pine-Mixed Conifer Forest and Spruce-Northern Hardwoods Forest Red spruce and Balsam fir. The ridgeline is predominately forested and historically accessible for forest management. Due to predominately shallow soils and exposure, the growth potential and timber quality of this area must be considered slightly below average. Regardless, this forest has been managed for decades. Prior to this project, the area had been harvested utilizing skidders skidder trails and logging roads that were within 0.5 to 0.75 miles of the ridgeline on both the east and western side of the ridge. The flatter northern portion of the ridge between Flathead Mountain and Record Hill has signs of an old truck road from the 19050s or 1960s, but since the advent of skidders, truck road access has been maintained further down slope.

Work on constructing access roads for the turbine site began in the fall of 2009. During this initial phase of construction, the sub-grade was completed along about 3.7 of the 6.1 miles of proposed access roads.

The project area encompasses approximately 175 acres within a larger forested tract of approximately 7,000 acres. Therefore, even assuming if all of this area was were taken out of timber production, the project would have a relatively minor impact to forest management of this larger tract (2.5% percent of the area). While there are some acres that would become non-forested developed acres, a significant portion of the 175 acres must remain in a forested condition per permit conditions. Once the project is completed, the entire ridgeline would be accessible and the remaining forest within the project area itself would be available for low impact forest management and a suite of silvicultural prescriptions. Additionally, forest management would benefit from improved access to areas near the ridge that are outside of the project area. While there is a small net loss of forested land associated due to project activities, this loss would be mitigated somewhat by making formerly inaccessible acres available for forest management.

The most significant recreational activity in the project area has been hunting for large game, such as black bear, moose and white-tail deer. There are no hiking trails within or near the project. Streams are generally too small in the project area to provide brook trout recreational fishing opportunities.

The Bunker Pond Road on the eastern slope of the project area is a popular designated snowmobile trail in the winter. Current safety practices require that snowmobile trails are closed when there is active trucking on the road. In the summer and fall the road is open to the public for hunting and touring. The northern section of the road is also a designated ATV trail.

The Bunker Pond Road on the eastern slope of the project area is a popular designated snowmobile trail in the winter. Current safety practices require that snowmobile trails are closed when there is active trucking on the road. In the summer and fall the road is open to the public for hunting and touring. The northern section of the road is also a designated ATV trail.

On the western side of the project there is a designated ATV trail that crosses the Access Road to the project. The Mine Notch Road has provided hunting and vehicle access to the western slopes. There also has been a designated snowmobile trail on the Yellow Gate road on the lower slopes of the northern portion of Flathead Mountain. While there was a snowmobile trail connecting the Bunker Pond trail with the Yellow Gate trail in the 1980s, it has not been a designated trail since that time.

The project's impact to recreation would be relatively minor. Hunting would continue to be allowed on the lower slopes but not where people are working on the ridgeline. This is consistent with historic and current policies on these lands. Brook fishing opportunities would remain as they are now. Erosion control methods would ensure that stream quality is maintained (or



possibly improved) in all streams. Snowmobile access on the Yellow Gate Rd. and Bunker Pond Rd. would remain unchanged. The Bunker Pond Rd. summer and fall usage for vehicles and ATVs would also not be changed due to the project. During construction vehicle access on the Mine Notch would be restricted. The ATV trail which crosses the access road has been relocated for reasons not related to the project. The trail followed an old discontinued county road which inappropriately crossed some forested wetlands. In addition, the trail was closed by an adjacent landowner. A new location has been approved on this tract that restores the connection with the existing trail network, avoids crossing the access road and is more environmentally acceptable.

The Segment 270 transmission line upgrade should not result in a significant adverse impact to existing or nearby land uses. The property where the new substation would be located would be converted from residential use to commercial use.

### 3.12.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.13 BIOLOGICAL RESOURCES

Biological resources, as described in this section, include native or naturalized plants, invasive plant species, wildlife, and avian species, as well as such species that are protected under Federal or State laws. Protected biological resources include plants and animals listed as threatened or endangered by the USFWS, or otherwise protected under federal or state law, and designated critical habitat.

The following sections briefly review the regulatory framework associated with biological resources, presents a description of the affected environment to include biological survey results, and presents the impacts on the biological resources that would occur under the proposed action and no action alternative.

### 3.13.1 REGULATORY FRAMEWORK

The principal federal statutes pertaining to the protection of plants and animals include the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act (BGEPA), the Migratory Bird Treaty Act (MBTA), and the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and the principal state statutes include the State of Maine's Endangered Species Act (Maine ESA) and the Maine's NRPA.

#### 3.13.1.1 Federal Statutes

The ESA of 1973 (12 USC Sections 1531-1534) establishes protection and conservation of threatened and endangered species and the ecosystems upon which they depend. USFWS and the National Marine Fisheries Service (NMFS) administer the ESA and designate critical habitat for each species protected under the ESA. Section 7 of the ESA requires all federal agencies to consult with USFWS or NMFS, as applicable, before initiating any action that may affect a listed species or designated Critical Habitat.

The BGEPA of 1940, as amended, (16 USC 668-668c) prohibits any form of possession or taking of both bald and golden eagles without a permit from the Secretary of the Interior. Pursuant to the BGEPA, take is defined as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity by substantially interfering with normal breeding, feeding,

or sheltering behavior, or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (72 Federal Register 31332).

The MBTA of 1918 implemented the 1916 convention between the U.S. and Great Britain to protect birds that migrated between the U.S. and Canada. Subsequent conventions were held between the U.S. and Mexico, Japan and Russia and were incorporated in the MBTA to protect birds that migrate within or across international boundaries at some point in their life cycle. Under the MBTA, it is illegal to “take” any migratory bird, its eggs, feathers or nest without a permit. A permit is not required to dislodge or destroy migratory bird nests that are not occupied by juveniles or eggs (with the exception of eagles and federally-listed threatened and endangered species).

The MSA was originally enacted as the Fishery Conservation and Management Act of 1976, and has been amended several times over the years, most notably with the Sustainable Fisheries Act in 1996, and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006. The MSA calls for direct action to stop or reverse the continued loss of fish habitats. Toward this end, Congress mandated the identification of habitats essential to managed species and measures to conserve and enhance this habitat. Under the MSA, Congress directs NMFS and the eight regional Fishery Management Councils, under the authority of the Secretary of Commerce, to describe and identify essential fish habitat (EFH) in fishery management plans; minimize, to the extent practicable, the adverse effects of fishing on EFH; and identify other actions to encourage the conservation and enhancement of EFH.

#### 3.13.1.2 State Statutes

The Maine ESA (12 M.R.S.A Part 13), as amended, is intended to protect those species of fish and wildlife designated as threatened or endangered in the state. The Maine ESA does not apply to plant species. The purpose of Maine’s ESA is to maintain and enhance populations of threatened and endangered animal species and to protect the ecosystems on which these species rely. The Maine ESA is administered by the MDIFW. Under the Maine ESA, MDIFW can designate areas as Essential Habitat for species listed as endangered or threatened, and develop protection guidelines for these Essential Habitats. Essential Habitats are defined “as areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine, and which may require special management considerations”. In addition, the MDIFW and the Maine Department of Conservation, Maine Natural Areas Program (MNAP) maintain lists of Species of Special Concern in Maine. Species of Special Concern are not protected under the Maine ESA or other legislation. The MDIFW views Species of Special Concern as potentially vulnerable to reaching either threatened or endangered status because of restricted distribution, low or declining numbers, specialized habitat needs or limits, or other factors. The list of Species of Special Concern include those species thought to be rare in Maine, and species suspected of being threatened or endangered or likely to become so, but because of insufficient data, an official determination cannot be made.

The Maine NRPA, specifically Chapter 335, regulates activities that take place in, on, or over a significant wildlife habitat, or adjacent to a significant wildlife habitat located within a freshwater wetland. Under this chapter, regulated activities must be reviewed and approved by the MDEP. Significant wildlife habitats as defined and protected in this chapter are limited to significant vernal pools, high and moderate value waterfowl and wading bird habitat, and shorebird nesting, feeding, and staging areas.

The Maine Department of Conservation considers twenty four plant species to be invasive, whose introduction does or is likely to cause economic or environmental harm or harm to human health. Of these species, there are a few of particular concern in and around forested areas, and include Japanese barberry, honeysuckle, Asiatic bittersweet, common buckthorn, glossy buckthorn, and autumn olive. While an invasive plant species inventory or survey was not completed, it is likely

that some could exist in areas of the project that have been previously disturbed by clearing and development.

### 3.13.2 PROJECT SETTING

The following sections discuss the existing vegetation and wildlife within the project area, reviews the protected species, and provides a summary of the biological field survey results conducted within the project area.

#### 3.13.2.1 Vegetation and Wildlife

The project area lies within the Western Mountains Region ecoregion, which extends from Bald Mountain near the Canadian border, to the Mahoosuc Range in southwestern Maine (McMahon 1990). This region includes the Boundary Mountains in the northern portion of the region and the Longfellow Mountains in the southern portion of the region. Located between these mountains are large lakes, including Lake Umbagog, Upper and Lower Richardson lakes, Rangely Lake, and Flagstaff Lake. Topography in this region averages between 1,000 feet to 2,000 feet (305 to 610 meters). Stands dominated by red spruce and balsam fir are common on the tops of ridges whereas hardwood species such as sugar maple, yellow birch, and American beech are more common in the valley areas.

The project area consists principally of undeveloped upland forests, which are in various stages of regeneration following timber management activities. Other cover types within or in proximity to the project area include wetlands and developed areas (residential, commercial and industrial). The majority of the lands adjacent to the existing transmission line corridor where the Section 270 corridor upgrade would occur are upland forests. These upland forests are generally described as northern hardwoods, conifers, or mixed hardwood and conifers. Most have been altered by timber harvesting and they are in various stages of regeneration. Most of the forested wetlands in the proposed corridor are classified as a mixture of broadleaved deciduous and needle-leaved evergreens. Scrub-shrub wetlands are typically dominated by shrubs and young trees, but may also include older trees that are stunted due to environmental conditions. Scrub-shrub wetlands within the existing transmission line corridor are moderately vegetated with species such as speckled alders, meadowsweet and stepple-bush. These communities are associated with seepages and with the floodplains of larger streams. Emergent wetlands found within the existing transmission line corridor are typically referred to as wet meadows. These wetlands are very similar in composition and include common species such as bluejoint, sensitive fern, and cinnamon fern.

The ridgeline portion of the project area (turbine area) includes forested uplands and various freshwater wetland communities. The forested uplands occur in various stages of succession following timber harvesting activities. The canopy of these uplands is dominated by a combination of American beech, yellow birch, and sugar maple. Additional tree species include paper birch, eastern hophornbeam, red spruce, balsam fir, and eastern hemlock. The shrub layer includes the above mentioned tree species, along with striped maple, hobblebush, and beaked hazelnut. Dominant herbaceous species include bracken fern, bunchberry, evergreen wood fern, and shining clubmoss.

In the forested wetlands, commonly occurring tree species include yellow birch, balsam fir, red maple, green ash, northern white cedar, and eastern hemlock. The shrub layer consists primarily of these same tree species with a limited presence of shrub species such as hobblebush, witherod, and winterberry. Commonly occurring herbaceous species include cinnamon fern, evergreen wood fern, sensitive fern, northeastern mannagrass, fowl mannagrass, and fringed sedge.

Scrub-shrub wetlands are present in scattered locations throughout the project area and often appear in conjunction with either forested or emergent wetland communities. The shrub layer is

dominated by tree species such as red maple, yellow birch, gray birch, and striped maple. Red raspberry, a common early successional species, also is present in many of these wetlands. The herbaceous layer includes species such as sensitive fern, cinnamon fern, rough-stemmed goldenrod, fowl mannagrass, northeastern mannagrass, bluejoint and swamp dewberry. The emergent wetlands, which are common throughout the project area, are typically referred to as wet meadows. Wet meadows are dominated by herbaceous species that are adapted to saturated soil conditions but not adapted to long periods of inundations as would be common in marsh habitats. The emergent wetlands within the project area are typically dominated by herbaceous species such as wool-grass, fowl mannagrass, bluejoint, sallow sedge, fringed sedge, pointed broom sedge, sensitive fern, jewelweed, and rough-stemmed goldenrod. These wetlands also support red raspberry, steeple-bush, and seedlings of the tree species mentioned above.

The property where the O&M building, project office, and collector substation would be located includes areas of forested and shrub uplands, as well as areas of upland field/maintained lawn. Wetlands present on this property included forested, scrub-shrub, and emergent communities. Vegetation species present in both uplands and wetland are the same as those identified on the ridgeline. There are seven delineated wetlands on the property where the project facilities would be located. These wetlands are generally small in size and have been altered by existing residential development and associated land management (i.e., mowing).

The project area including the ridgeline, electrical generator lead, O&M property and Section 270 corridor, totals approximately 1,628 acres. Forested uplands, in various stages of succession due to forestry management practices, represent over 90 percent of the surveyed area. The dominant upland forest community is Beech-Birch-Maple Forest as defined by the MNAP. Wetlands, principally forested communities or formerly forested communities that have undergone timber harvesting, represent less than 10 percent of the project area. Existing development within the project area is limited (less than 1 percent of the area) occurring at the proposed O&M site and at few other locations. At the proposed O&M site approximately 25 percent of the property consists of development in the form of an existing residence, out buildings, driveway and upland field/maintained lawn.

Fish and wildlife resources in the project area include resident and migratory animal species. These resources include individuals and populations. Although active timber harvesting alters the habitat, the early successional and mixed growth forests present on the ridgeline can support a variety of wildlife species. Mammals that were observed or that may be present on the ridgeline based upon available habitat include white-tailed deer, moose, black bear, coyote, bobcat, red squirrel, eastern chipmunk, snowshoe hare, deer mouse, porcupine and short-tailed shrew. Based upon their normal geographical range, the following species of bat could be present in the project area: little brown bat, northern myotis, eastern small-footed bat, silver-haired bat, big brown bat, eastern red bat, hoary bat, and eastern pipistrelle. There is a documented bald eagle nest approximately one mile west of the project area on an island in Ellis Pond. Additional information on bats and avian species in the project area is presented in Section 3.11.2.3, Biological Survey Results. Herptiles (i.e., amphibians and reptiles) that were either observed or could be present based upon available habitat include spotted salamander, red-back salamander, wood frog, American toad, spring peeper, eastern garter snake, and eastern milk snake.

Seventy-seven small intermittent and perennial streams were identified within the ridgeline portion of the project area and along the electrical generator lead. The streams that would be impacted on the ridgeline include a small perennial stream and three first order intermittent streams. The three intermittent streams would be unlikely to support fish, and the small perennial stream would most likely only support small non-game species such as longnose dace. No fish were observed during the field surveys in the project area and no adverse impacts to fisheries are expected on the ridgeline. The electrical generator lead would cross one first order intermittent stream and six small perennial streams. No fish were observed in the intermittent stream during the course of the resource delineation, and it is unlikely that it is capable of supporting fish. Fish

were observed in one of the perennial streams and the five other perennial streams may support at least limited fisheries.

The available wildlife habitat identified along the Section 270 line upgrade corridor is similar to those habitats identified on the project ridgelines with the exception of developed residential, commercial and industrial areas. Because available habitat is similar, wildlife species utilizing these areas also is similar. Many of the bird species that would commonly utilize the habitats present along the Section 270 line are migratory species. It is likely that some bats forage along the Section 270 line corridor, particularly along the existing maintained corridor, and it is possible that some species could roost in existing forested areas. Thirty-two streams transect the proposed Section 270 line upgrade corridor. Based on correspondence from the MDIFW, Scotty Brook provides habitat for brook trout, rainbow trout, slimy sculpins, and cyprinids including the longnose dace. The MDIFW fishery biologist also indicated that other streams in the area likely provide habitat for a similar assemblage of fish species.

### 3.13.2.2 Protected Species and Habitat

Table 3-11 presents the Federally-listed species that occur in Oxford County, Maine.

**Table 3-11 Federally Listed Species in Oxford County, Maine**

Group	Name	Status
Birds	Arctic peregrine Falcon ( <i>Falco peregrinus tundrius</i> )	Recovery
Fish	Gulf of Maine, Distinct Population Segment Atlantic Salmon ( <i>Salmo salar</i> )	Endangered
Flowering Plants	Small whorled pogonia ( <i>Isotria medeoloides</i> )	Threatened
Mammals	Canada Lynx ( <i>Lynx canadensis</i> )	Threatened

Source: [http://ecos.fws.gov/tess\\_public/countySearch!speciesByCountyReport.action?fips=23017](http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=23017)

The project area is not within NMFS Designated Critical Habitat for the Atlantic Salmon (74 FR 29300) or in USFWS Designated Critical Habitat for the Canada lynx (74 FR 8616). FWS has not designated any critical habitat for the small whorled pogonia. NMFS has designated essential fish habitat (EFH) for Atlantic salmon includes that includes all water currently or historically accessible to Atlantic salmon within the streams, rivers, lakes, ponds, wetlands and other water bodies of Maine. The Androscoggin River and its associated tributaries are designated as EFH for Atlantic salmon.

Correspondence from the USFWS identified that the proposed project occurs within the range of the federally endangered Gulf of Maine Distinct Population Segment of Atlantic Salmon and that the federally-threatened Canada lynx occurs throughout Maine and could occur in the project area; however, Roxbury, Maine is outside of the Canada lynx critical habitat and outside the area the USFWS normally reviews for potential lynx related impacts (USFWS, 2009). No other federally threatened or endangered species under USFWS or NMFS jurisdiction are known to occur in the project area. Correspondence from the MDIFW indicated that there are no documented occurrences of state-listed threatened or endangered wildlife species or their habitats within the project area. Additionally, MDIFW had no documented occurrences of Species of Special Concern within the project area (Letter dated September 14, 2007 from Bob Cordes, MDIFW Assistant Regional Wildlife Biologist, to Adam Gravel, Stantec Consultant - formerly Woodlot Alternatives - Biologist). The MNAP Biological and Conservation Data System documented only two rare plants within a four-mile radius of the ridgeline project area and one rare plant within a four-mile radius of the Section 270 corridor; and no rare botanical features were documented within the project area.

A bald eagle nest occurs on French Island in Ellis Pond, approximately 1.8 miles from the closest proposed turbine locations on Flathead Mountain, and FWS noted that other nests could be in the vicinity of the project area (USFWS 2009). The nest on French Island fledged two young in 2009. Bald eagles primarily fly along river corridors at varying heights in pursuit of prey, during aerial displays, and during daily movements. However, they also often expand their feeding grounds for many miles to lakes, ponds, and other waterbodies.

Maine protected wildlife habitats include essential habitats and significant wildlife habitats. According to the MDIFW, there are no Essential Habitats (roseate tern, least tern and piping plover nest sites) known to occur within the proposed turbine site project area. The MDEP has indicated that no significant wildlife habitat is known to be present within the project area; however, site-specific surveys identified a total of 5 Significant Vernal Pools on the ridgeline or in proximity to the access road to the ridgeline. No Significant Vernal Pools were identified with the electrical generator lead corridor or on the property where the O&M building and substation would be located. One Significant Vernal Pool was identified within the Section 270 line upgrade corridor (see Section 3.5 for a complete analysis of the Significant Vernal Pools). In addition, MDIFW has no record of Deer Wintering Areas in the project area.

### 3.13.2.3 Biological Surveys and Results

The applicant initiated a series of ecological field surveys, including migrating and breeding bird and raptor surveys, acoustic bat surveys, vernal pool surveys, wetland delineations, and rare, threatened, and endangered (RTE) species surveys. Surveys were targeted to provide data to help assess the project's potential to impact birds and bats, RTE plants and animals, breeding amphibians, and wetlands. The scope of the surveys was based upon guidelines outlined by USFWS and MDIFW. The following surveys were conducted by the applicant:

- RTE surveys and nocturnal radar surveys were conducted on the ridgeline in both the spring and fall of 2007, and acoustic bat surveys in the fall of 2007 and spring of 2008
- RTE and diurnal raptor surveys on the ridgeline were conducted in the fall of 2007 and the spring of 2008
- Breeding bird surveys were conducted in spring 2008, and bald eagle use survey in late summer and early fall of 2009.
- Sensitive Species surveys were conducted along the proposed Section 270 line upgrade

The 2007 nocturnal radar surveys conducted on the ridgeline in both the spring and fall, documented the passage rates of nocturnal migrating animals, which would include birds (primarily passerines [song birds]) and bats. This technology does not distinguish birds and bats therefore observations are described as targets. The animals [targets] documented during the nocturnal radar surveys were not necessarily utilizing the ridgeline itself, but they were passing through the airspace above the ridgeline. Of the avian species identified during the diurnal raptor surveys and the breeding bird surveys, nearly all of the raptors and many of the passerines are migratory.

The acoustic bat surveys were completed to document bat activity patterns in the proposed project area, including within the air space of the rotor-swept zone of the proposed wind turbines. Anabat II detectors (Titley Electronics Pty Ltd.) were used for the surveys, which record and convert the ultrasonic calls made by bats so that they can be heard by humans. These calls were then analyzed and compared to available libraries of known bat calls, and were grouped into four guilds/groups representing bats with similar calls. Calls that could not be identified to guild because of the call quality or duration were placed in a group referred to as unknown. A total of 2,619 bat call sequences were recorded during the fall 2007 sampling period. The overall mean detection rate for all four detectors was 10.7 calls/detector night. Many of the recorded call sequences (28%) were labeled as unknown due to very short call sequences (less than five pulses) or poor call signature formation (probably due to a bat flying at the edge of the detection

zone of the detector or flying away from the microphone). Of the calls that were identified to species or guild, those of the *Myotis* guild were the most common (66% of all call sequences) with the majority detected during the time period when the detectors were in trees at low heights (62% of all *Myotis*). The big brown/silver-haired/hoary bat guild was the next most common, but far less than *Myotis*, and made up approximately six percent of all call sequences.

During the 2007 and 2008 surveys, raptors that were identified during the diurnal raptor surveys most likely were not breeding on the ridgeline, but were migrating through the area or if they were resident birds they were hunting in the area. Thirteen species were observed during these surveys, including American kestrel, bald eagle, broad-winged hawk, Cooper's hawk, merlin, northern goshawk, northern harrier, osprey, peregrine falcon, sharp-shinned hawk, red-shouldered hawk, red-tailed hawk and turkey vulture. During the 2008 diurnal raptor survey, a single peregrine falcon was observed flying through the project area. The breeding population of peregrine falcons is listed as endangered by the state of Maine. Two state-listed Species of Special Concern were documented during the 2007 and 2008 diurnal raptor surveys: bald eagle and northern harrier.

During the spring 2008 acoustic surveys, a total of 2,361 bat call sequences were recorded from all detectors combined. During the spring sampling period, approximately 96 percent of these calls were detected during the month of June from two tree detectors. The majority of these calls were from the *Myotis* guild. The mean detection rate of all detectors was 11 detections per detector-night. The majority of calls (45%) were identified as *Myotis* spp., with the majority detected by tree detectors during the month of June. This is expected as *Myotis* tend to forage at lower heights than other species. The big brown/silver-haired/hoary bat guild was the next most common and made up approximately 38 percent of all call sequences. Only 12 calls from the eastern red bat/eastern pipistrelle guild were detected during the entire season. This trend in species composition is similar to that of other studies in the region.

The 2008 breeding bird surveys conducted on the ridgeline in the spring identified 44 species of birds, most of which potentially could have been breeding at some location on the ridgeline. Some of the species observed included ovenbird, dark-eyed junco, chestnut-sided warbler, white-breasted nuthatch, golden-crowned kinglet, rose-breasted grosbeak, American robin, blue jay, black-capped chickadee, hairy woodpecker, northern flicker, American redstart, black-throated green warbler, and red-eyed vireo. Of the species identified during the 2008 breeding bird surveys, seven Species of Special Concern: American redstart, black-and-white warbler, chestnut-sided warbler, eastern wood-pewee, tree swallow, veery, and white-throated sparrow. These species are on conservation watch lists because of recent declines in their regional population trends, mainly due to loss of habitat. These species are known to occur in disturbed habitats as a result of industrial and commercial timber harvests and were found to be common in the project area. In addition, seven bat species listed as Species of Special Concern, little brown bat, northern myotis, eastern small-footed bat, silver-haired bat, eastern red bat, hoary bat, and eastern pipistrelle, could be present based upon acoustic surveys conducted on the project ridgeline.

A flora and fauna survey conducted on the along the proposed Section 270 line upgrade, did not identify any listed federally-threatened or endangered species. In addition, no plant species tracked as rare by the MNAP were observed. The survey found no state- or federally-listed rare plant or plants tracked as rare by MNAP and did not identify any significant natural communities.

The RTE surveys that were completed in 2007 and 2008 did not identify or document any resident federal or state listed RTE species or Species of Special Concern in the project area. However as noted above, one peregrine falcon (breeding population only - State Endangered), one bald eagle (State Species of Special Concern and protected under the BGEPA), one red-shouldered hawk (State Special Concern species), one Cooper's hawk (State Special Concern species), and one Northern goshawk (State Special Concern species) were observed passing through the area during the raptor migration surveys.

In addition, the surveys conducted in May 2008 and May 2009 identified 32 vernal pools. Of these pools, fourteen did not meet MDIFW criteria for significant vernal pools pursuant to Chapter 335, Significant Wildlife Habitat because they were man-made and occurred within either a roadside ditch or a rut created by heavy equipment. The remaining 18 pools were naturally occurring and supported breeding activity by wood frogs and/or spotted salamanders. Of the 18 pools, five pools met the criteria to be considered Significant Vernal Pools based upon the level of amphibian breeding activity. One Significant Vernal Pool was identified within the Section 270 line upgrade corridor.

### 3.13.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The following sections discuss the potential impacts of the proposed action and no action alternative on the existing vegetation and wildlife within the project area and on the protected species and their associated habitat. It should be noted that Record Hill followed many USFWS recommendations during the design and location of the wind turbines, which included avoidance and minimization measures found in the *Guidelines for Building and Operating Wind Energy Facilities in Maine Compatible with Federal Fish and Wildlife Regulations and Interim Guidance on Avoiding and Minimizing Impacts from Wind Turbines*.

#### 3.13.3.1 Impacts on Vegetation and Wildlife

Work on constructing access roads for the turbine site began in the fall of 2009. During this initial phase of construction, the sub-grade was completed along about 3.7 of the 6.1 miles of proposed access roads. At completion, approximately seven percent of the project area would initially be altered by the proposed project with approximately 90 percent of each turbine site and 50 percent of the crane paths allowed to naturally revegetate following construction. Actual development would occupy approximately one percent of the project area. Forested uplands, which represent a majority of the project area, would be the principal habitats altered by the proposed development. Approximately two acres of forested wetlands would be converted from forested communities to shrub and/or herbaceous communities. An additional 0.3 acres of wetland would be permanently filled and 1.5 acres of forested wetlands would be converted to emergent or scrub/shrub wetlands. The proposed project would occupy approximately 5 acres of existing development at the proposed O&M site. The project would result in a total of 18.4 acres of new impervious area and 18.8 acres of new developed areas, in addition to 0.7 acre of developed area in the form of existing logging roads.

Project construction could introduce or increase the spread of invasive species through construction equipment carrying seeds or propagative plant parts, or from seed mixtures that contain invasive plant seeds used to revegetate exposed soils. These potential impacts can be minimized through best management practices such as pressure washing construction equipment before entering construction areas, and using certified weed free seed mixtures.

The removal of 19 acres and the clearing of 49 acres of vegetative habitat within the project area would adversely impact resident wildlife species that currently utilize the project area. The temporary and permanent changes on vegetation and the habitat conditions would impact wildlife that are present in the area. Direct and indirect impacts to wildlife include injury, mortality, and displacement; however, the impacts are not considered significant as suitable wildlife habitat is available in the immediate vicinity of the proposed action that the displaced wildlife could utilize. In addition, because the existing powerline right-of-way would only be expanded by 50 feet, wildlife use of the corridor would not be expected to notably change following the completion of construction. Resident bird species that currently utilize the project area would be expected to continue their use with potential temporary displacement during the actual construction phase. Based on the results of the nocturnal radar surveys, raptor surveys, and acoustic bat surveys in 2007 and 2008, the operation of the wind turbines would not pose a significant threat to birds or bats. The radar surveys indicate that passage rates at the project are comparable to other turbine



sites in the state. Flight height and flight direction data indicate that the majority of targets or animals are flying at a height sufficient to avoid the proposed turbines and blades. Raptor surveys indicate that passage rates of raptors is low in the project area, which is due to the lack of large landscape features that would concentrate raptor activity and migration.

The streams on the project area ridgeline that would be impacted by the project include a small perennial stream and three first order intermittent streams. The three intermittent streams would be unlikely to support fish, and the small perennial stream would most likely only support small non-game species such as longnose dace. Because of the stream protection measures discussed under the proposed action, no notable adverse impacts to fisheries would be expected in the streams along the ridgeline or downstream of the ridgeline streams. The electrical generator lead would cross one first order intermittent stream and six small perennial streams. No fish were observed in the first order intermittent stream during the course of the resource delineation, and it is unlikely that it is capable of supporting fish. Fish were observed in one of the perennial streams and the five other perennial streams may support at least limited fisheries. As described under the proposed action, buffers would be maintained on these streams to reduce potential thermal impacts that would affect fisheries and temporary bridges would be used to cross the streams.

Along the proposed Section 270 line upgrade corridor, a total of 32 streams would be crossed using temporary bridges made of construction mats. At each temporary bridge, supporting mats would not be placed below the normal high water and would not impact the stream banks. This technique allows water to flow freely under the temporary crossings and limits adverse effects to the streams. Crossings of Bean Brook and Scotty Brook would be accomplished using existing permanent bridges or crossings of these streams would be avoided. This approach would reduce potential sedimentation of the streams, which could adversely affect fisheries habitat. After construction of the proposed Section 270 line upgrade and removal of the Section 59 poles and associated materials, vegetation management within the corridor would maintain a 100-foot buffer on six of the perennial streams that were identified by MDIFW as providing coldwater fishery habitat. A 50-foot buffer would be maintained on each of the other streams identified within the corridor. Within this buffer, only capable species (i.e., species capable of growing into the conductor safety zone during the typical four to five year vegetation management schedule) would be removed and all other vegetation would remain uncut. Removal of capable species within these buffers would be done principally using chainsaws or other hand-held equipment such as brush hooks or handsaws. Access to the buffers for maintenance activities would involve minimal trimming or clearing of non-capable species. Use of herbicides within waterbody buffers would be prohibited. These buffers would help reduce potential thermal impacts that could affect fisheries. Therefore, the proposed Project would not be not expected to notably alter existing fisheries habitat and would have negligible impacts on fisheries.

### 3.13.3.2 Impacts on Protected Species and Habitat

#### Endangered Species Act (ESA) and Essential Fish Habitat (EFH) and State-protected Areas

The proposed action would have no impact (a no effect determination pursuant to Section 7 of the ESA) on small whorled pagonia as it is not present within the project area, and no impact on designated critical habitat as none has been designated by FWS. The proposed action would have no impact (a no effect determination pursuant to Section 7 of the ESA) on the Canada lynx or its designated critical habitat. No Canada lynx or evidence of Canada lynx were identified during the RTE surveys of the project area, and its preferred habitat (regenerating spruce-fir habitats with high stem densities) is not within the project area. No designated critical habitat for the Canada lynx is within or adjacent to the project area (no critical habitat is present in Roxbury, Maine).

DOE has reviewed the measures to protect the habitat associated with the Gulf of Maine Distinct Population Segment of the Atlantic salmon that are incorporated in proposed action (see below),

and the findings of the USACE Section 404 permits (USACE Permit Numbers NAE-2008-03763 and NAE-2009-01866), and has concluded that the proposed action would have no impact (a no effect determination pursuant to Section 7 of the ESA) on the Atlantic salmon, and no impact on its designated essential fish habitat. In addition, the proposed action would have no impact on designated critical habitat for the salmon, as none is located in the project area. The following measures have been incorporated as part of the proposed action for the protection of streams and wetlands in the project area:

- Temporary bridges for 32 of the stream crossings that would not require construction work below the normal high water line of the streams and would not impact the stream banks.
- Crossing of Bean Brook and Scotty Brook would be done using existing permanent bridges or crossings of these streams would be avoided.
- After construction vegetation management within the transmission corridor would maintain a 100-foot buffer on six of the perennial streams that were identified by MDIFW as providing coldwater fishery habitat to reduce potential thermal impacts. A 50-foot buffer would be maintained on each of the other streams identified within the corridor to reduce potential thermal impacts.
- Within this buffer, only capable species (i.e., species capable of growing into the conductor safety zone during the typical four to five year vegetation management schedule) would be removed and all other vegetation would remain uncut. Removal of capable species within these buffers would be done principally using chainsaws or other hand-held equipment such as brush hooks or handsaws.
- Use of herbicides within waterbody buffers would be prohibited.

In addition, USACE consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service during the Section 404 permit process and determined that the wetland and stream impacts would have no impact, and therefore no effect (pursuant to Section 7 of ESA), on the Gulf of Maine Distinct Population Segment of the Atlantic salmon, and its essential fish habitat.

#### Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA)

Clearing activities completed on the ridgeline were conducted during the winter (January 2010) and so avoided the migratory bird season. Remaining clearing activities would be associated with the electrical generator lead, facilities at the O&M site and Segment 207 line corridor. The majority of work at the O&M site would occur in already developed/altered areas so clearing would be limited. Remaining clearing would occur principally along the two electrical corridors. The preferred time of year to conduct these activities is under frozen ground conditions and Record Hill anticipates conducting clearing for the generator lead during the winter months. Record does not have control over CMPs construction schedule, but it appears that CMP also intends to take advantage of the winter months (2010) with completion in June or July. Following the CMP construction sequence, clearing would occur as one of the early steps suggesting this would be substantively completed prior to the migratory bird breeding season.

Although wind turbines pose a threat to migratory birds and bats, based upon surveys conducted on the project ridgeline, this threat would be not expected to be significant. The nocturnal radar surveys indicate that the majority of migrants are flying at a height sufficient to avoid the proposed turbines and blades [415 feet (126.5 meters)]. The diurnal raptor surveys indicate many of the raptors flying through the project area passed below the maximum height of the turbines. Because the passage rates of raptors in the project area are relatively low compared to other sites and because diurnal raptors have been documented to avoid modern wind turbines, there would not be a significant impact on these populations. In addition, flight height and flight direction data collected from the surveys indicate that the majority of migratory birds are flying at a height sufficient to avoid the proposed turbines and blades. Migratory species that currently utilize the project area would be expected to continue their use with potential temporary

displacement during the actual construction phase. In collaboration with the MDIFW, post-construction monitoring would be implemented to track mortality that may occur at the project turbines. This information would be used to help ensure that unreasonable adverse impacts to populations are avoided and minimized to the extent practical.

The USFWS made a determination that additional consultation under Section 7 was not required, but as is stated in the PGP issued for the project, a final Eagle Risk Minimization Plan must be developed by Record Hill and submitted to the Corps, USFWS and the Maine Department of Inland Fisheries and Wildlife. This plan has not yet been developed. The permit condition requires that this plan be submitted “at least 60 days prior to commencement of commercial operations.”

Raptor mortality documented from developed wind energy projects across the country has shown that diurnally migrating species are at low risk of collision with wind turbines (only 0 to 0.07 fatalities per turbine per year), as recorded from other developed wind projects in the United States outside of California (GAO 2005). In addition, bald eagle mortality from collisions with turbines would not be expected due to the location of the turbines on upland ridgelines, as bald eagles tend to hunt on bodies of water. Pursuant to BGEPA, based upon results of the surveys and other raptor studies, the proposed Project would not have an adverse impact on bald eagles.

#### 3.13.4 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

### 3.14 SOCIOECONOMICS

The socioeconomic resources that influence the quality of the human environment include demographic information on populations and housing and economic figures such as employment, income, and earnings. Population is the number of residents in the area and the recent changes in population growth. Housing includes numbers of units, ownership, and vacancy rate. Employment data include labor sectors, labor force, and statistics on unemployment. Income information is provided as per capita income. The present day socioeconomic setting is described using the most recently available U.S. Census Bureau data from 2000, unless otherwise noted.

#### 3.14.1 PROJECT SETTING

The ROI for the proposed action is principally the Town of Roxbury (Roxbury) and secondarily Oxford County, Maine. Selected economic indicators for the ROI and comparative data for the state are presented in Table 3-12, Selected Socioeconomic Indicators for the Region of Influence and State of Maine.

Based upon the most currently available data from the U. S. Census Bureau data, in 2000 the population of the Town of Roxbury was 384. In 2000, the population of Oxford County was 54,755. The 2006-2008 American County Survey data shows that the population of Oxford County is relatively stable with less than a one percent growth since 2000.

In Roxbury there were 457 housing units in 2000 with a 63.9 percent vacancy rate (significantly higher than the national average of 9 percent). Nearly 90 percent (88.5 percent) of the housing units were owner-occupied, and just over 10 percent (11.5 percent) were renter-occupied. The median value of a single-family home in Roxbury was \$80,500, compared to a national average price of \$119,600. In Oxford County in 2000, there were 32,295 housing units with a 30.9 percent vacancy rate. More than half of the housing units were owner-occupied (77 percent) and less than half were renter-occupied (23 percent). The median value of a single-family home in Oxford County was \$82,800. The 2006-2008 data for Oxford County shows less than a one percent

increase in the number of housing units, as well as less than a one percent increase in the housing vacancy rate.

In 2000, the average per capita income in Roxbury was \$18,615 compared to \$16,945 for Oxford County. The two primary employment sectors in Roxbury were production, transportation, and material moving occupations (28.5 percent), and management, professional, and related occupations (23.9 percent). The primary employment sectors for Oxford County were somewhat similar with 26.6 percent of people employed in management, professional, and related occupations, 21.3 percent in the sales and office occupations, and 20.1 percent in the production, transportation, and material moving occupations. The primary employment sectors to Oxford County during this time were management, professional, and related occupations (24.6 percent), service occupations (21.1 percent) and sales and office occupations (21.0 percent).

**Table 3-12 Selected Socioeconomic Indicators for the Region of Influence and the State of Maine (2000)**

Geographic Area	Population	Labor Force	Housing Units	Housing Vacancy Rate (percent)	Median Home Price
Town of Roxbury	384	216	457	63.9	80,500
Oxford County	54,755 (56,608)	27,137 (28,700)	32,295 (34,514)	30.9 (33)	82,800 (144,300)
Maine	1,274,923 (1,315,069)	659,360 (705,001)	651,901 (696,079)	21.8 (20.5)	98,700 (175,200)

Source U.S. Census Bureau 2000 and 2006-2008.

Because the most current census data for the Town of Roxbury is from 2000, the 2000 census data was used at the town, county and state level to allow better direct comparison. To show changing trends, the 2006-2008 American Community Survey data for Oxford County and the State of Maine are provided in parentheses.

### 3.14.2 POTENTIAL IMPACTS OF THE PROPOSED ACTION

#### *Construction Phase*

Under the proposed action, direct and indirect beneficial impacts on socioeconomic resources would occur as a result of up to 200 additional job opportunities. Short-term impacts would include employment opportunities (i.e., timber harvesters and equipment operators) as well as increased activity at local businesses such as hotels and restaurants during construction of the proposed project.

#### *Operational Phase*

Long-term benefits would include three to five full-time jobs for employees to operate the facilities as well as seasonal work associated with road maintenance.

The project also would provide long-term tax benefits. Currently Roxbury's total assessed property value is approximately \$33 million. The project is expected to be assessed at approximately \$100 million and is expected to pay 75 percent of all taxes in the town. At this value, the project would result in a 66 percent reduction in local property taxes. This reduction takes into account adjustments to county taxes, state education subsidy, and municipal revenue sharing that would occur as a result of the new assessment. Current estimates of property taxes on the project are over \$700,000 per year. Currently, a residence in Roxbury that is assessed at \$120,000 has a \$2,305 annual property tax. In a typical year after the project begins operation that tax should drop to \$775, a savings to the owner of \$1,530 per year.

Finally, the project would offer local residents energy assistance. The project developers would pay the first 500 kilowatt hours of electricity generation charges for every current residence in the

Roxbury for each month over the next 20 years (or the life of the project, whichever comes first). Assuming that there were about 220 year-round residences and about 180 seasonal residences in Roxbury at the time of this offer (September 1, 2008), and that the cost of the electricity generation charge on CMP bills was about \$0.10 per kilowatt hour, this benefit would be worth about \$600 annually to each year-round residence and about \$200,000 annually to all residents collectively.

### 3.14.3 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.15 ENVIRONMENTAL JUSTICE

### 3.15.1 REGULATORY FRAMEWORK

In February 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. This states that “*each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities, on minority populations and low-income populations*” (Executive Order 12898, 59 Federal Register 7629 [Section 1-201]).

Under DOE guidance, consideration is given to pathways or uses of resources that are unique to a minority or low-income community before determining that there are no disproportionately high and adverse impacts on the minority or low-income population (*Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements*, U.S. Department of Energy 2004).

Executive Order, Protection of Children from Environmental Health Risks and Safety Risks (Executive Order 13045, 62 Federal Register 19885), states that each federal agency must make a high priority the identification and assessment of environmental health risks and safety risks that may disproportionately affect children. As part of this process, federal agencies must ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Environmental health risks and safety risks are those risks that are attributable to products or substances that children are likely to come into contact with or to ingest.

### 3.15.2 PROJECT SETTING

#### 3.15.2.1 Demographics

Racial and ethnic data for Roxbury, Oxford County and the State of Maine are presented in Table 3-13, Population by Race/Ethnicity. The proposed action would be located within census tract 9954. Census tract 9954 has a slightly higher Asian population than adjacent census tracts including 9951 and 9956, but otherwise these tracts have comparable levels of ethnic minorities.

**Table 3-13 Population by Race/Ethnicity**

Geographic Area	White	Black, African American	American Indian, Alaskan Native	Asian	Native Hawaiian, Other Pacific Islander	Some Other Race
Census Tract 9954	3,393	7	1	31	1	0
Town of	382	0	1	0	1	0

Roxbury						
Oxford County	53,797 (55,452)	95 (240)	151 (302)	201 (235)	12 (0)	59 (36)
Maine	1,236,014 (1,253,397)	6,760 (14,899)	7,098 (6,785)	9,111 (11,922)	382 (350)	2,911 (4,504)

Source U.S. Census Bureau 2000 and 2006-2008.

Because the most current census data for the Town of Roxbury is from 2000, the 2000 census data was used at the town, county and state level to allow better direct comparison. To show changing trends, the 2006-2008 American Community Survey data for Oxford County and the State of Maine are provided in parentheses.

### 3.15.2.2 Income and Poverty Level

Income statistics for geographic areas within the ROI and comparative data for the state are presented in Table 3-14, Income and Poverty Level.

In 2000, the median household income for the Roxbury (\$41,750) was higher than the county (\$33,435) and state (\$37,240), but the median household income for census tract 9945 (\$29,348) was lower than all of these other geographic areas. The per capita income for Roxbury was slightly above that of the county, but slightly below that of the state. In 2000, Roxbury (0.9 percent) had an unemployment rate below that of the county (3.3 percent) and the state (3.1 percent).

In 2000, the percentage of individuals in Roxbury living in poverty was 9.2 percent, slightly below both county (11.8 percent) and state (10.9 percent) levels.

**Table 3-14 Income and Poverty Level**

<b>Geographic Area</b>	<b>Median Household Income</b>	<b>Per Capita Income</b>	<b>Percentage of Individuals Living in Poverty (2006)</b>	<b>Percentage of Individuals Living in Poverty (2000)</b>
Town of Roxbury	41,750	18,615	—	9.2
Oxford County	33,435 (47,679)	16,945 (21,164)	14.3	11.8
Maine	37,240 (46,807)	19,533 (25,264)	12.6	10.9

Source U.S. Census Bureau 2000 and 2006-2008.

Because the most current census data for the Town of Roxbury is from 2000, the 2000 census data was used at the town, county and state level to allow better direct comparison. To show changing trends, the 2006-2008 American Community Survey data for Oxford County and the State of Maine are provided in parentheses.

### 3.15.2.3 Protection of Children

In 2000, 20.1 percent of the population of Roxbury was less than 18 years of age and 3.1 percent were less than 5 years of age. There are no schools located in Roxbury or the Town of Byron, located immediately north of the project area. The nearest schools are approximately six miles to the south in the Towns of Rumford and Mexico and six miles to the west in the Town of Andover.

### 3.15.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

The project would result in no disproportionate high and adverse human health or environmental impacts on minority or low income populations and no impacts on children.

### 3.15.4 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.16 TRANSPORTATION

This section presents parking and access for the proposed project, and existing transportation routes and traffic conditions on these roadways and the intersections around the proposed project.

### 3.16.1 REGULATORY FRAMEWORK

The Maine Department of Transportation holds regulatory authority over Maine's public roadways. The project would present minimal additional traffic to the project area, with between one and three vehicles likely to be utilizing the area during typical operations.

### 3.16.2 PROJECT SETTING

#### 3.16.2.1 Roadway Network

The only access to the ridgeline portion of the project area is from Route 120 (also known as Roxbury Notch Road). The ridgeline portion of the project area is located north of Route 120, and the actual ridgeline is accessed by a gravel road known as Mine Notch Road. The property where the office, O&M building, and collector substation would be located also is accessed from Route 120. An existing residential driveway provides access to this site.

The project anticipates delivery of turbines at Searsport, Maine, which has served as the point for offloading turbines from ships to land transportation for other wind developers in Maine. The road network from Searsport to Farmington has already been modified to accommodate loads for turbines as part of prior projects that have been constructed. The road from Farmington to Route 120 in Roxbury has been studied, and no notable physical improvements are required.

For construction, temporary light-duty construction access paths would be established along the existing transmission line corridor to provide access to the new Section 270 line. To reach the existing transmission line corridor, access would occur either directly from public roads or across private land where permission can be attained (Refer to the Maine Natural Resource Protection Act permit application submitted for the Section 270 Transmission Line Upgrade). Where access occurs across private property, existing trails would be used. Establishment of the access path would be an ongoing process conducted throughout the course of the Section 270 line construction. Access would be established to areas undergoing immediate construction and as construction progresses, new access paths would be established and paths that are no longer needed would be closed. Maintenance activities would involve limited use of motorized equipment in areas that are directly accessible from public or private access roads or existing pathways.

The new substation would be accessed from Route 120. An existing residential driveway provides access to this site. The entrance to this driveway would remain essentially the same, but its route would be changed to provide access to all of the buildings/facilities that would be present on site.

#### 3.16.2.2 Parking Supply and Demand

The ridgeline portion of the project area is essentially undeveloped with the exception of Mine Notch Road and unimproved roads/trails created for timber harvesting. There are no parking

facilities and no need for parking facilities. The O&M building would have a small gravel parking lot with six designated parking spaces. Parking for the office would be available in the existing residential driveway.

There are no parking facilities and no need for parking facilities for the Section 270 line. Parking at the new substation would be available within the fenced enclosure surrounding the substation or if needed in the gravel parking lot at the adjacent project O&M building.

#### 3.16.2.3 Bikeways and Pedestrian Facilities

There are no designated Class I, II or III bikeways within the project area.

#### 3.16.2.4 Transit

There are no established public transportation services within the project area.

### 3.16.3 POTENTIAL IMPACTS OF THE PROPOSED ACTION

Access to the ridgeline project areas would occur from Mine Notch Road. Mine Notch Road is a private gravel road that has been up-graded to provide access to the project area. This road would service both the proposed wind power development as well as provide access during future timber harvesting activities on the property surrounding the proposed development. Mine Notch Road is accessed from Route 120, a public two-lane asphalt road. The property where the project facilities would be located would be accessed from an existing residential driveway that would be up-graded as necessary to service these facilities. This driveway would provide access to the project facilities as well as to a proposed CMP substation. This property also is accessed from Route 120.

Access to the Section 270 line corridor would occur either directly from public roads or across private property where CMP is granted access. Where access occurs across private property, existing trails would be used. Temporary light-duty access paths would be used during construction and these would be closed as construction is completed and they are no longer needed. During construction all woody vegetation would be cut to the ground in non-buffer areas and within buffers only capable species would be cut. Once construction is complete vegetation would be allowed to reestablish, but capable species would be controlled during regular maintenance. Crossings of wetlands and streams would be accomplished using construction mats, which would be removed as construction is completed. Any impacts resulting from construction should be temporary in nature.

### 3.16.4 POTENTIAL IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee and the impacts associated with the Record Hill project would not occur unless alternative financing were realized.

## 3.17 UTILITIES

### 3.17.1 ENERGY CONSUMPTION

#### *Construction Phase – Turbine Installation*

Construction of the project is expected to take approximately eight months. Primary energy sources necessary for the construction of the project are light fuel (diesel) and electricity. It is expected that construction of the project would require approximately 135,000 gallons of diesel fuel and roughly 40,000 kilowatt/hours of electricity.

#### *Operational Phase of Turbines*



The on-site office would be heated through the use of fuel oil. It is expected that the building would operate much like a single-family home in terms of typical heat demands, and thus is likely to require somewhere around 400 gallons of fuel oil each year. The electricity demand of the office and O&M building is projected to be approximately 1,000 kilowatt hours per month or approximately 12,000 kilowatt hours per year.<sup>11</sup>

*Construction Phase of Transmission Line Upgrade*

It is estimated that construction of the Section 270 transmission line would take about four to five months to complete. Primary energy sources necessary for the construction is light fuel (diesel).

*Operational Phase of Transmission Line Upgrade*

The operational phase of the Section 270 transmission line is not expected to involve energy consumption other than fuel used during safety checks and maintenance activities.

### 3.17.2 WATER USE

*Construction Phase – Turbine Installation*

During construction, Record Hill (or its contractors) would supply drinking water for workers from an existing public water supply or by bottled or other bulk water resource. Dust abatement during construction would involve the use of up to 20,000 gallons of water per day, depending upon conditions. Water for dust abatement would be withdrawn from the boat ramp at Ellis Pond Village using an approximately 4,000 gallon tanker truck. Given the limited volume of this withdrawal, this activity would not change the naturally occurring water levels of Ellis Pond or the surrounding lakes (see MDEP Rules, 06-096 Chapter 587(6)). No water for concrete production would be required, as any necessary concrete would be produced at existing facilities.

*Operational Phase of Turbines*

Water supply would not be required for the operation of the wind turbines or the electrical equipment at the Record Hill project. The O&M building and the on-site office, which are located on the same parcel, would be the only project components that would have an on-going demand for water. The on-site office would have drinking water, bathroom facilities and a shower for the staff. There also would be hose bibs (exterior faucets) for routine maintenance needs. An existing residential well would be discontinued to allow for development of an electrical substation, and a new private water well would be drilled to supply potable water to the O&M building. The new well would be located near the on-site office and would be a small, residential-scale deep rock well, similar to the existing on-site well.

*Construction Phase of Transmission Line Upgrade*

Water use during construction would be limited to potential dust abatement. Dust abatement is not expected to be needed during construction of the Section 270 transmission line, but could possibly be required during construction of the new substation depending upon conditions.

*Operational Phase of Transmission Line Upgrade*

Water supply would not be required for the operation of the CMP substation or Section 270 transmission line.

### 3.17.3 WASTE TREATMENT AND DISPOSAL

During operation of the project, solid waste would consist of domestic waste produced at the office and O&M building. A dumpster maintained on site would be used to hold this waste. A licensed waste hauler would periodically collect and transport this waste to a licensed waste

<sup>11</sup> Electricity demand determined using the home energy calculator available from the CMP web site <http://www2.cmpco.com/EnergyCalculator/default.jsp>.

disposal facility. In addition, the O&M building would handle materials that, when spent, constitute universal wastes. Among these materials are cathode ray tubes, florescent bulbs, and batteries.

No commercial or industrial wastewater would be generated with the project; therefore, there should be no release of liquid waste to the environment. Wastewater from the on-site office (approximately 135 gallons/day) would be handled by a subsurface wastewater system. This system that includes a septic tank with a standard stone bed septic was designed to meet Maine Subsurface Wastewater Disposal Rules. The system would be built on suitable soils located adjacent to the on-site office. The Division of Environmental Assessment, part of MDEP's Bureau of Land and Water Quality, reviewed and approved the soil survey used to develop the subsurface wastewater plan.

### 3.17.3.1 Hazardous Materials Use and Storage

Storage of materials at the project O&M building would be addressed in the final SPCC Plan for operation of the facility. The SPCC Plan must be submitted and approved by the MDEP prior to the start of operations.

A representative list of liquids and solids to be handled at the O&M building includes:

- Gear oils;
- Antifreeze;
- Hydraulic fluid;
- Greases;
- Non-lead based paint;
- Gasoline and/or diesel fuel; and
- Various cleaners.

CMP's Environmental Control Requirements for Contractors and Subcontractors and CMP's oil and hazardous material contingency plan establish minimum requirements for spill prevention and response. Employees operating construction vehicles are trained to promptly contain, report, and clean up any spill in accordance with standard procedures. As a standard operating procedure, all operational vehicles carry an oil spill kit that contains materials for conducting initial containment and clean-up of spills. In the event of a spill of oil or hazardous material, on-site personnel would immediately follow standard spill reporting and clean-up procedures. CMP also has specific standards related to refueling and herbicide use in proximity to waterbodies and sensitive natural resources. These standards include:

1. Refueling and maintenance of vehicles and equipment is prohibited within 25 feet of all waterbodies and sensitive natural resources;
2. Herbicide application is prohibited within 25 feet of all waterbodies and wetlands with standing water;
3. Mixing, transfer and storage of herbicides are prohibited within 50 feet of all waterbodies and wetlands with standing water; and
4. Mixing, transfer and storage of herbicides are prohibited within 100 feet from any known well or spring used as a drinking water supply [Note no well or spring used as drinking water supply occur within or near the Section 270 line].

There is an existing auto salvage yard in the town of Mexico, which is crossed by the Section 270 transmission line. Pole 97 would be installed in the vicinity of this auto salvage yard. An area of approximately 100 square feet would be excavated to a depth of 10 to 12 inches at this location. Soil would be backfilled into the hole once the pole is placed. Excess soil would be placed around the base of the pole and compacted with the excavator bucket. Because of the distance of Pole 97 from the auto salvage yard, CMP does not anticipate encountering contaminated soil or hazardous waste. If such material were encountered, it would be managed based on the nature and extent of the potential contaminant.

### 3.18 CUMULATIVE EFFECTS

A cumulative effect is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other action (40 CFR Part 1508.7). This discussion is limited to recent past, present, and reasonably foreseeable future actions within the project area and the immediate vicinity (defined as the town of Roxbury).

The project area is located in an area historically and currently used for industrial timber production. The development of the proposed wind energy project would occur in the same time and space as ongoing timber management activities. Lands owned by Bayroot, LLC, and managed by Wagner Forest Management, Ltd., in the Roxbury area are routinely harvested. This property is enrolled in both the Forest Stewardship Council (FSC) program, as well as the Sustainable Forestry Initiative (SFI) program. Timber harvesting activities have occurred to the west of the project area within the past 10 years, and this area would likely be re-entered sometime in the next 10 to 15 years. Areas to the east of the project site would likely see activity within the next 5 years since this area has not been harvested recently. All harvesting will be done in accordance with the Maine Forest Practices Act and MDEP Shoreland Zoning regulations. Maine’s BMPs for timber harvesting will be followed during harvesting activities. Harvesting activity within the project area is limited by the terms of Record Hill Wind’s DEP permit. These restrictions generally prohibit removal of more than 40 percent of timber volume within a 10 year period. Potential cumulative impacts to vegetation and soil erosion could occur during the construction phase of the wind energy project if it overlaps with timber harvesting. However, these impacts would be limited through the implementation of BMPs. There would be no cumulative impacts during the operational phase of the wind energy project.

The surrounding area is rural and land uses include agriculture, rural residential, and recreation. Publicly available aerial photographs show no other large-scale commercial development in the area. No future development projects are anticipated for the project area, although this land would continue to be managed for timber production.

Growth in the town of Roxbury appears to be relatively low based upon the number building permits issued for the new construction of single-family homes (City-Data.com 2010). Between 1996 and 2009, an average of 3 permits was issued per year with two years in which no permits were issued.

Based upon a review of publicly available information, there are no developments in proximity to the Record Hill project to include in a cumulative effect analysis. In regard to other commercial-scale wind energy developments, the proposed Spruce Mountain Wind project is the nearest publicly presented project. The Spruce Mountain Wind project is located in the town of Woodstock in Oxford County, approximately 16 miles south of the Record Hill project. The nearest operational wind energy developments are located on Kibby Mountain in the town of Eustis and Beaver Ridge in the town of Freedom. The Kibby Mountain project is located approximately 54 miles north of the Record Hill project, and the Beaver Ridge project is located approximately 64 miles to the east. Because the Record Hill project is located in an area of both limited existing and proposed development, an analysis of cumulative effects would have to extend well beyond the area immediately influenced by the proposed development and beyond the scope of this EA.

Growth in the towns of Mexico and Rumford appears to be relatively low based upon the number building permits issued for the new construction of single-family homes (City-Data.com 2010). Between 1996 and 2009, an average of three building permits was issued per year in Mexico with three years in which no permits were issued. According to Census Bureau data, no housing units were built in Mexico from 1990 to 1994, 29 were built from 1995 to 1998, and no housing units

were built between 1999 and 2000. In Rumford, an average of five building permits was issued between 1996 and 2009 with two years in which only one permit was issued. According to Census Bureau data, 86 housing units were built in Rumford from 1990 to 1994, 23 from 1995 to 1998 and 10 from 1999 to 2000. Based on this information, no adverse cumulative impacts are expected to result from the project.

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**CHAPTER 4.0: LIST OF PREPARERS**

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**US Department of Energy, Loan Guarantee Program Office**

Marhamati, Joseph  
MS, Environmental Science  
BA Philosophy  
Years of Experience: 3  
NEPA Document Manager  
DOE Loan Guarantee Program Office

McMillen, Matthew  
MS, Natural Resource Development  
BS, Environmental Science  
Years of Experience: 26  
Director, Environmental Compliance  
DOE Loan Guarantee Program Office

Stribley, Todd  
MS, Environmental Science and Policy  
BS, Biology  
Years of Experience: 18  
NEPA Advisor

**Stantec Consulting**

Ryan, Jonathan  
JD, Duke University School of Law  
MA, Environmental Sciences and Policy  
BA, Political Science  
Years of Experience: 8  
Project Manager, Regulatory Specialist

Worden, Karol  
MS, Wildlife  
BS, Wildlife Management  
Years of Experience: 15  
Project Manager, Environmental Scientist

## **CHAPTER 5.0: LIST OF AGENCIES CONTACTED**

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Maine Department of Environmental Protection  
Central Maine Regional Office  
17 State House Station  
Augusta, Maine 04333-0017

Maine Historic Preservation Commission  
55 Capitol Street  
65 State House Station  
Augusta, Maine 04333

Maine Department of Inland Fisheries and Wildlife  
Bureau of Resource Management  
284 State Street  
41 State House Station  
Augusta, Maine 04333-0041

Natural Areas Program  
Maine Department of Conservation  
17 Elkins Lane  
93 State House Station  
Augusta, Maine 04333

United States Fish and Wildlife Service  
Maine Field Office  
17 Godfrey Drive, Suite #2  
Orono, ME 04473

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## CHAPTER 6.0: REFERENCES

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## **Appendix A**

### **U.S. Army Corps of Engineers Section 404 Programmatic General Permits**



**DEPARTMENT OF THE ARMY**  
 NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
 696 VIRGINIA ROAD  
 CONCORD, MASSACHUSETTS 01742-2751

REPLY TO  
 ATTENTION OF

**MAINE PROGRAMMATIC GENERAL PERMIT (PGP)  
 AUTHORIZATION LETTER AND SCREENING SUMMARY**

RECORD HILL WIND, LLC  
 C/O STANTEC CONSULTING  
 30 PARK DRIVE  
 TOPSHAM, MAINE 04086

CORPS PERMIT # NAE-2008-03763  
 CORPS PGP ID# 09-264  
 STATE ID# NRPA

**DESCRIPTION OF WORK:**

**Place fill in numerous waterways and wetlands at Roxbury, Maine in order to develop a mountaintop wind power facility with an associated electrical transmission line. The project will result in approximately 13,364 s.f. of permanent wetland impact, 392 s.f. of permanent stream impact, and 30,172 s.f. of overstory**

**Project Description Continued on Page 2**

LAT/LONG COORDINATES : 44.6362290° N 70.6309237° W USGS QUAD: ROXBURY, ME

**I. CORPS DETERMINATION:**

Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine Programmatic General Permit (PGP).**

You must perform the activity authorized herein in compliance with all the terms and conditions of the PGP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed PGP carefully, including the PGP conditions beginning on page 7, to familiarize yourself with its contents. You are responsible for complying with all of the PGP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 38 of the PGP (page 15) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the PGP on October 11, 2010. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 11, 2011.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.** Also, this permit requires you to notify us before beginning work and allow us to inspect the project. **Hence, you must complete and return the attached Work Start Notification Form(s) to this office no later than 2 weeks before the anticipated starting date.** (For projects requiring mitigation, be sure to include the **MITIGATION WORK START FORM**).

**II. STATE ACTIONS: PENDING [ ] ISSUED [ X ] DENIED [ ] DATE 8/20/09**

APPLICATION TYPE: PBR: \_\_\_\_\_ TIER 1: \_\_\_\_\_ TIER 2: \_\_\_\_\_ TIER 3: X LURC: \_\_\_\_\_ DMR LEASE: \_\_\_\_\_ NA: \_\_\_\_\_

**III. FEDERAL ACTIONS:**

JOINT PROCESSING MEETING: 8/13/09 LEVEL OF REVIEW: CATEGORY 1: \_\_\_\_\_ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10 \_\_\_\_\_, 404 X, 10/404 \_\_\_\_\_, 103 \_\_\_\_\_

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

**FEDERAL RESOURCE AGENCY OBJECTIONS: EPA\_NO \_\_\_\_\_, USF&WS\_NO \_\_\_\_\_, NMFS\_NO \_\_\_\_\_**

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at <http://per2.nwp.usace.army.mil/survey.html>

JAY L. CLEMENT  
 SENIOR PROJECT MANAGER  
 MAINE PROJECT OFFICE

For PHILIP T. FEIR  
 COLONEL, CORPS OF ENGINEERS  
 DISTRICT ENGINEER  
 DATE 11/9/09



US Army Corps  
of Engineers  
New England District

Project Description Continued from Page 1

vegetation clearing in wetlands. This work is shown on the attached plans entitled "RECORD HILL WIND, RECORD HILL WIND LLC" in 13 sheets with multiple dates.

**SPECIAL CONDITIONS FOR  
DEPARTMENT OF THE ARMY  
PROGRAMMATIC GENERAL PERMIT  
NO. NAE-2008-03763**

1. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).
2. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.
3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.
4. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.
5. In order to fulfill the requirements of Section 106 of the National Historic Preservation Act of 1966, the permittee shall implement the stipulations contained in the attached Memorandum of Agreement.
6. Mitigation shall consist of payment of **\$15,025.66** to the Natural Resource Mitigation Fund. The Corps will provide a completed ILF Project Data Worksheet which must be mailed with a cashiers check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. **This authorization is not valid until** the permittee provides the Corps with a copy of the check, with the permit number noted on the check. The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.
7. In order to minimize potential long-term impacts to bald eagles from wind turbine operations, the permittee shall develop a final Eagle Risk Minimization Plan. This plan shall be developed in consultation with US Fish & Wildlife Service ("USFWS") and Maine Inland Fisheries & Wildlife ("ME IF&W"). The plan shall be provided to the Corps, USFWS, and ME IF&W at least 60 days prior to commencement of commercial operations.

MAINE IN-LIEU-FEE (ILF)

Project Data Worksheet

Project name: Record Hill Wind, LLC

Applicant: Record Hill Wind, LLC

Corps permit#: NAE-2008-03763 State permit # (if known): L-24441-24-A-N

Project location (address, city): Roxbury, Maine

Biophysical region: Western Maine Highlands Subregion

Size of total impact subject to compensation: 30,172 s.f.

Types of resource subject to compensation by size: 30,172 s.f. of palustrine forested wetland (PFO) converted through overstory clearing within a proposed electrical transmission corridor to palustrine scrub-shrub (PSS) and palustrine emergent (PEM) wetland

Amount of ILF: \$15,025.66

Corps Project Manager: Clement

Checks should be made out to "Treasurer, State of Maine" and mailed to:

MEDEP  
Attn: ILF PROGRAM ADMINISTRATOR  
State House Station 17  
Augusta, ME 04333

Date: 11/9/09

MEMORANDUM FOR FILE

SUBJECT: Applicant name & File number - Record Hill Wind, LLC; NAE-2008-03763

1. PRELIMINARY JURISDICTIONAL DETERMINATION:

[X] The State of Maine has performed a preliminary jurisdictional determination with which the Corps concurs. (OR)

Our preliminary determination of jurisdiction is that the aquatic resources within the review area are waters of the United States due to the presence of: (Check all that apply)

- TNWs, including territorial seas
Wetlands adjacent to TNWs
Relatively permanent waters (RPWs) that flow directly or indirectly into TNWs
Non-RPWs that flow directly or indirectly into TNWs
Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
Impoundments of jurisdictional waters
Isolated (interstate or intrastate) waters, including isolated wetlands

2. SECTION 106 COORDINATION

Coordination with the State Historic Preservation Officer Yes/ N/A. Determination & date: No effect by 10 day default; No effect; May effect; No Adverse effect. Refer to attached comments

Coordination with the Tribal Historic Preservation Officer(s) Yes/ N/A. Determination & date: No effect by default; No effect; May effect; No Adverse effect

3. ENDANGERED SPECIES CONSULTATION: USFWS/NMFS (circle)

Determination & date: 8/13/09 No effect; Not likely to adversely effect

4. ESSENTIAL FISH HABITAT (EFH): EFH PRESENT Y (N) (CIRCLE ONE).

IF YES: Based on the terms and conditions of the PGP, which are intended to ensure that authorized projects cause no more than minimal environmental impacts, the Corps of Engineers has preliminary determined that this project will not cause more than minimal adverse effects to EFH identified under the Magnuson-Stevens Fisheries Conservation and Management Act.

Determination & date: No recommendations received; No effect; May Adversely effect.

EFH recommendations:

5. Specific Project information:

a. On the above date, Michael Hicks, acting Permits & Enforcement Chief, delegated signature authority for this permit action to Jay Clement, Senior Project Manager.

b. During the processing of the permit application, the issue of potential impacts to bald eagles was identified. Bald eagles are no longer listed under the federal Endangered Species Act. However, they are still of concern pursuant to the Migratory Bird Treaty Act and the Bald & Golden Eagle Act. The applicant has furnished the USFWS with baseline and subsequent information concerning bald eagles in the project area. In a letter dated November 5, 2009, the USFWS indicated that it did not object to permit issuance provided the applicant develop a final Eagle Risk Minimization Plan, the draft details of which are contained in the administrative record. The permit has been so conditioned.

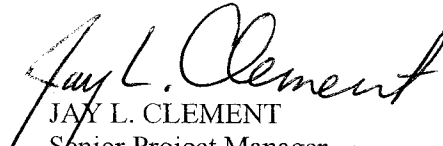
c. Also during the processing of the application, the Maine Historic Preservation Commission determined that three farmsteads, eligible for listing on the National Register but several miles distant from the proposed facility, could be adversely affected by the project. The Corps concurs with this determination and developed a Memorandum of Agreement with MHPC detailing mitigation measures in the form of recordation. The permit has been conditioned to require implementation of the terms of this MOA.

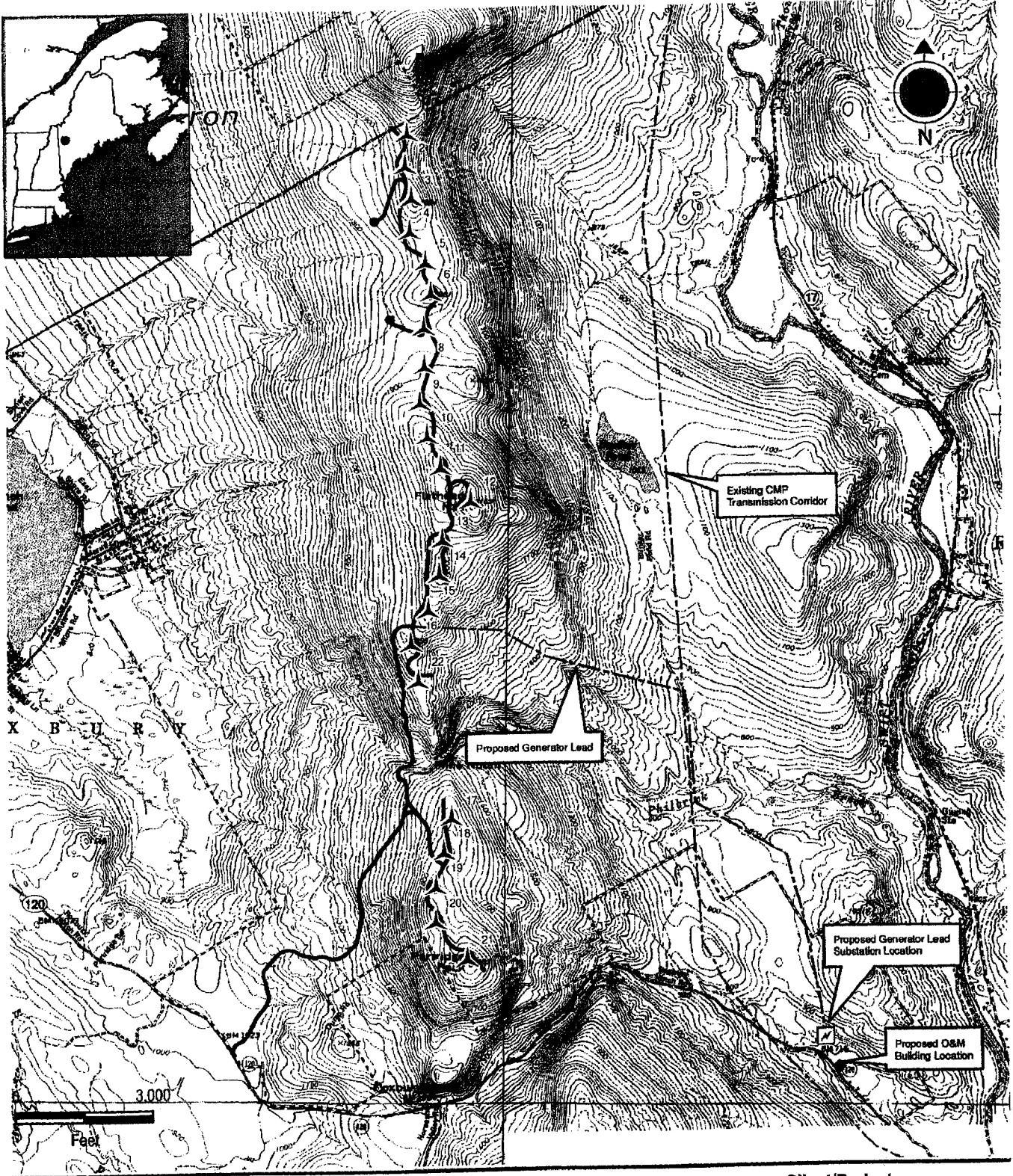
d. Recent national guidance on wetland mitigation directs the Corps to consider direct as well as indirect/secondary impacts to wetlands. The Corps of Engineers, New England District, working in cooperation with the Maine DEP, has developed a draft set of guidelines intended to address the indirect impacts of clearing and temporary access for electrical transmission lines. These guidelines lay out diminished requirements depending on the severity and effect of the impact. In this case, the "discount" associated with the guidelines has been applied to the requirement for an in lieu fee payment. In Oxford County, the standard in lieu fee payment would be \$3.32 x square foot of impact or \$100,171.04 for the 30,172 s.f. of impact for this project. Applying the guidelines, this payment drops to between \$15,025.66 and \$45,076.99. The Corps has determined that the lower value is acceptable in this case because of the limited loss in function & value, the fact that much of the area is already subject to routine timber harvesting with similar impact, the narrow corridor proposed, and the no-cut buffers around streams being proposed. The applicant does not object to the in lieu fee payment. The permit has been so conditioned.

e. The Corps is aware that there are several citizens in the Roxbury area that object to the project, despite the fact that the town has approved it. Concerns about impacts to waters of the US have been fully considered within the context of the PGP review. The Corps has determined that the project will have minimal impact to aquatic resources with the implementation of standard erosion control measures and other standard requirements of the Maine DEP. Concerns about impacts to eagles and other wildlife have been considered by state and federal resource agencies. Those agencies do not object to permit issuance. Concerns about water quality, views, and scenic character are best evaluated by the Maine DEP who has issued a permit for the project.

f. The Corps is aware of a proposal by Central Maine Power Co. to upgrade an existing electrical transmission line between Rumford and Mexico (Corps Application No. NAE-2009-01866). The transmission line off the windfarm would tie into this line. Upgrading the CMP line will involve widening an existing utility corridor with approximately 0.82 acres of wetland impact. While the two projects are connected, the CMP project has independent utility and funding. CMP is not affiliated in any way with the wind developer. The Corps is reviewing the project independently for eligibility under the Maine PGP but acknowledges the cumulative wetland impact in the area. Mitigation is being required for both projects.

g. The Corps has determined that there is no justification for exerting discretionary authority on the basis of the limited public opposition expressed to us to date. The impacts of the project are minimal or have been appropriately mitigated.

  
JAY L. CLEMENT  
Senior Project Manager  
Maine Project Office







**Stantec**

00115-00-0.5x11\_USGS\_location.mxd

**Stantec Consulting Services Inc.**

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

Legend

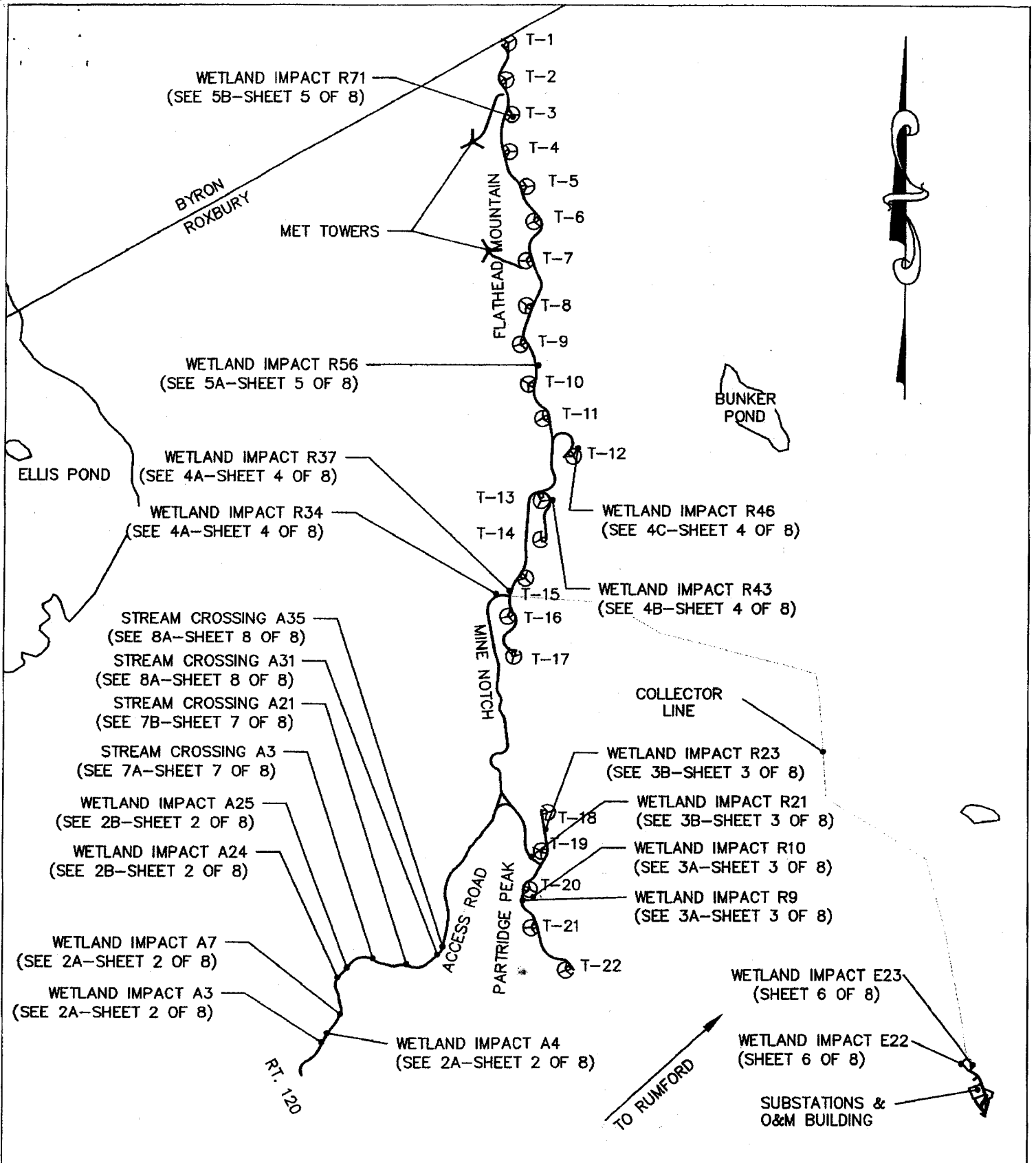
-  Proposed Turbine
-  Proposed Access Roads and Crane Paths
-  Proposed Permanent MET Tower
-  Wagner Lands

**Client/Project**  
 Record Hill Wind, LLC  
 Record Hill Wind  
 Roxbury, Maine

Figure No.

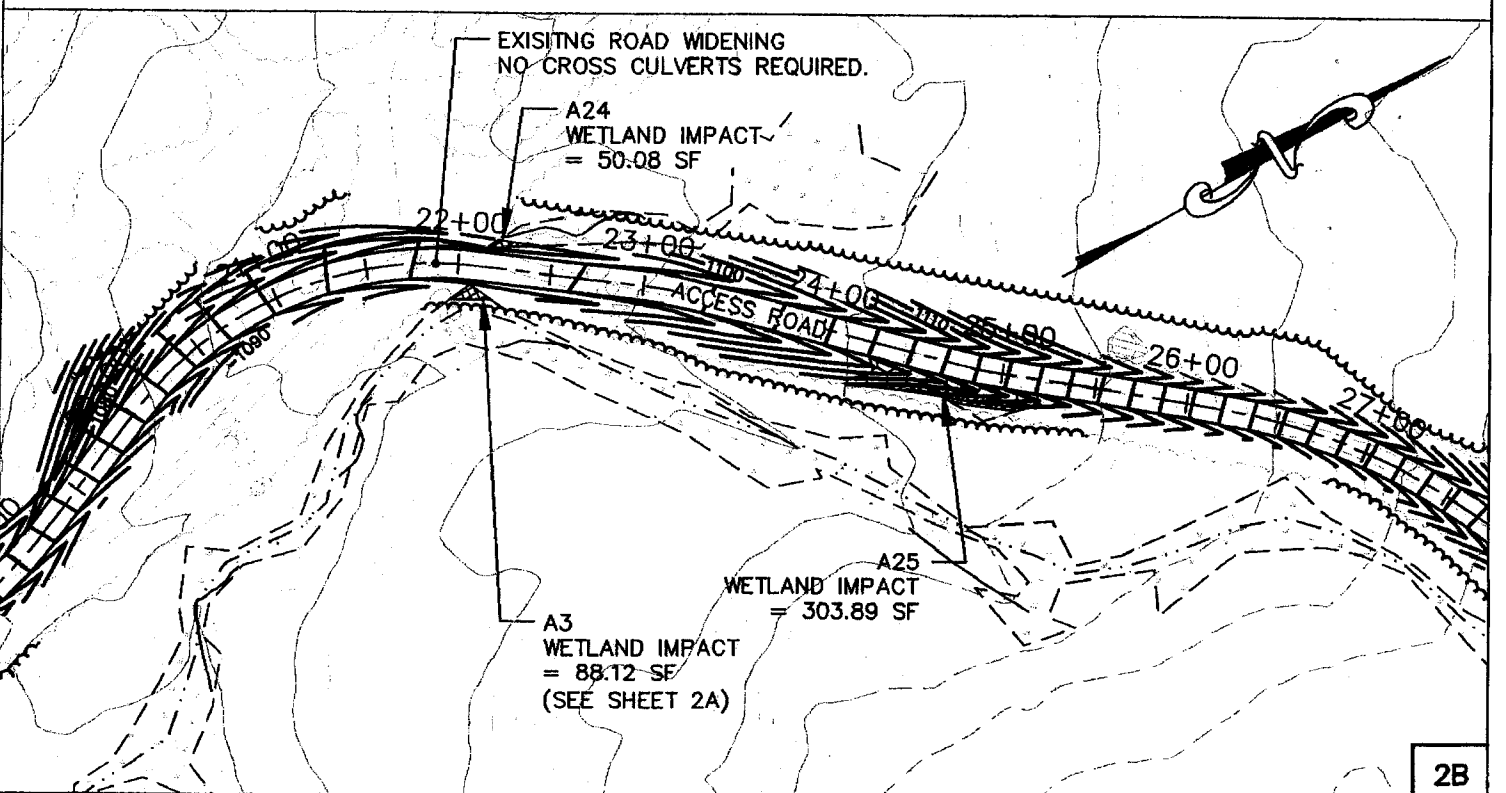
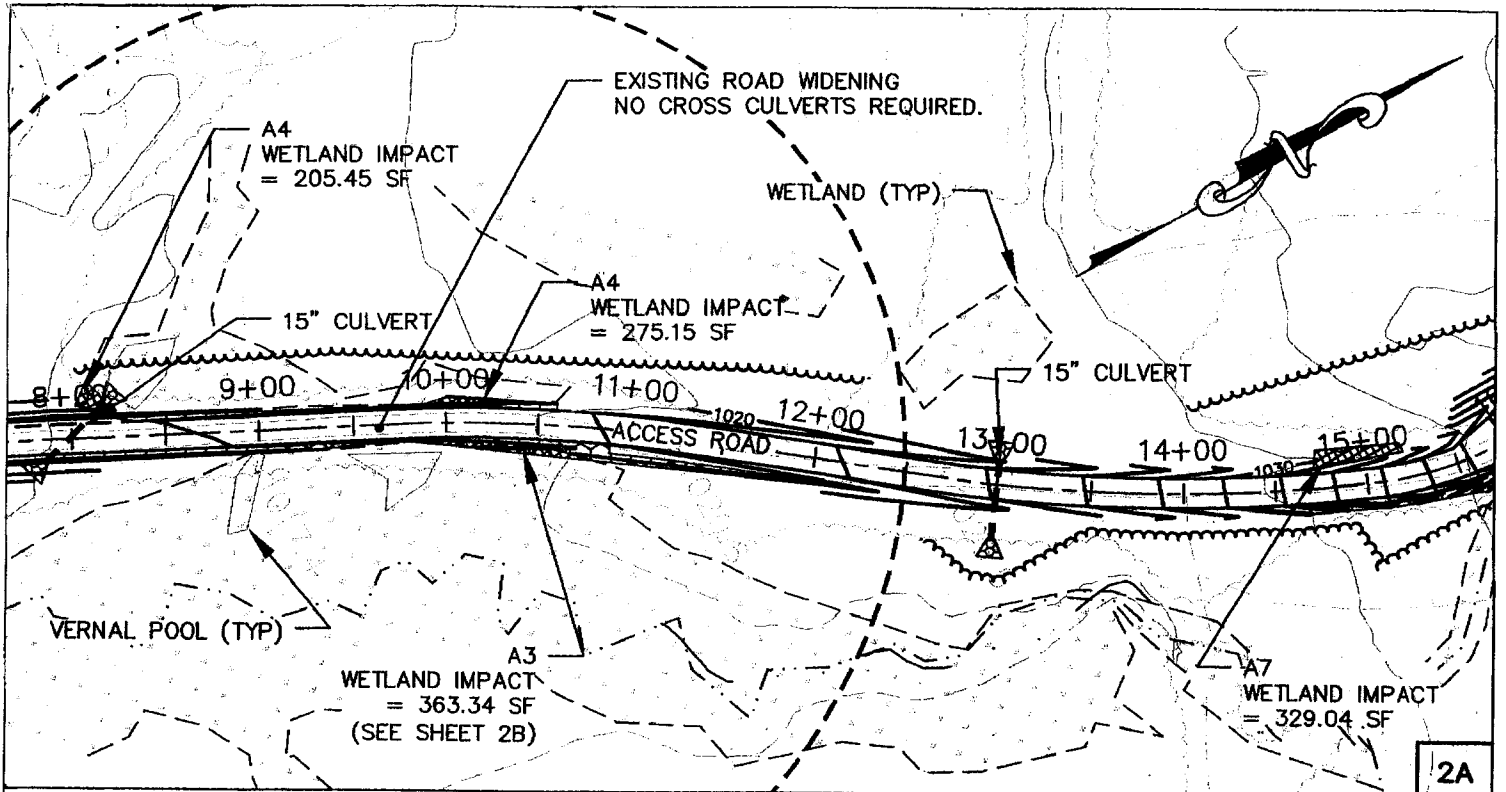
Title  
**Project Site Map**  
 July 22, 2009

**RECORD HILL WIND  
 RECORD HILL WIND LLC**



Project No. <b>61040E</b>		<b>RECORD HILL WIND RECORD HILL WIND LLC</b>			
Engineer <b>SEWALL</b> JAMES W. SEWALL COMPANY / Since 1880 SEWALL.COM 800 648 4202		AN INTEGRATED TEAM OF GEOSPATIAL ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS			
Project Location ROXBURY, MAINE		Date 7/23/09	Drawn by MT	Checked by BCH	
Drawing Description <b>WETLAND IMPACT AREAS INDEX SHEET 1 OF 8</b>			Scale: 1"=2500'		

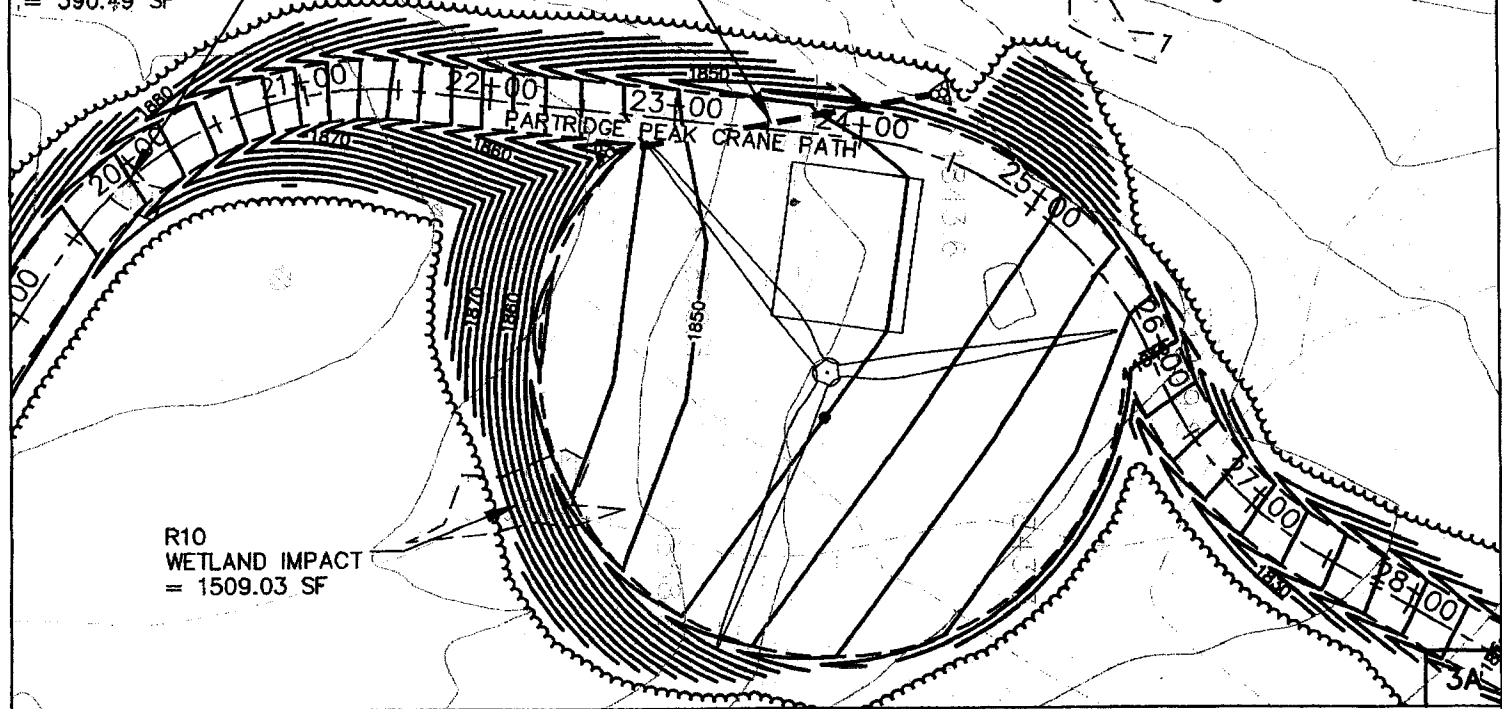




Project No. <b>61040E</b>		<b>RECORD HILL WIND RECORD HILL WIND LLC</b>					
Engineer <b>SEWALL</b> JAMES W. SEWALL COMPANY / Since 1880 SEWALL.COM 800 648 4202		AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS		Project Location ROXBURY, MAINE	Date 7/23/09	Drawn by MT	Checked by BCH
				Drawing Description <b>WETLAND IMPACT AREAS 2 OF 8</b>	Scale: 1"=100'		

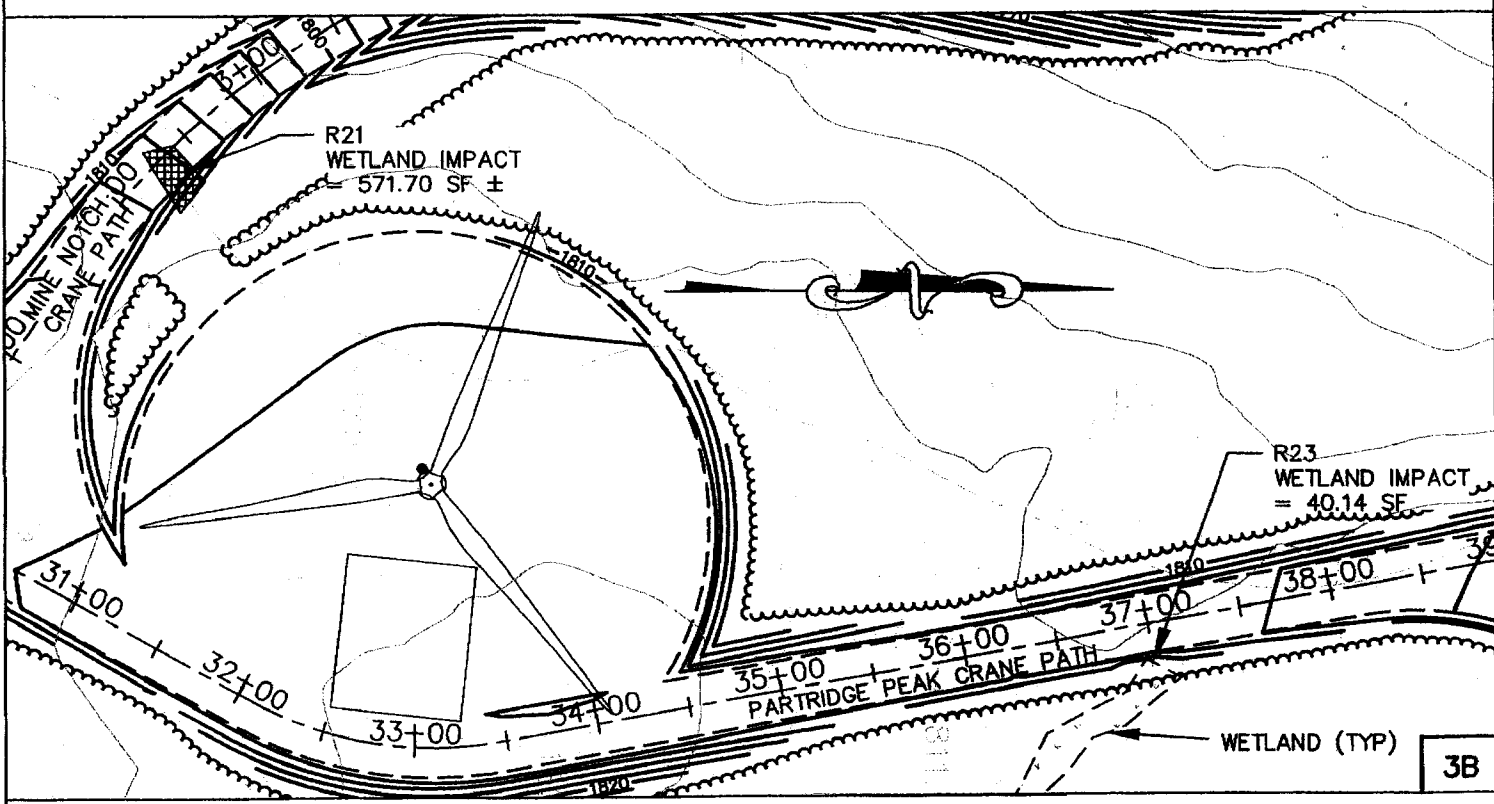
R9  
WETLAND IMPACT  
= 390.49 SF

15" CULVERT



R10  
WETLAND IMPACT  
= 1509.03 SF

R21  
WETLAND IMPACT  
= 571.70 SF ±



R23  
WETLAND IMPACT  
= 40.14 SF

Project No.

**61040E**

Engineer



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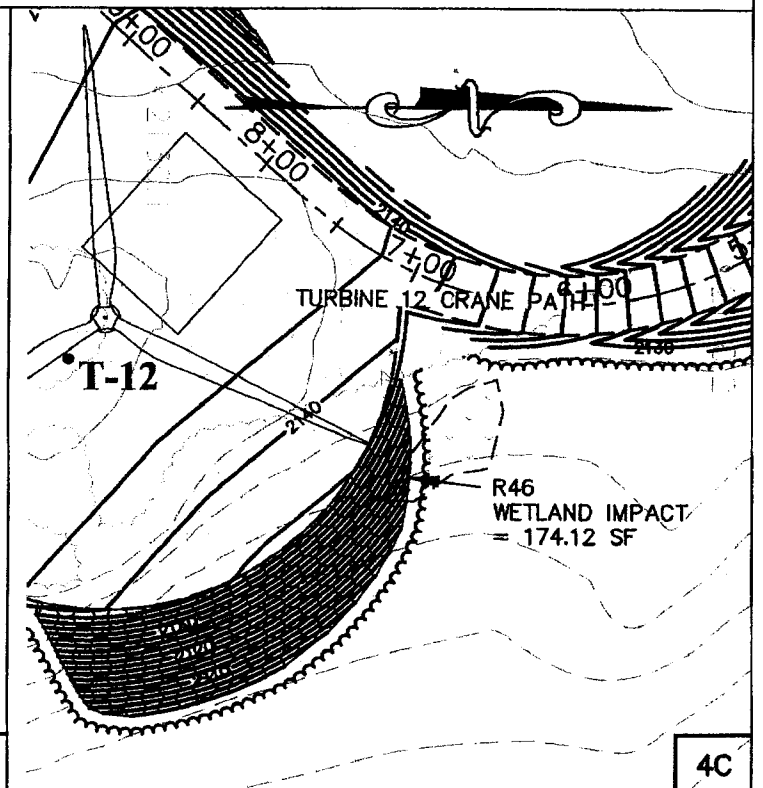
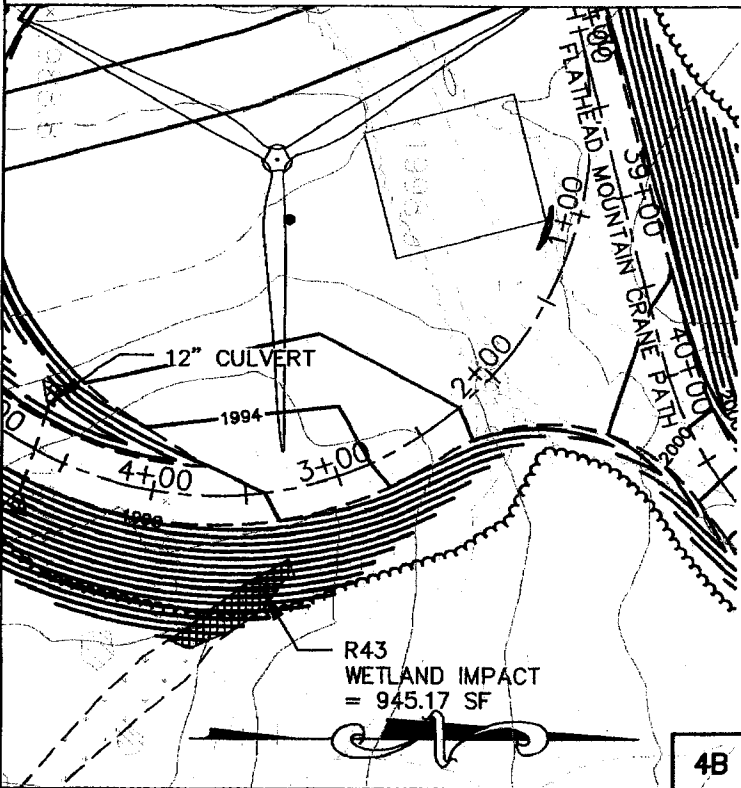
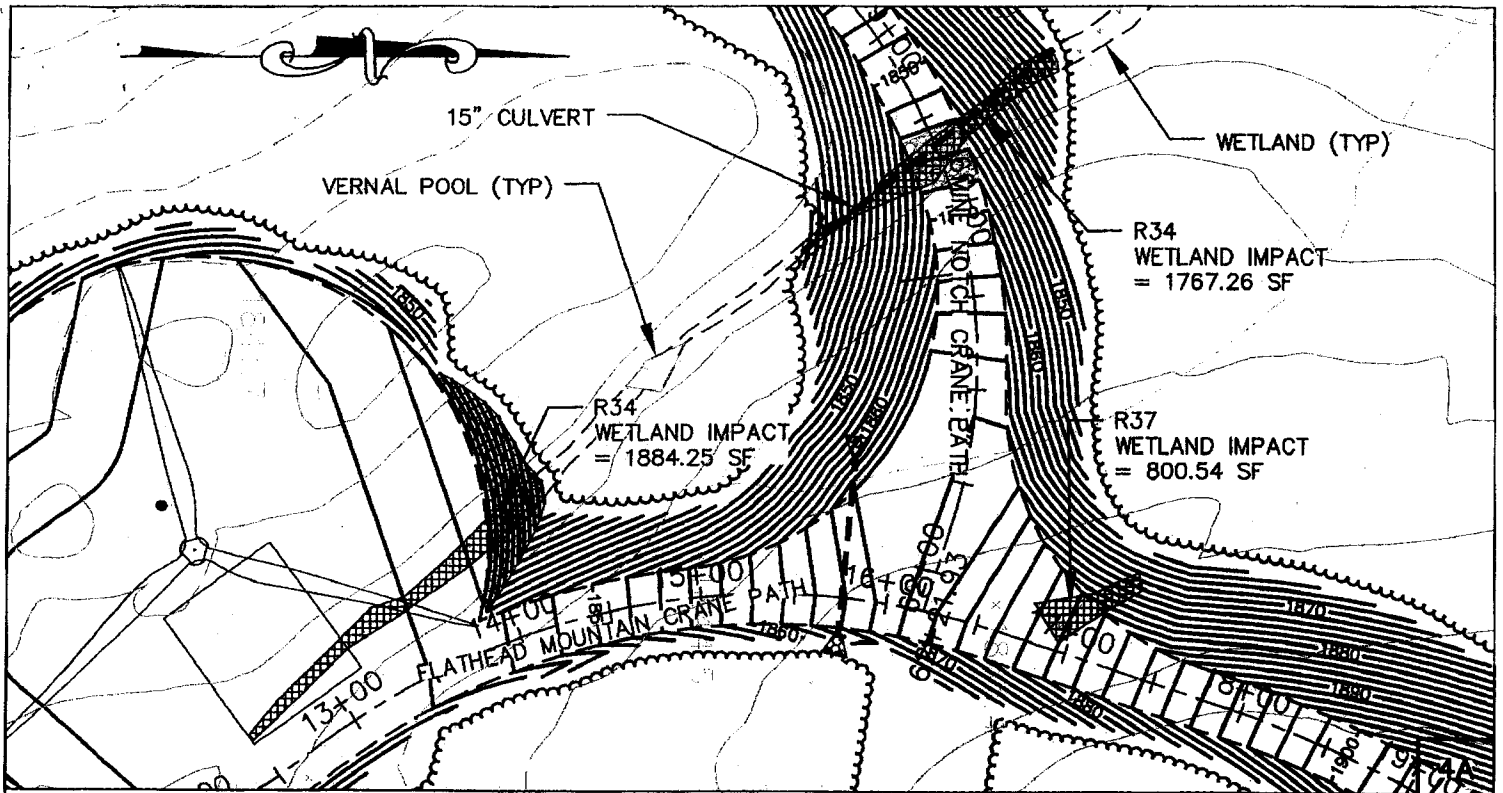
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GEOSPATIAL, ENGINEERING,  
SURVEYING AND NATURAL  
RESOURCE CONSULTANTS

**RECORD HILL WIND  
RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	7/23/09	MT	BCH

Drawing Description: **WETLAND IMPACT AREAS** Scale: 1"=100'

**3 OF 8**



Project No. **61040E**

Engineer



**SEWALL**

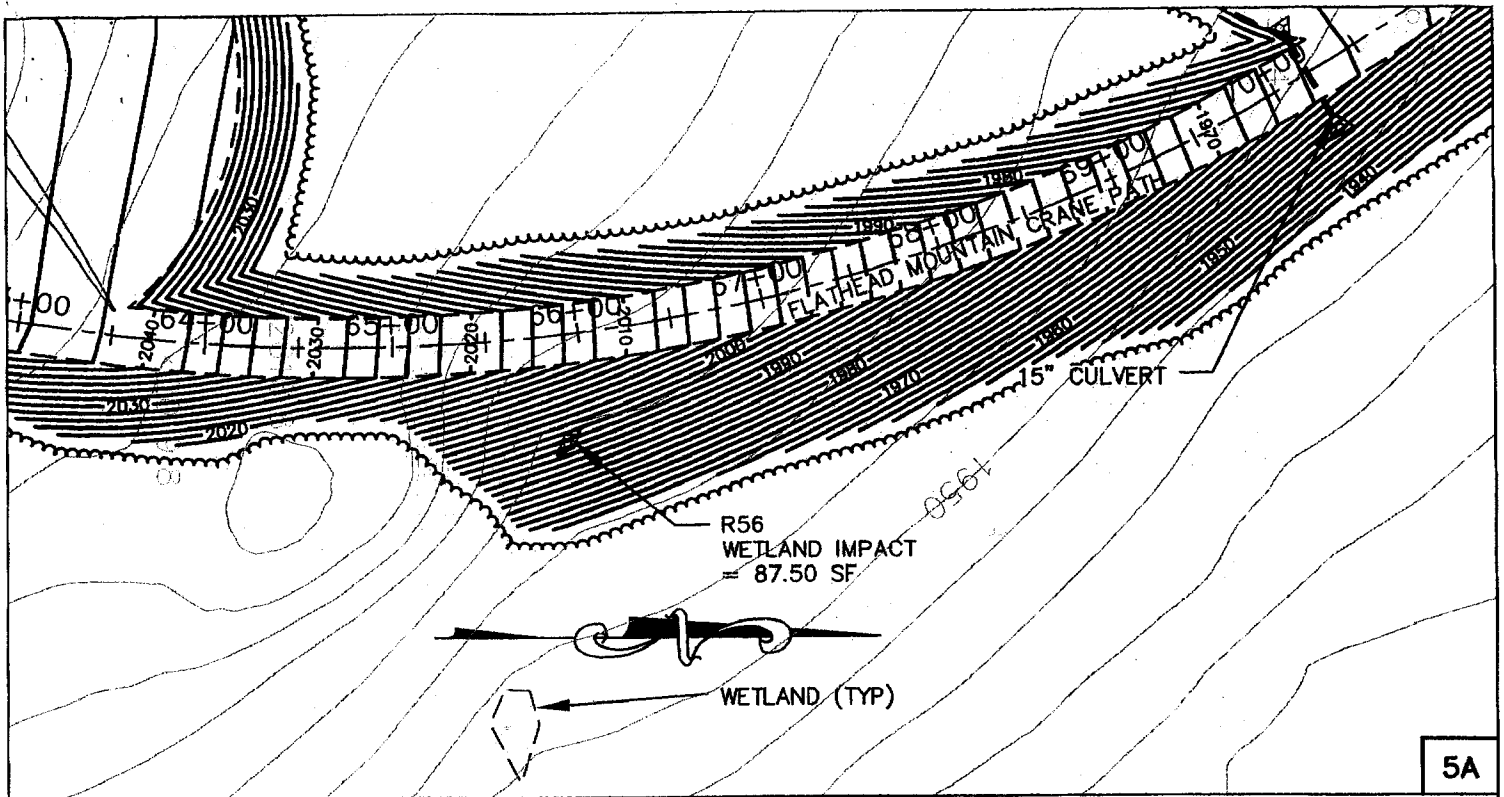
JAMES W. SEWALL COMPANY / Since 1880  
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GEOSPATIAL ENGINEERING,  
SURVEYING AND NATURAL  
RESOURCE CONSULTANTS

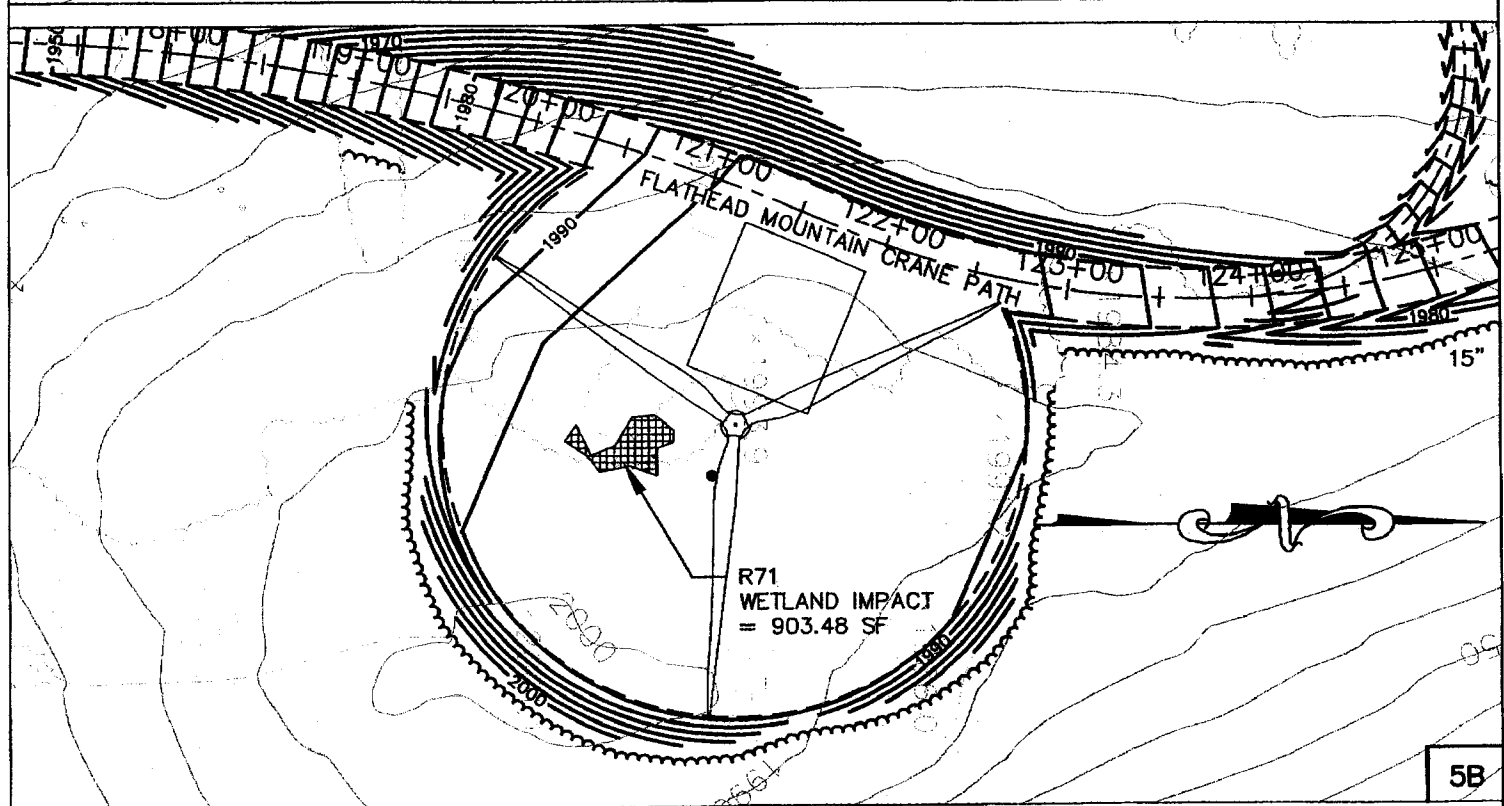
**RECORD HILL WIND  
RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	7/23/09	MT	BCH
Drawing Description	Scale: 1"=100'		
<b>WETLAND IMPACT AREAS 4 OF 8</b>			

2008-07-23 Army Corps Engineering Bx11 Wetlands.dwg



5A



5B

Project No.

**61040E**

Engineer



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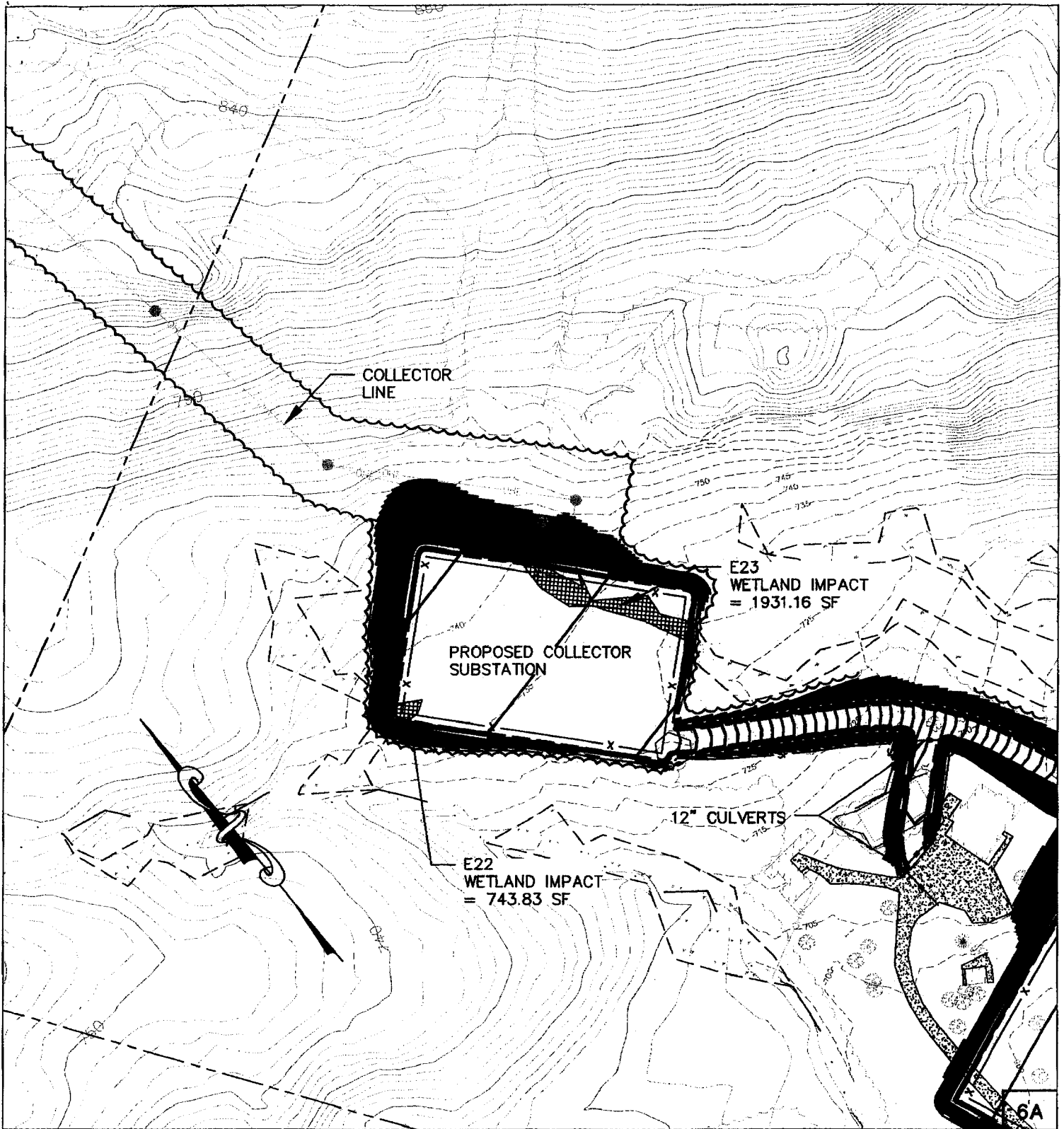
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SURVEYING AND NATURAL  
RESOURCE CONSULTANTS

**RECORD HILL WIND  
RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	7/23/09	MT	BCH

Drawing Description: **WETLAND IMPACT AREAS** Scale: 1"=100'

**5 OF 8**



Project No.

**61040E**

Engineer



JAMES W. SEWALL COMPANY *Since 1880*  
SEWALL.COM 800 648 4202

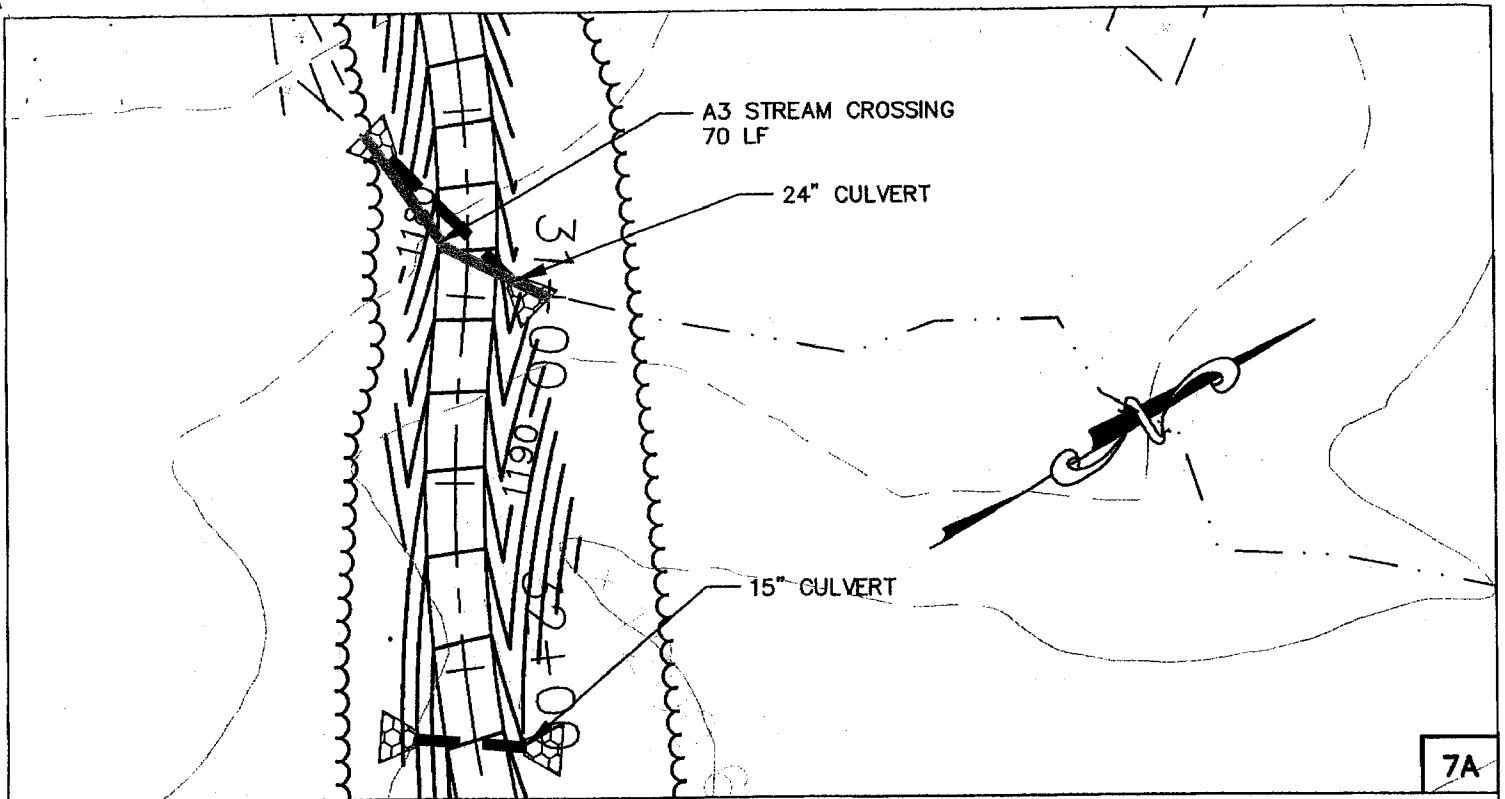
AN INTEGRATED TEAM OF  
GEOSPATIAL, ENGINEERING,  
SURVEYING AND NATURAL  
RESOURCE CONSULTANTS

**RECORD HILL WIND  
RECORD HILL WIND LLC**

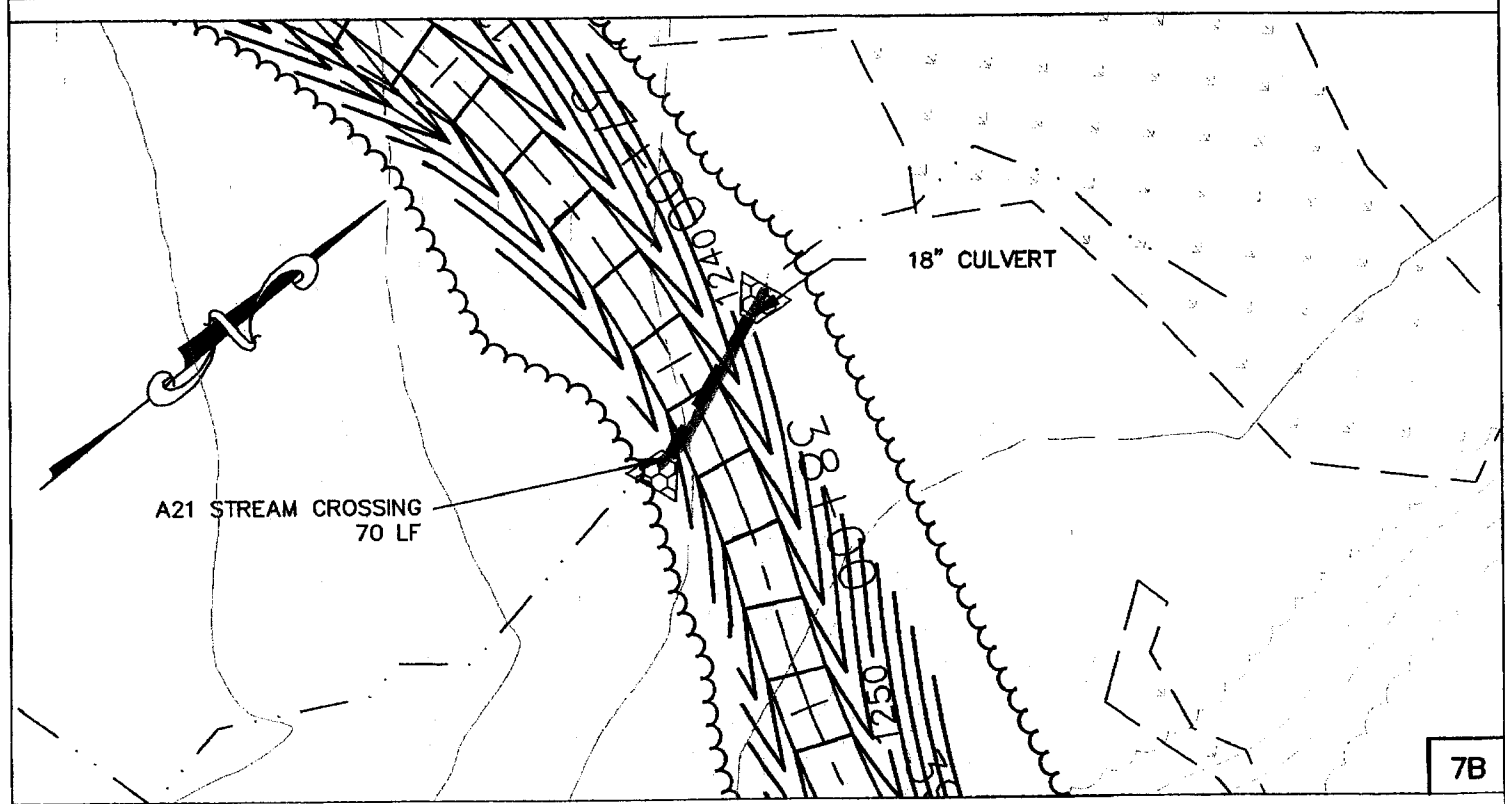
Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	7/23/09	MT	BCH

Drawing Description	Scale:
<b>WETLAND IMPACT AREAS</b>	1"=100'


**6 OF 8**

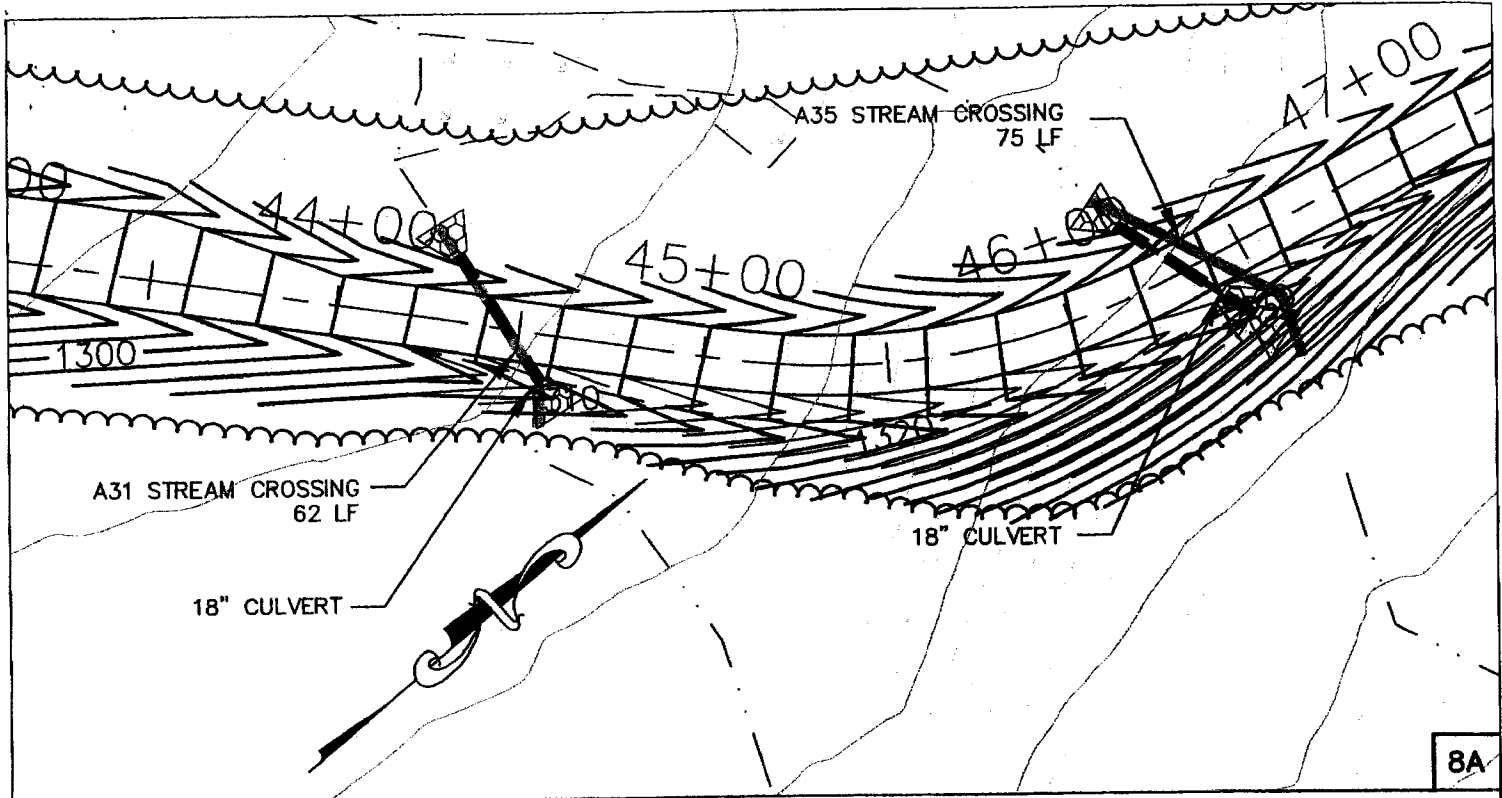



7A

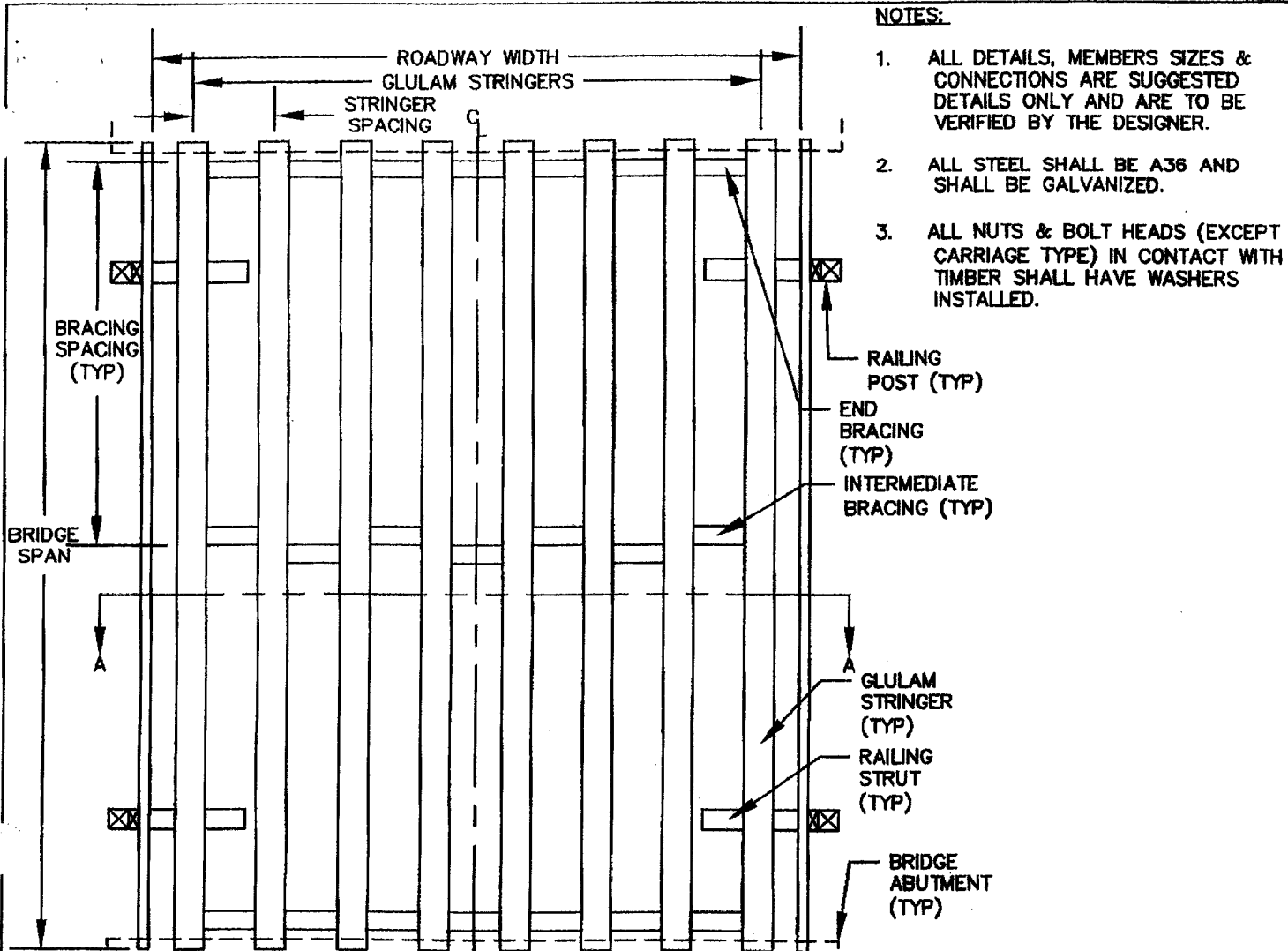


7B

Project No. <b>61040E</b>		<b>RECORD HILL WIND RECORD HILL WIND LLC</b>			
Engineer		Project Location	Date	Drawn by	Checked by
 <b>SEWALL</b> JAMES W. SEWALL COMPANY Since 1880 SEWALL.COM 800 648 4202		ROXBURY, MAINE	7/23/09	MT	BCH
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		<b>STREAM CROSSING AREAS 7 OF 8</b>			
2009-07-28 Army Corps Engineering Btl 1 Wetlands.dwg					

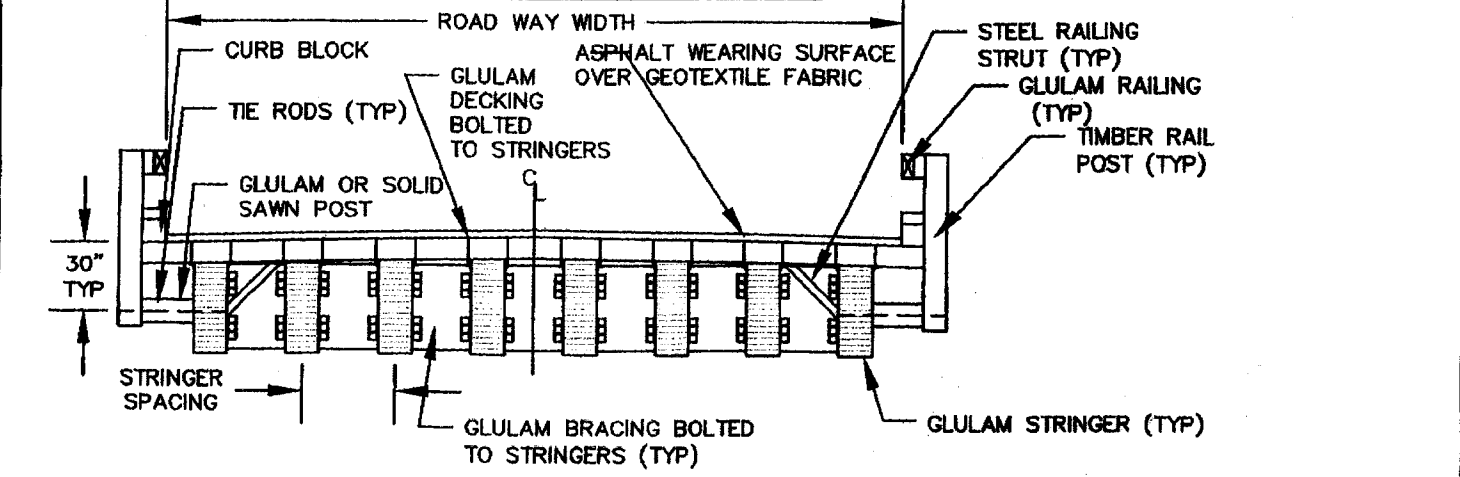


Project No. <b>61040E</b>	<b>RECORD HILL WIND RECORD HILL WIND LLC</b>			
Engineer  <b>SEWALL</b> JAMES W. SEWALL COMPANY / Since 1880 SEWALL.COM 800 648 4202 AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS	Project Location ROXBURY, MAINE	Date 7/23/09	Drawn by MT	Checked by BCH
Drawing Description <b>STREAM CROSSING AREAS 8 OF 8</b>		Scale: 1"=50' <small>9000-07-28 Army Corps Engineering Bx11 WaterInfo.dwg</small>		




- NOTES:**
1. ALL DETAILS, MEMBERS SIZES & CONNECTIONS ARE SUGGESTED DETAILS ONLY AND ARE TO BE VERIFIED BY THE DESIGNER.
  2. ALL STEEL SHALL BE A36 AND SHALL BE GALVANIZED.
  3. ALL NUTS & BOLT HEADS (EXCEPT CARRIAGE TYPE) IN CONTACT WITH TIMBER SHALL HAVE WASHERS INSTALLED.

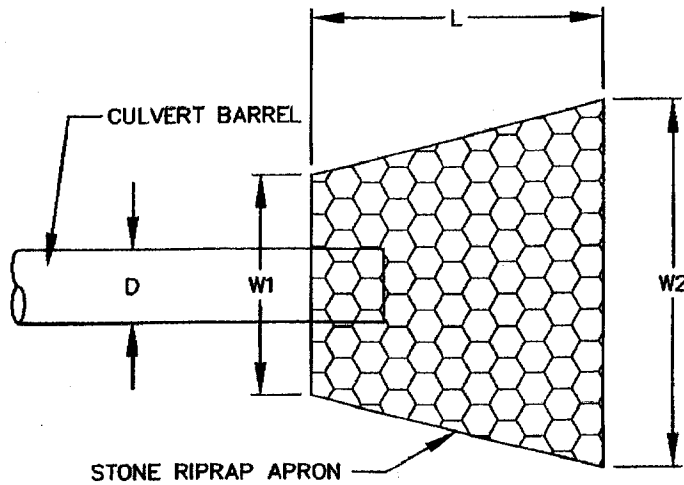
**GENERIC TIMBER BRIDGE FRAMING PLAN**



**A-A TRANSVERSE SECTION OF GENERIC TIMBER BRIDGE**

Project No. <b>61040E</b>		<b>RECORD HILL WIND RECORD HILL WIND LLC</b>			
Engineer		Project Location	Date	Drawn by	Checked by
 <b>SEWALL</b> JAMES W. SEWALL COMPANY / Since 1880 SEWALL.COM 800 648 4202		ROXBURY, MAINE	12/01/08	JH	BCH
		Drawing Description	Scale: NTS		
		<b>BRIDGE DETAIL</b>			

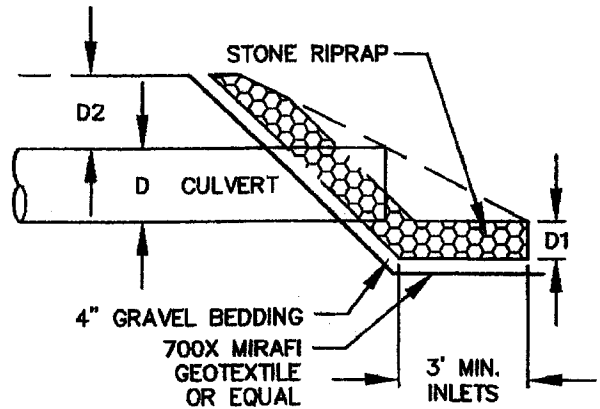




D	W1	W2	L	d50
15"	4'	14'	10'	4"
18"	5'	15'	10'	6"
24"	6'	16'	12'	6"

**CULVERT OUTLET DETAIL**  
**PLAN VIEW**  
 NOT TO SCALE

**NOTES**  
 1. THE RIPRAP APRON SHALL BE CONSTRUCTED WITH NO SLOPE ALONG ITS LENGTH.



D	D1	D2 INLET	D2 OUTLET
15"	9"	24"	12"
18"	13.5"	24"	12"
24"	13.5"	36"	12"

**CULVERT INLET/OUTLET DETAIL**  
**PLAN VIEW**  
 NOT TO SCALE

Project No.

**61040E**

Engineer



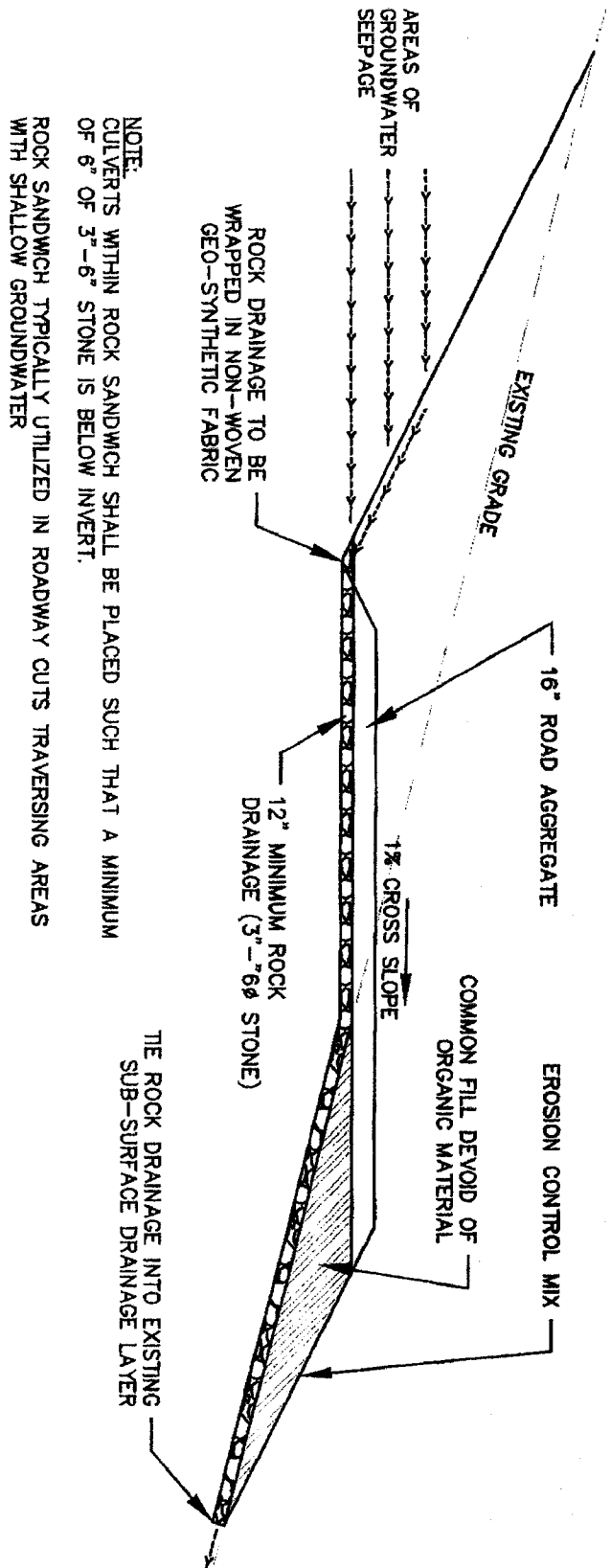
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 SURVEYING AND NATURAL  
 RESOURCE CONSULTANTS

**RECORD HILL WIND**  
**RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	12/01/08	JH	BCH

Drawing Description: Scale: NTS

**CULVERT DETAIL**



NOTE: CULVERTS WITHIN ROCK SANDWICH SHALL BE PLACED SUCH THAT A MINIMUM OF 6" OF 3"-6" STONE IS BELOW INVERT.  
 ROCK SANDWICH TYPICALLY UTILIZED IN ROADWAY CUTS TRAVERSING AREAS WITH SHALLOW GROUNDWATER

**TYPICAL ROCK SANDWICH DETAIL**  
 NOT TO SCALE

Project No. **61040E**

Engineer



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 SURVEYING AND NATURAL  
 RESOURCE CONSULTANTS

**RECORD HILL WIND  
 RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	12/01/08	JH	BCH

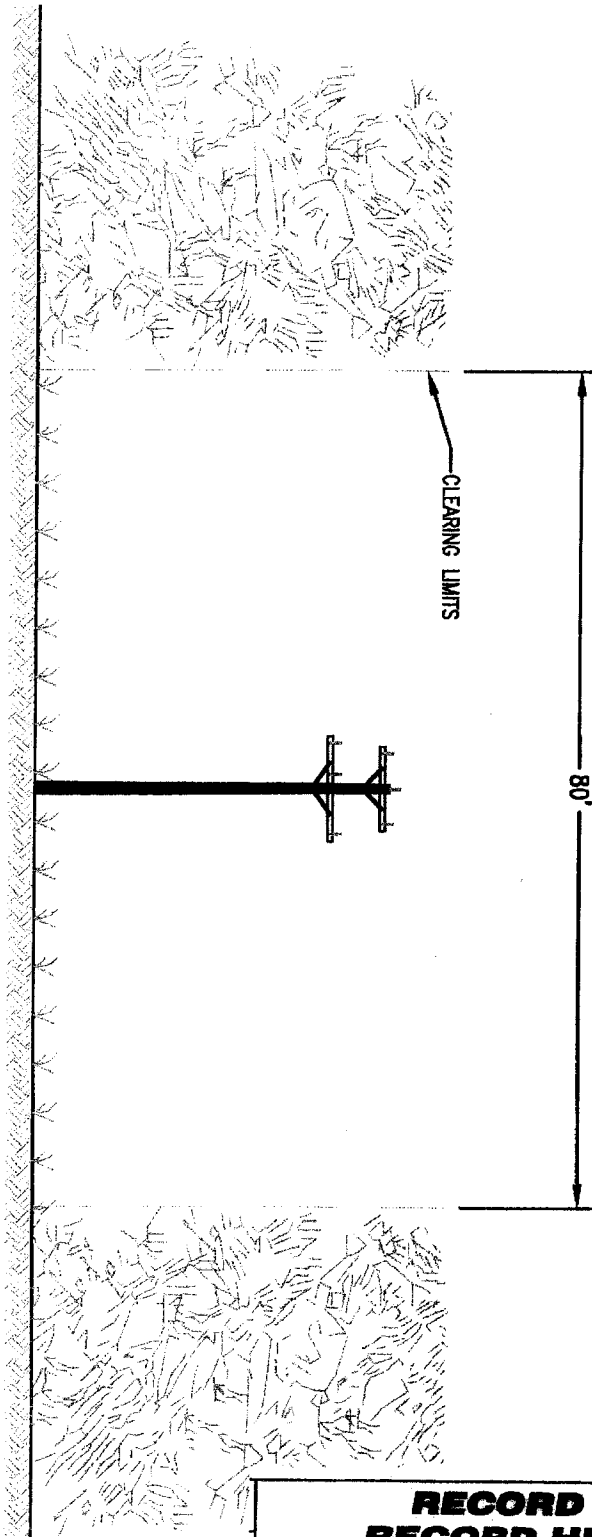
Drawing Description	Scale: NTS
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**ROCK SANDWICH DETAIL**

2008-10-02 Army Corps Engineering Bc11 details.dwg

ISSUED FOR REVIEW - NOT FOR CONSTRUCTION

PROPOSED 34.5 KV STRUCTURE



**RECORD HILL WIND  
RECORD HILL WIND LLC**

JOB NO.: 748002

**TYPICAL RIGHT-OF-WAY CROSS SECTION  
RECORD HILL WIND PROJECT  
34.5 KV COLLECTOR SYSTEM  
OXFORD COUNTY, MAINE**

**PREPARED FOR:  
RECORD HILL WIND, LLC  
110 FORESIDE ROAD  
CUMBERLAND FORESIDE, MAINE 04110**



**SGC ENGINEERING, LLC**

- Civil Design & Survey Engineering
- Environmental & Regulatory Permitting
- Electrical Power Systems Engineering

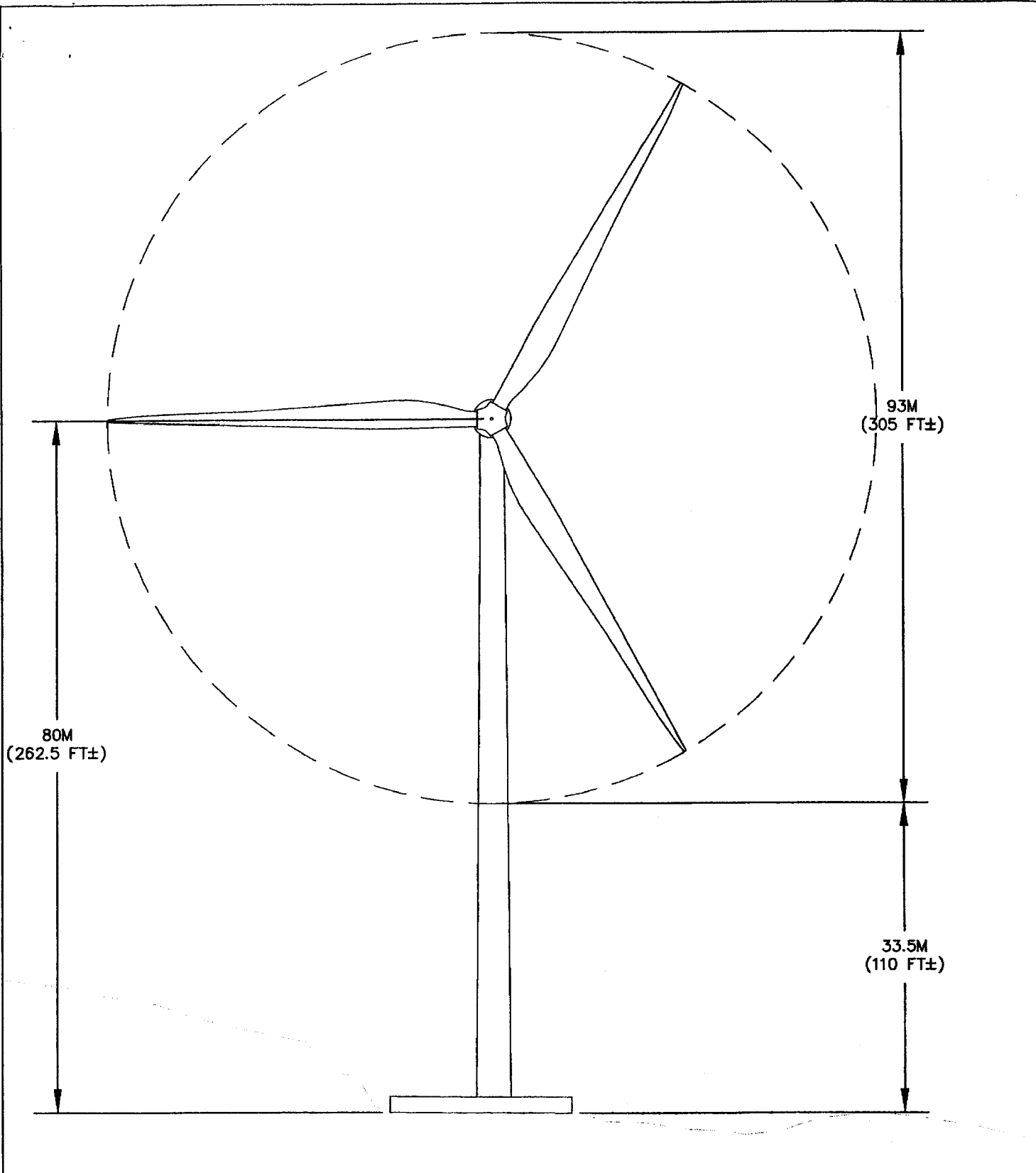
Offices - Westbrook & Orton, Maine  
South Burlington, Vermont  
Farmington, New Mexico

DWG NO.: 101-900

DATE: JULY 27, 2009

DRAWN: MGL

SCALE: NTS



Project No.

**61040E**

Engineer



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AN INTEGRATED TEAM OF  
GEOSPATIAL ENGINEERING,  
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RESOURCE CONSULTANTS

**RECORD HILL WIND  
RECORD HILL WIND LLC**

Project Location	Date	Drawn by	Checked by
ROXBURY, MAINE	7/29/09	JH	BCH
Drawing Description		Scale:	NTS

**TURBINE PROFILE**

**Table E-1. Wetland and Stream Impact Summary – Record Hill Wind Project**

<b>Wetland Impacts</b>	<b>Permanent fill* (sq. ft.)</b>	<b>Permanent Clearing (sq. ft.)**</b>	<b>Stream impact--- culverts (sq. ft.)</b>
Access, Ridge & O&M Site	13,364	0	392
Generator Lead Line	0	30,172	0
<b>TOTAL</b>	13,364	30,172	392

Notes:

\* Permanent fill in wetlands are those areas where fill will be placed and not removed after construction. Because of slopes present on the Project site, toe of grading extends beyond what is necessary to clear.

\*\*The Project area is confined within a parcel utilized for commercial timber harvesting; this includes the entire area to be cleared for the electrical collector line system.

**RECORD HILL WIND  
RECORD HILL WIND LLC**

**MEMORANDUM OF AGREEMENT**  
**BETWEEN THE**  
**NEW ENGLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS,**  
**AND THE**  
**MAINE STATE HISTORIC PRESERVATION OFFICER**  
**REGARDING THE RECORD HILL WIND, LLC PROJECT**  
**ROXBURY, MAINE**

WHEREAS, the New England District, U.S. Army Corps of Engineers (“NED”) plans to issue a permit for the construction of the Record Hill Wind, LLC Project in Roxbury, Maine (Corps Permit Application No. NAE-2008-03763), pursuant to 33 CFR Part 325, Appendix C; and

WHEREAS, NED has determined that the Record Hill Wind Project will have an adverse effect on the Austin Farmstead, 72 Swift River Road, Byron; Knapp Farmstead, 60 Swift River Road, Byron; and Mitchell Farmstead, 816 Roxbury Road, Mexico, which have been determined to be eligible for listing in the National of Register of Historic Places; and

WHEREAS, NED has consulted with the Maine State Historic Preservation Officer (“Maine SHPO”) pursuant to 36 CFR Part 800 and 33 CFR Part 325, Appendix C, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f) and the Maine SHPO concurred with NED’s determination on October 14, 2009; and

WHEREAS, the parties agree that there are no prudent or feasible alternatives to avoid the adverse effect; and

WHEREAS, in accordance with 36 CFR Section 800.6(a)(1), NED has notified the Advisory Council on Historic Preservation (“ACHP”) of its adverse effect determination with specified documentation and the Council has chosen not to participate in the consultation pursuant to 36 CFR Section 800.6(a)(1)(iii); and

NOW, THEREFORE, NED and Maine SHPO agree that the project shall be implemented in accordance with the following stipulations in order to take into account the project’s effect on historic properties.

**Stipulations**

NED will ensure that the following measures are carried out prior to the construction of the Record Hill Wind Project:

**A. Documentation**

The Austin Farmstead, Knapp Farmstead, and Mitchell Farmstead shall be documented to the standards of the Maine Historic Building Record in accordance with the schedules of documentation contained in Attachment A.

**B. Amendment**

At any time during the period in which this memorandum of agreement is in effect, the NED or Maine SHPO may request that it be amended, whereupon the parties shall consult to consider the proposed amendment. 36 C.F.R. 800.6(c)(7) shall govern the execution of any such amendment.

**C. Dispute Resolution**

Should Maine SHPO object within 30 days to any actions proposed by any party pursuant to this agreement, the Maine SHPO will contact NED and NED shall consult with the party to resolve the objection. If NED determines that the objection cannot be resolved, NED shall request comments from the ACHP pursuant to 36 CFR Section 800.6 (b) and 33 CFR, Appendix C. Any Council comments provided in response to such a request will be taken into account by NED in accordance with 36 CFR Section 800.6 (c) (2) and 33 CFR, Appendix C with reference only to the subject of the dispute. The responsibility of NED to carry out all actions under this agreement, other than those subject to dispute, will remain unchanged.

**D. Duration**

This MOA will be null and void if its terms are not carried out within one (1) year from the date of its execution. Prior to such time, this MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

---

Execution of this Memorandum of Agreement by NED and Maine SHPO, and implementation of its terms, are evidence that NED has afforded the ACHP an opportunity to comment on this project and its effects on historic properties, and NED has taken into account the effects of the undertaking on historic properties.

**SIGNATORIES:**

NEW ENGLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS

By: Jennifer L. McCarthy Date: 11/6/09  
Jennifer L. McCarthy  
Chief, Regulatory Division

MAINE STATE HISTORIC PRESERVATION OFFICER

By: Earle G. Shettleworth, Jr. Date: 11/4/09  
Earle G. Shettleworth, Jr.  
State Historic Preservation Officer



**ATTACHMENT A**

**TO THE  
MEMORANDUM OF AGREEMENT  
BETWEEN THE  
NEW ENGLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS,  
AND THE  
MAINE STATE HISTORIC PRESERVATION OFFICER  
REGARDING THE RECORD HILL WIND PROJECT  
ROXBURY, MAINE**

**SCHEDULES OF DOCUMENTATION**

- Austin Farmstead, 72 Swift River Road, Byron, Maine (MHBR No. 44)**
- Knapp Farmstead, 60 Swift River Road, Byron, Maine (MHBR No. 45)**
- Mitchell Farmstead, 816 Roxbury Road, Mexico, Maine (MHBR No. 46)**

# MAINE HISTORIC BUILDING RECORD

## SCHEDULE OF DOCUMENTATION FOR THE RECORDING OF Austin Farmstead, 72 Swift River Road Byron, Maine MHBR No. 44

### I. WRITTEN DOCUMENTATION

An "Outline Format" report (see page 10 of "HABS Historical Reports" (2000) at [www://www.cr.nps.gov/habshaer](http://www.cr.nps.gov/habshaer)) regarding the building is required. This should be as thorough as possible, stressing the historical and architectural significance of the Austin Farmstead. **NOTE:** unless access is granted by the property owner, disregard the requirements relating to interior documentation.

### II. PHOTOGRAPHIC DOCUMENTATION

A. All photographic documentation shall conform to the Guide to Preparing HABS/HAER Photographic Documentation (September 1997), and shall include an Index and Key to Photographs (see page 12 of the Guide). The acceptable format is true black and white 4" x 5" negatives and contact prints.

B. Views:

1. Elevations.
2. Perspective view, front facade and one side.
3. Perspective view rear, front facade and opposing side.
4. Detail view of main entrance.
5. General views from a distance sufficient to show the property's environmental setting including relation to the roadway, fields and background ridge lines.

C. One set of negatives and one set of contact prints shall be submitted.

D. Historic views:

A thorough search should be undertaken and photographic copies made of existing historic photographs if they are copyright-free. A source and approximate date for each original photograph should be stated in the Index to Photographs for each original photograph. If a sizable collection exists, please consult with the MHPC regarding the size of the sample to be copied. If historical views cannot be found, please list in the bibliography all the repositories searched.

- E. Representative color digital images of the exterior of the complex. A minimum 6 megapixel camera shall be used, and all images shall be shot at full resolution and submitted in jpg format on a CD. In addition, 8"x10" glossy prints shall be provided, and all prints shall be labeled with a permanent marking pen, including name of the building, town, direction of photograph, MHBR No., and date.

### III. PACKAGING REQUIREMENTS

- A. All materials submitted as documentation must follow the requirements outlined in the Guide to Preparing HABS/HAER Photographic Documentation (September, 1997). However, the photos should be submitted in sleeves comparable to those used for negatives rather than photo mount cards.
- B. Both an electronic copy and a hard copy of the Index to Photographs shall be provided.
- C. This project has been assigned the Maine Historic Building Record number **MHBR No. 44.**

## MAINE HISTORIC BUILDING RECORD

### SCHEDULE OF DOCUMENTATION FOR THE RECORDING OF Knapp Farmstead, 60 Swift River Road Byron, Maine MHBR No. 45

#### I. WRITTEN DOCUMENTATION

An "Outline Format" report (see page 10 of "HABS Historical Reports" (2000) at [www://www.cr.nps.gov/habshaer](http://www.cr.nps.gov/habshaer)) regarding the building is required. This should be as thorough as possible, stressing the historical and architectural significance of the Knapp Farmstead. **NOTE:** unless access is granted by the property owner, disregard the requirements relating to interior documentation.

#### II. PHOTOGRAPHIC DOCUMENTATION

A. All photographic documentation shall conform to the Guide to Preparing HABS/HAER Photographic Documentation (September 1997), and shall include an Index and Key to Photographs (see page 12 of the Guide). The acceptable format is true black and white 4" x 5" negatives and contact prints.

B. Views:

1. General views of the connected farmstead.
2. Elevations.
3. Perspective view, front facade and one side.
4. Perspective view rear, front facade and opposing side.
5. Detail view of main entrance.
6. General views from a distance sufficient to show the property's environmental setting including relation to the roadway, fields and background ridge lines.

C. One set of negatives and one set of contact prints shall be submitted.

D. Historic views:

A thorough search should be undertaken and photographic copies made of existing historic photographs if they are copyright-free. A source and approximate date for each original photograph should be stated in the Index to Photographs for each original photograph. If a sizable collection exists, please consult with the MHPC regarding the size of the sample to be copied. If historical views cannot be

found, please list in the bibliography all the repositories searched.

- E. Representative color digital images of the exterior of the complex. A minimum 6 megapixel camera shall be used, and all images shall be shot at full resolution and submitted in jpg format on a CD. In addition, 8"x10" glossy prints shall be provided, and all prints shall be labeled with a permanent marking pen, including name of the building, town, direction of photograph, MHBR No., and date.

### III. PACKAGING REQUIREMENTS

- A. All materials submitted as documentation must follow the requirements outlined in The Guide to Preparing HABS/HAER Photographic Documentation (September, 1997). However, the photos should be submitted in sleeves comparable to those used for negatives rather than photo mount cards.
- B. Both an electronic copy and a hard copy of the Index to Photographs shall be provided.
- C. This project has been assigned the Maine Historic Building Record number **MHBR No. 45.**

# MAINE HISTORIC BUILDING RECORD

## SCHEDULE OF DOCUMENTATION FOR THE RECORDING OF Mitchell Farmstead, 816 Roxbury Road Mexico, Maine MHBR No. 46

### I. WRITTEN DOCUMENTATION

An "Outline Format" report (see page 10 of "HABS Historical Reports" (2000) at [www://www.cr.nps.gov/habshaer](http://www.cr.nps.gov/habshaer)) regarding the building is required. This should be as thorough as possible, stressing the historical and architectural significance of the Mitchell Farmstead. **NOTE:** unless access is granted by the property owner, disregard the requirements relating to interior documentation.

### II. PHOTOGRAPHIC DOCUMENTATION

A. All photographic documentation shall conform to the Guide to Preparing HABS/HAER Photographic Documentation (September 1997), and shall include an Index and Key to Photographs (see page 12 of the Guide). The acceptable format is true black and white 4" x 5" negatives and contact prints.

B. Views:

1. General views of the connected farmstead.
2. Elevations.
3. Perspective view, front facade and one side.
4. Perspective view rear, front facade and opposing side.
5. Detail view of main entrance.
6. General views from a distance sufficient to show the property's environmental setting including relation to the roadway, fields and background ridge lines.

C. One set of negatives and one set of contact prints shall be submitted.

D. Historic views:

A thorough search should be undertaken and photographic copies made of existing historic photographs if they are copyright-free. A source and approximate date for each original photograph should be stated in the Index to Photographs for each original photograph. If a sizable collection exists, please consult with the MHPC regarding the size of the sample to be copied. If historical views cannot be

found, please list in the bibliography all the repositories searched.

- E. Representative color digital images of the exterior of the complex. A minimum 6 megapixel camera shall be used, and all images shall be shot at full resolution and submitted in jpg format on a CD. In addition, 8"x10" glossy prints shall be provided, and all prints shall be labeled with a permanent marking pen, including name of the building, town, direction of photograph, MHBR No., and date.

### III. PACKAGING REQUIREMENTS

- A. All materials submitted as documentation must follow the requirements outlined in The Guide to Preparing HABS/HAER Photographic Documentation (September, 1997). However, the photos should be submitted in sleeves comparable to those used for negatives rather than photo mount cards.
- B. Both an electronic copy and a hard copy of the Index to Photographs shall be provided.
- C. This project has been assigned the Maine Historic Building Record number **MHBR No. 46.**



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

**MAINE PROGRAMMATIC GENERAL PERMIT (PGP)  
AUTHORIZATION LETTER AND SCREENING SUMMARY**

CENTRAL MAINE POWER COMPANY  
C/O TRC  
14 GABRIEL DRIVE  
AUGUSTA, MAINE 04330

CORPS PERMIT # NAE-2009-01866  
CORPS PGP ID# 09-265  
STATE ID# PBR

**DESCRIPTION OF WORK:**

Place temporary and permanent fill and conduct vegetative clearing in freshwater wetlands between Rumford and Roxbury, Maine in order to upgrade an existing 34.5 kV electrical transmission line to 115 kV and to construct a new electrical substation. This work will result in approximately 75 s.f. (0.001 acres) of

Project Description Continued on Page 2

LAT/LONG COORDINATES : 44.5392027° N 70.5459776° W USGS QUAD: RUMFORD, ME

**I. CORPS DETERMINATION:**

Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine Programmatic General Permit (PGP). Accordingly, other than possibly performing a compliance inspection (condition 23 of the permit) at some later date, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the PGP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed PGP carefully, including the PGP conditions beginning on page 7, to familiarize yourself with its contents. You are responsible for complying with all of the PGP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 38 of the PGP (page 15) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the PGP on October 11, 2010. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 11, 2011.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

**II. STATE ACTIONS: PENDING [ X ], ISSUED[ ], DENIED [ ] DATE \_\_\_\_\_**

APPLICATION TYPE: PBR: \_\_\_\_\_ TIER 1: \_\_\_\_\_ TIER 2: \_\_\_\_\_ TIER 3: X LURC: \_\_\_\_\_ DMR LEASE: \_\_\_\_\_ NA: \_\_\_\_\_

**III. FEDERAL ACTIONS:**

JOINT PROCESSING MEETING: 8/13/09 LEVEL OF REVIEW: CATEGORY 1: \_\_\_\_\_ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10 \_\_\_\_\_, 404 X, 10/404 \_\_\_\_\_, 103 \_\_\_\_\_

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at <http://per2.nwp.usace.army.mil/survey.html>

Jay L. Clement  
JAY L. CLEMENT  
SENIOR PROJECT MANAGER  
MAINE PROJECT OFFICE

PHILIP T. FEIR 7-22-2010  
PHILIP T. FEIR  
COLONEL, CORPS OF ENGINEERS  
DISTRICT ENGINEER  
DATE





US Army Corps  
of Engineers  
New England District

Project Description Continued from Page 1

permanent wetland impact; 12,350 s.f. (0.28 acres) of temporary impact (access mats); and 27,975 s.f. (0.64 acres) of clearing of overstory wetland vegetation. This work is shown on the attached plans entitled "CMP Section 270 (Existing Section 59) and Roxbury Substation" in 23 sheets undated "10/26/2009" and "CMP SECTION 270 115 KV UPGRADE, R.O.W. CROSS SECTIONS" in six sheets dated for permit "7/13/10"

ADDITIONAL SPECIAL CONDITIONS FOR  
DEPARTMENT OF THE ARMY  
PROGRAMMATIC GENERAL PERMIT  
NO. NAE-2009-01866

1. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.
2. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.
3. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.
4. All areas of temporary waterway or wetland fill will be restored to their original contour and character upon completion of the project.
5. Mitigation shall consist of payment of ~~\$119,130.71~~ to the Natural Resource Mitigation Fund. The Corps will provide a completed ILF Project Data Worksheet which must be mailed with a cashiers check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. **This authorization is not valid until** the permittee provides the Corps with a copy of the check, with the permit number noted on the check. The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.

MFR

*[Signature]*  
Proj MGR

Refer to attached memo. The federal resource agencies have no objections and there are no outstanding ESA or Sec 106 issues. The proposed in-lieu fee mitigation is supported by the DEP and the federal resource agencies. Where this project maximizes use of existing utility corridor, only minimal additional, long-term impact to aquatic resources is expected.

**IN-LIEU-FEE (ILF) PROJECT DATA  
WORKSHEET**

DEP Invoice # \_\_\_\_\_

*[Note: Will be filled in by ILF Administrator in Augusta]*

Project name: Central Maine Power Company; Section 270 Upgrade; Rumford-Roxbury

Applicant (s): Central Maine Power Company

DEP/Corps permit #: Corps – NAE-2009-01866; DEP – L-24663-24-A-N; TF-B-N; VP-C-N

*[Note: DOT - Please attach a PDF copy of the permits]*

DEP ATS #: \_\_\_\_\_

ILF Contribution Amount \$119,130.71

*[Note: DOT - Please attach a PDF copy of the check]*

Project address: Within existing electrical transmission corridor; Rumford to Roxbury, ME

*[Note; DOT - Please attach a PDF map of project location]*

Biophysical region: Western Maine Foothills Subsection

Size of total impact subject to compensation: 25,174 s.f. (0.57 acres)

Resources Impacted: *[The resource table on page 2 MUST be filled in with all resource types impacted, amounts and functions.]*

Project manager: Corps – Clement; DEP - Margerum

Note: The ILF Project Data Worksheet must be filled out by the PM within 3 days of receiving a contribution to the "Natural Resource Mitigation Fund" and faxed along with a copy of the check to James Cassida in Augusta at 287-7826. The distribution of ILF contributions is time sensitive.

The PM should also double check to make sure that the check has been routed to Augusta with the correct account number reference. The account # for the ILF program is 014.06A.1776.14



Date: 7/20/10

MEMORANDUM FOR FILE

SUBJECT: Applicant name & File number - Central Maine Power Co.;

1. PRELIMINARY JURISDICTIONAL DETERMINATION:

NAE-2009-01866

The State of Maine has performed a preliminary jurisdictional determination with which the Corps concurs. (OR)

Our preliminary determination of jurisdiction is that the aquatic resources within the review area are waters of the United States due to the presence of: (Check all that apply)

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

2. SECTION 106 COORDINATION

Coordination with the State Historic Preservation Officer:  Yes /  N/A. Determination & date:

No effect by 10 day default; 9/29/09  No effect;  
 May effect;  No Adverse effect

Coordination with the Tribal Historic Preservation Officer(s):  Yes /  N/A. Determination & date:

No effect by default;  No effect;  
 May effect;  No Adverse effect

3. ENDANGERED SPECIES CONSULTATION:  USFWS/NMFS (circle)

Determination & date: 8/13/10  No effect;  Not likely to adversely effect

4. ESSENTIAL FISH HABITAT (EFH): EFH PRESENT Y  N (CIRCLE ONE).

IF YES: Based on the terms and conditions of the PGP, which are intended to ensure that authorized projects cause no more than minimal environmental impacts, the Corps of Engineers has preliminary determined that this project will not cause more than minimal adverse effects to EFH identified under the Magnuson-Stevens Fisheries Conservation and Management Act.

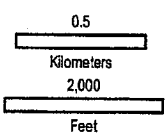
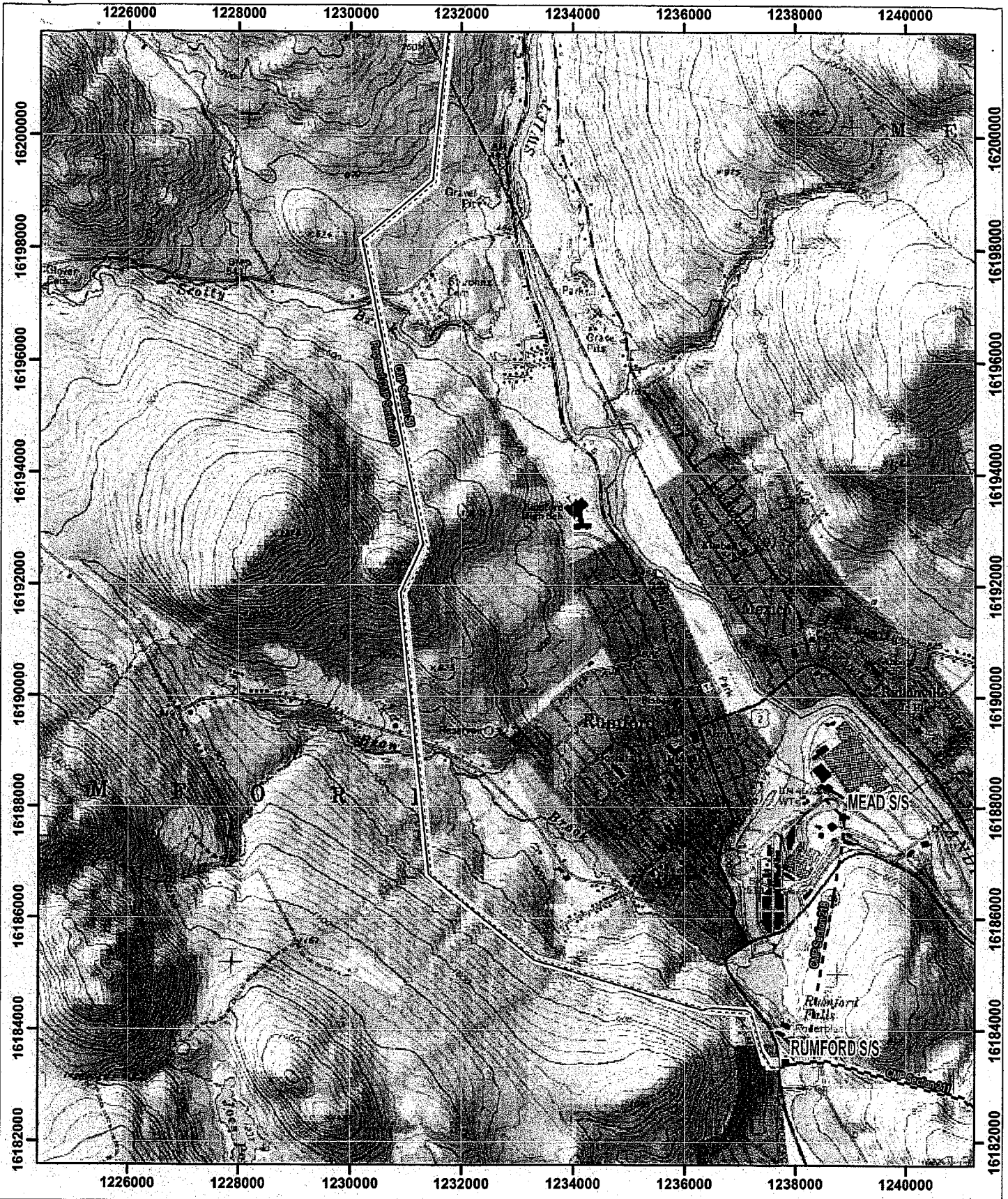
Determination & date:  No recommendations received;  No effect;

May Adversely effect.

EFH recommendations: \_\_\_\_\_

5. Specific Project information:

Jay L. Clement  
JAY L. CLEMENT  
Senior Project Manager  
Maine Project Office

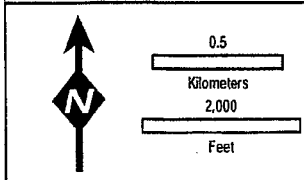
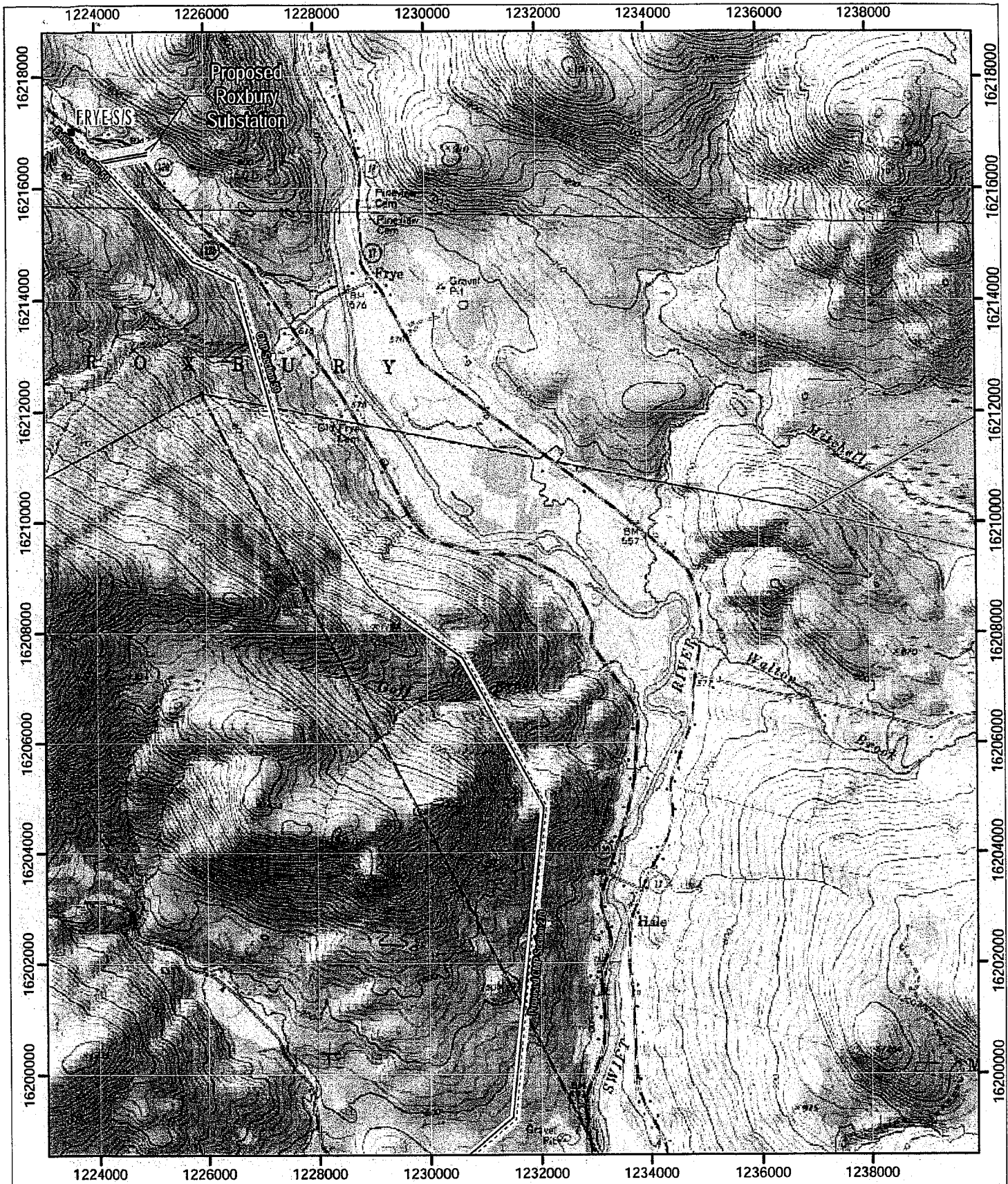


**Legend**

- Proposed Transmission ROW
- Substation
- Proposed Transmission Centerline (Section 270)
- Existing 34.5 kV Transmission Line (CMP)
- Existing 115 kV Transmission Line (CMP)
- Existing 345 kV Transmission Line (CMP)

CMP Section 270 (Existing Section 59) and Roxbury Substation

**Exhibit 3 Location Map**

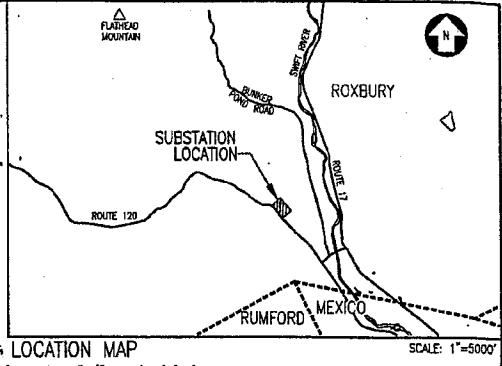
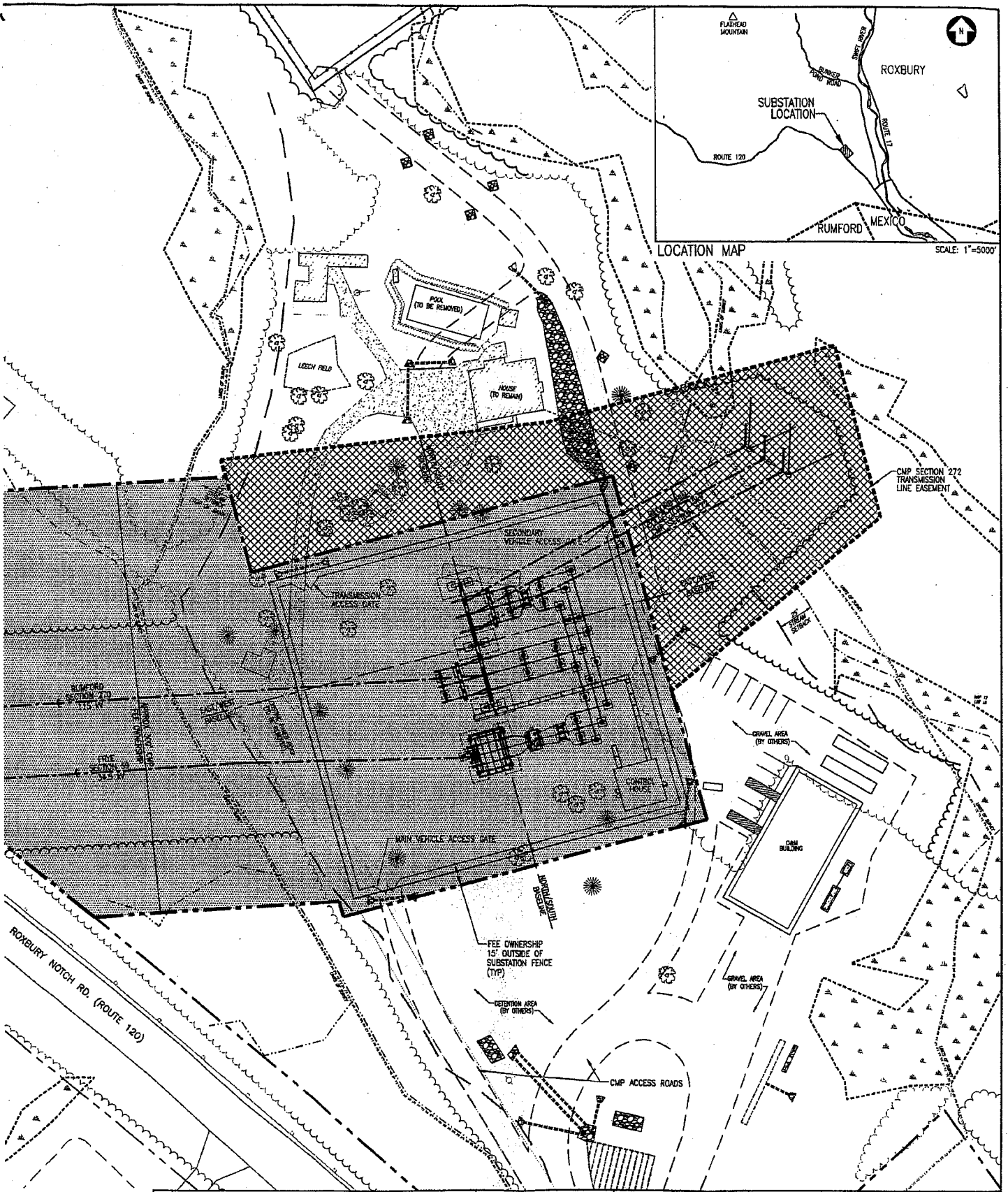


- Legend**
- Proposed Transmission ROW
  - Existing 34.5 kV Transmission Line (CMP)
  - Existing 115 kV Transmission Line (CMP)
  - Existing 345 kV Transmission Line (CMP)
  - Substation
  - Proposed Transmission Centerline (Section 270)

CMP Section 270 (Existing Section 59) and Roxbury Substation

**Exhibit 3 Location Map**

Page 2 of 2    10/26/2009



3

CE DRAWINGS


NO.	REVISION	DATE	BY	CK	P. E. Stamp	P. E. No.	Professional Engineer Seal

DESIGNED TRC/HAV  
 DRAWN TRC/LAV  
 CHECKED TRC/AJW  
 APPROVED

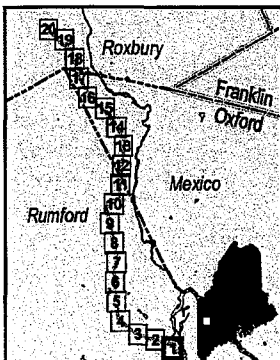
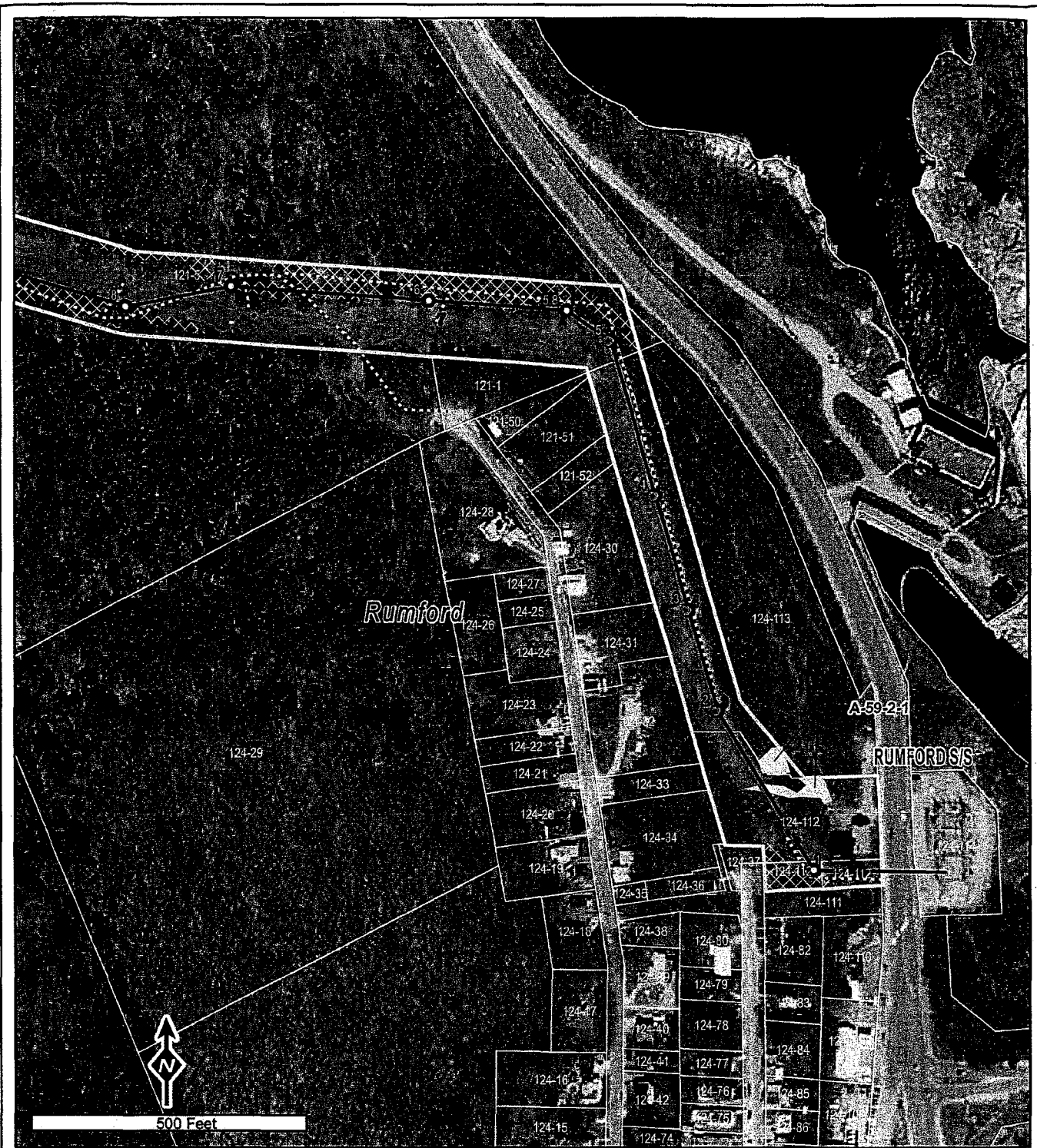
**SITE PLAN**

**CMP Section 270 (Existing Section 59)  
and Roxbury Substation**

ROXBURY MAINE

REVIEWED: **CENTRAL MAINE POWER COMPANY**  
 SYSTEM ENGINEERING  
 SCALE AS NOTED DATE

10/26/2009



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

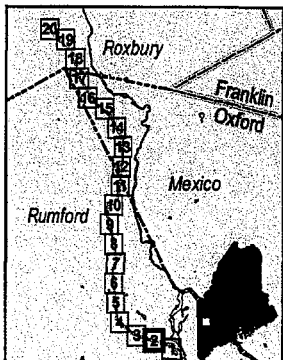
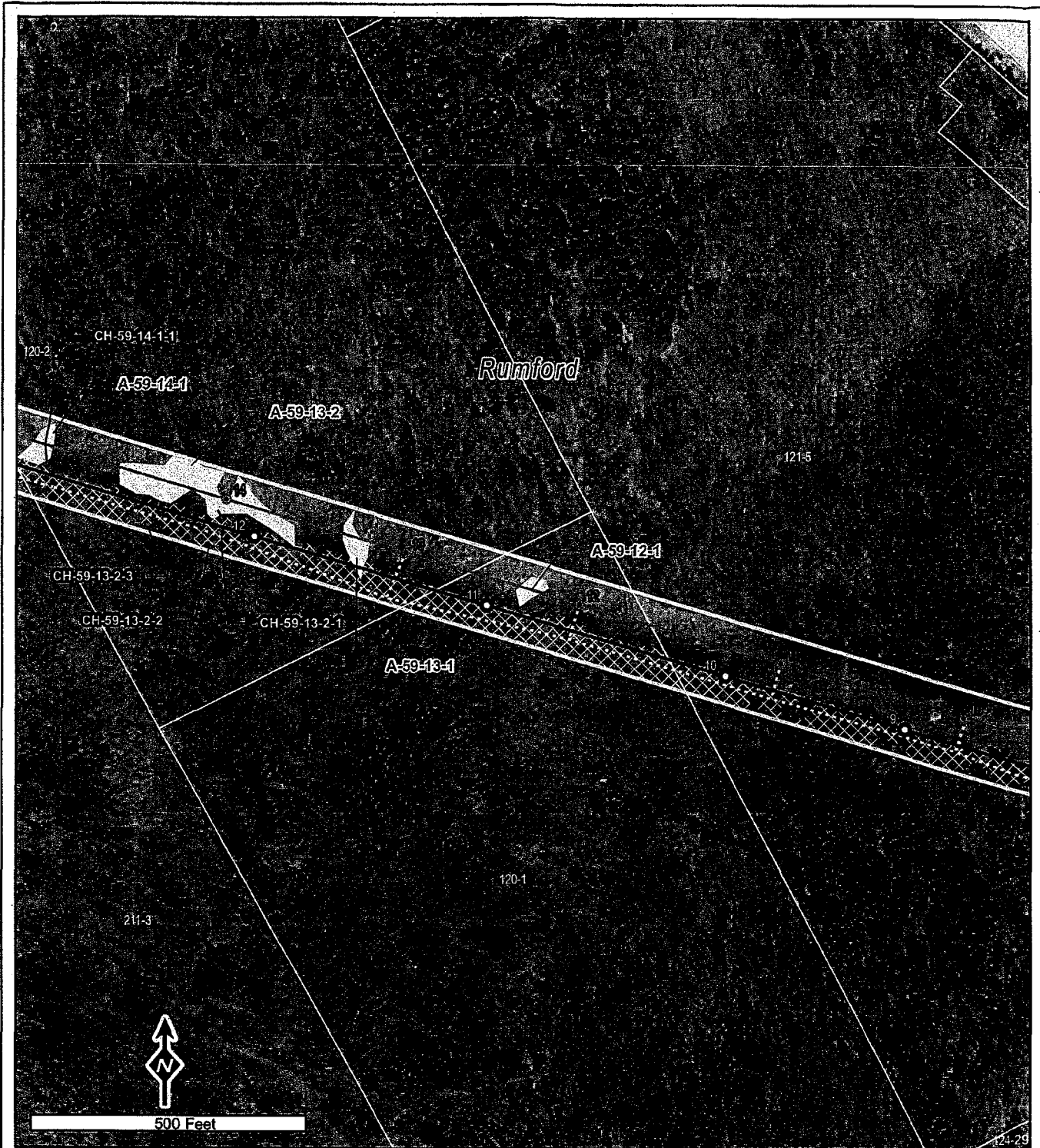
Page 1 of 20

CMP Section 270 (Existing Section 59)  
and Roxbury Substation

14 Gabriel Drive  
Augusta, ME 04330      10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec





Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**


**Natural Resources Map**

Page 2 of 20

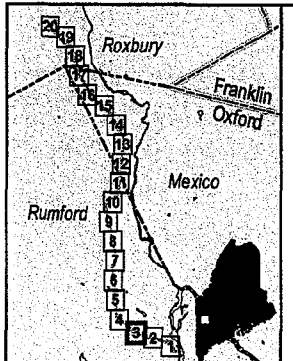
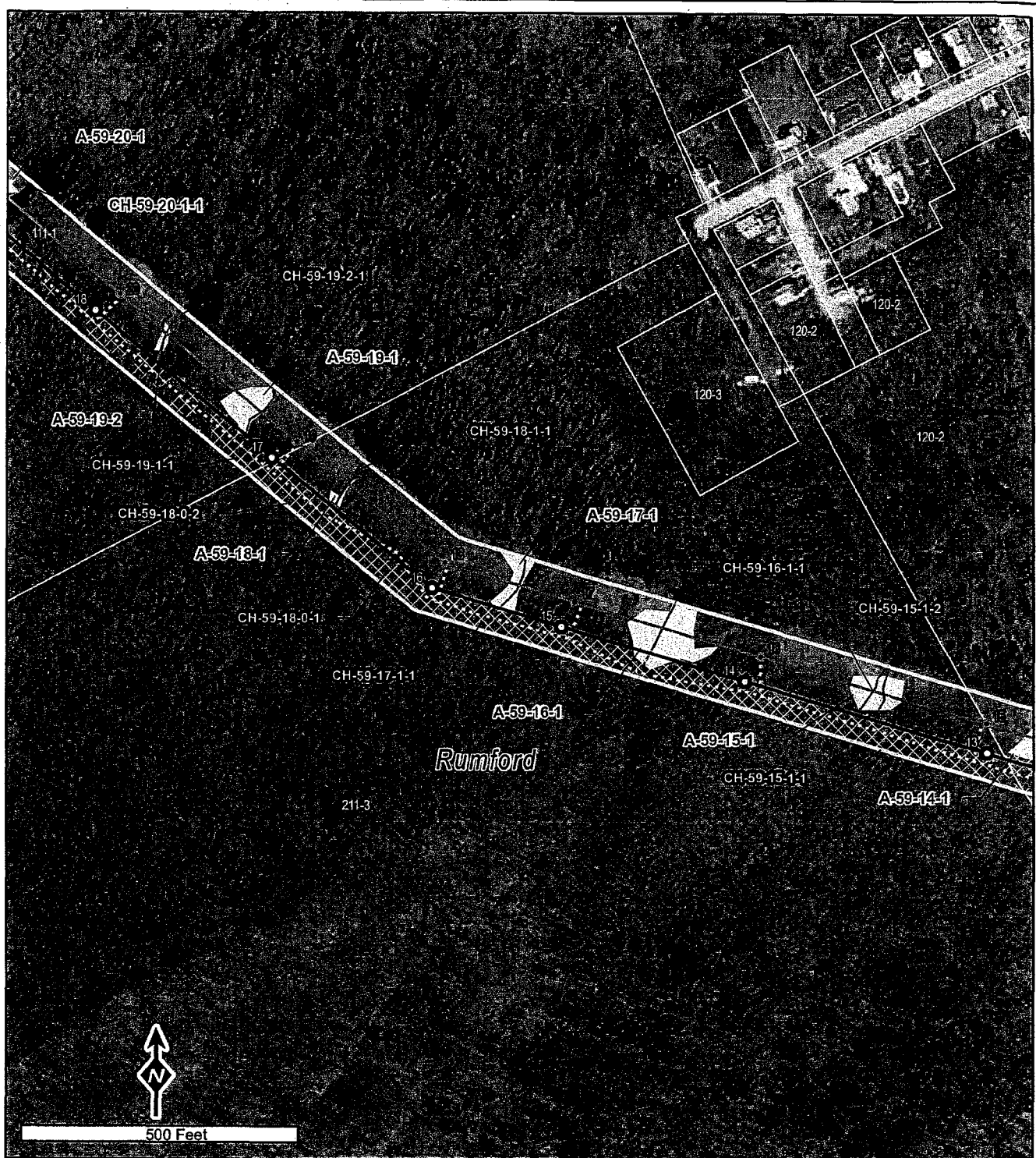
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

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 14 Gabriel Drive  
 Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
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Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

Page 3 of 20

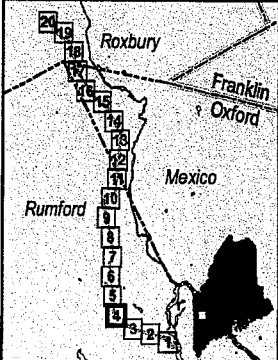
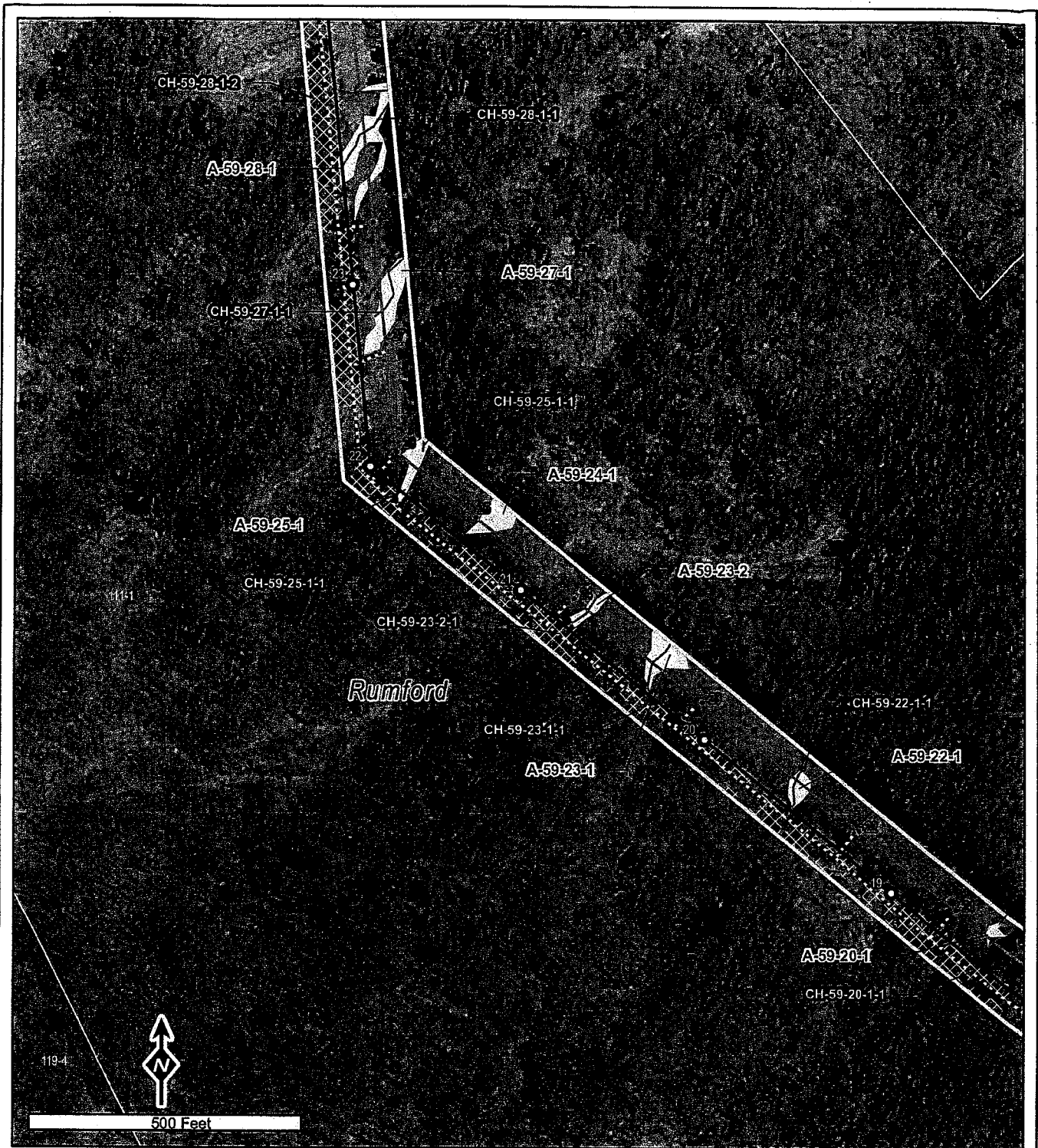
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

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14 Gabriel Drive  
Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	


**Exhibit 5-2**  
**Natural Resources Map**

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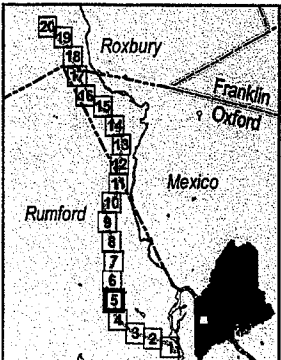
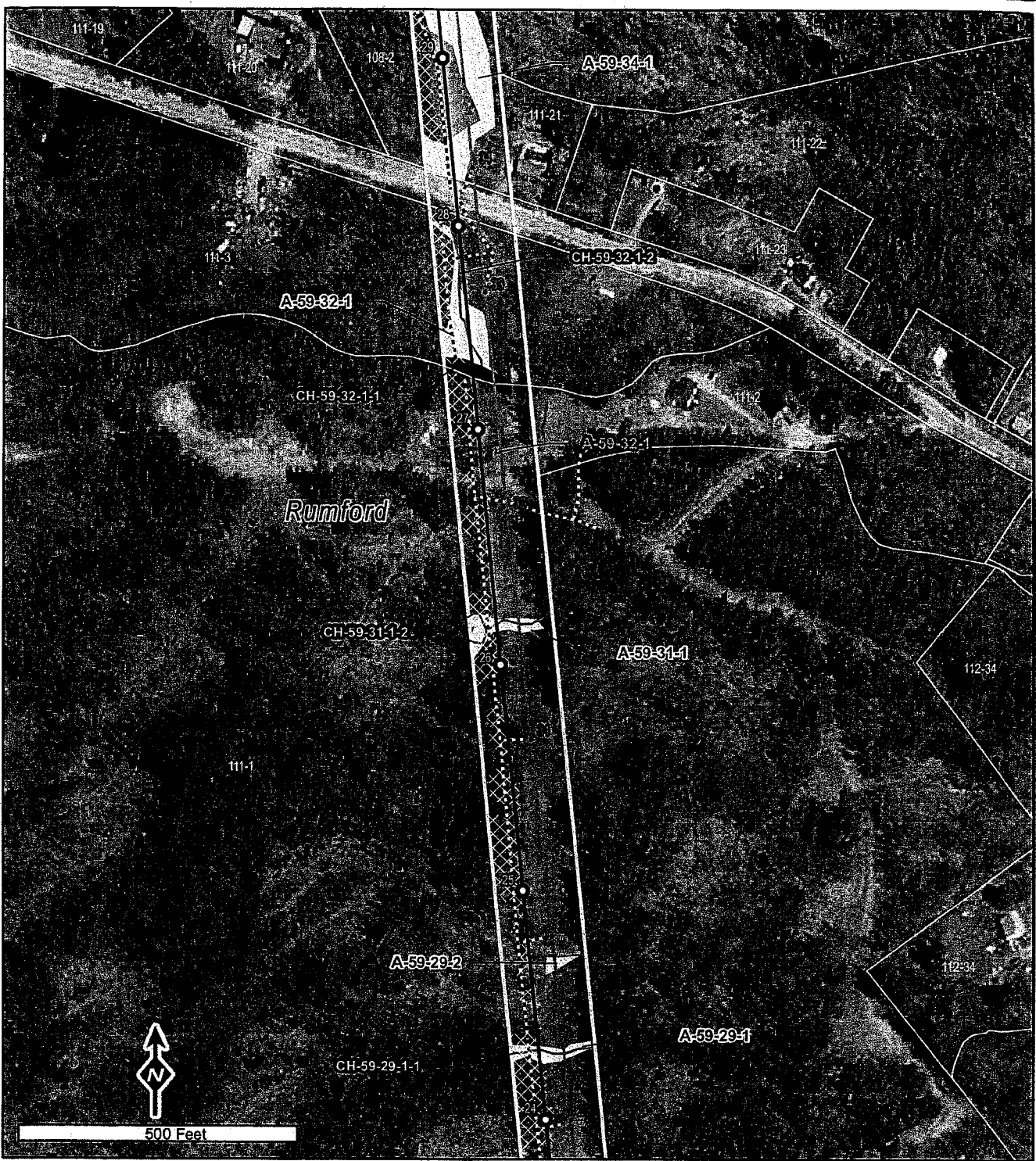
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

---


 14 Gabriel Drive  
 Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec




Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

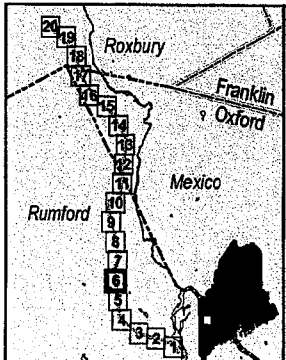
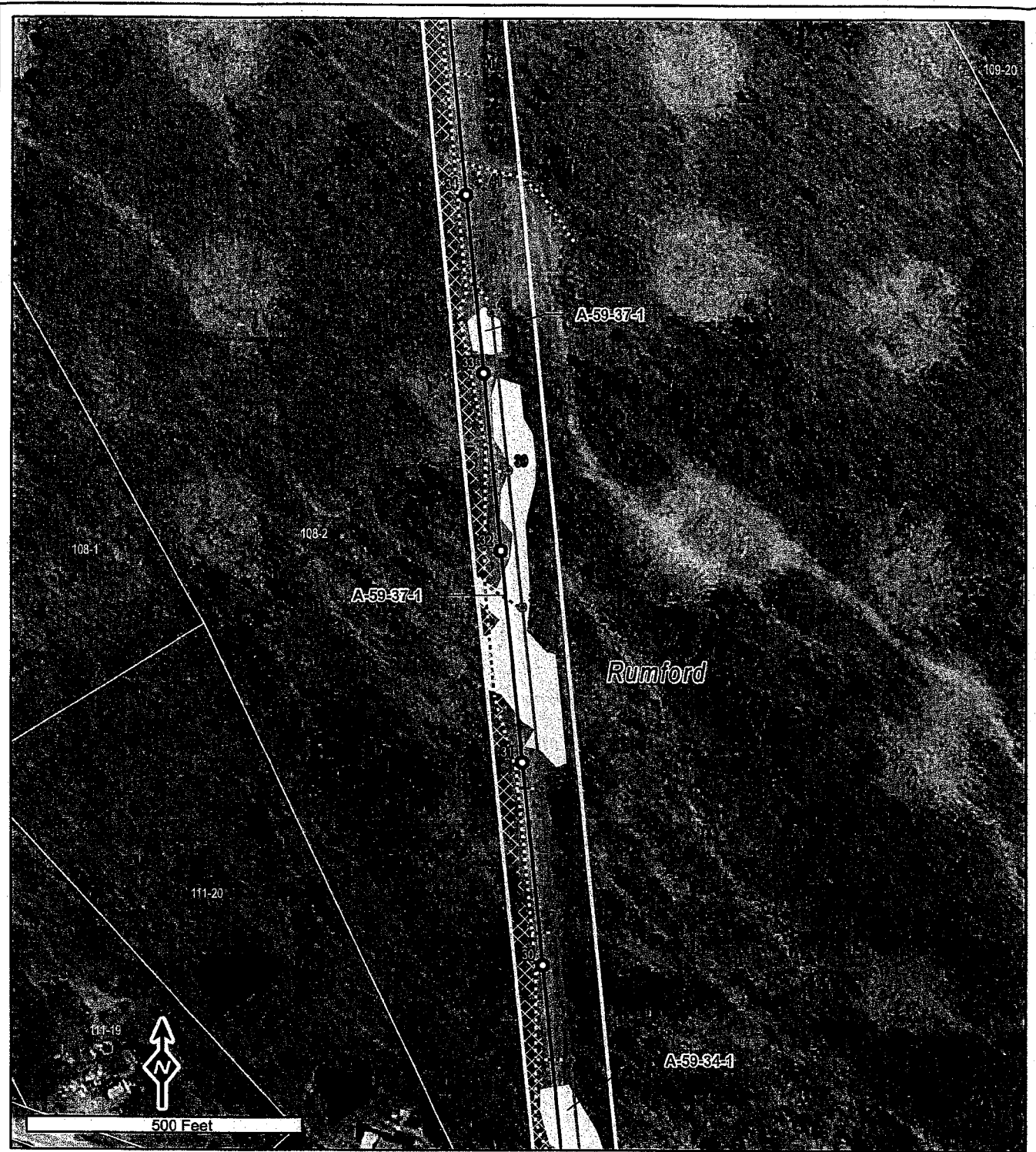
**Exhibit 5-2**  
**Natural Resources Map**

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CMP Section 270 (Existing Section 59)  
 and Roxbury Substation

 14 Gabriel Drive  
 Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

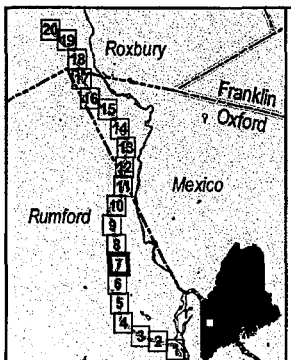
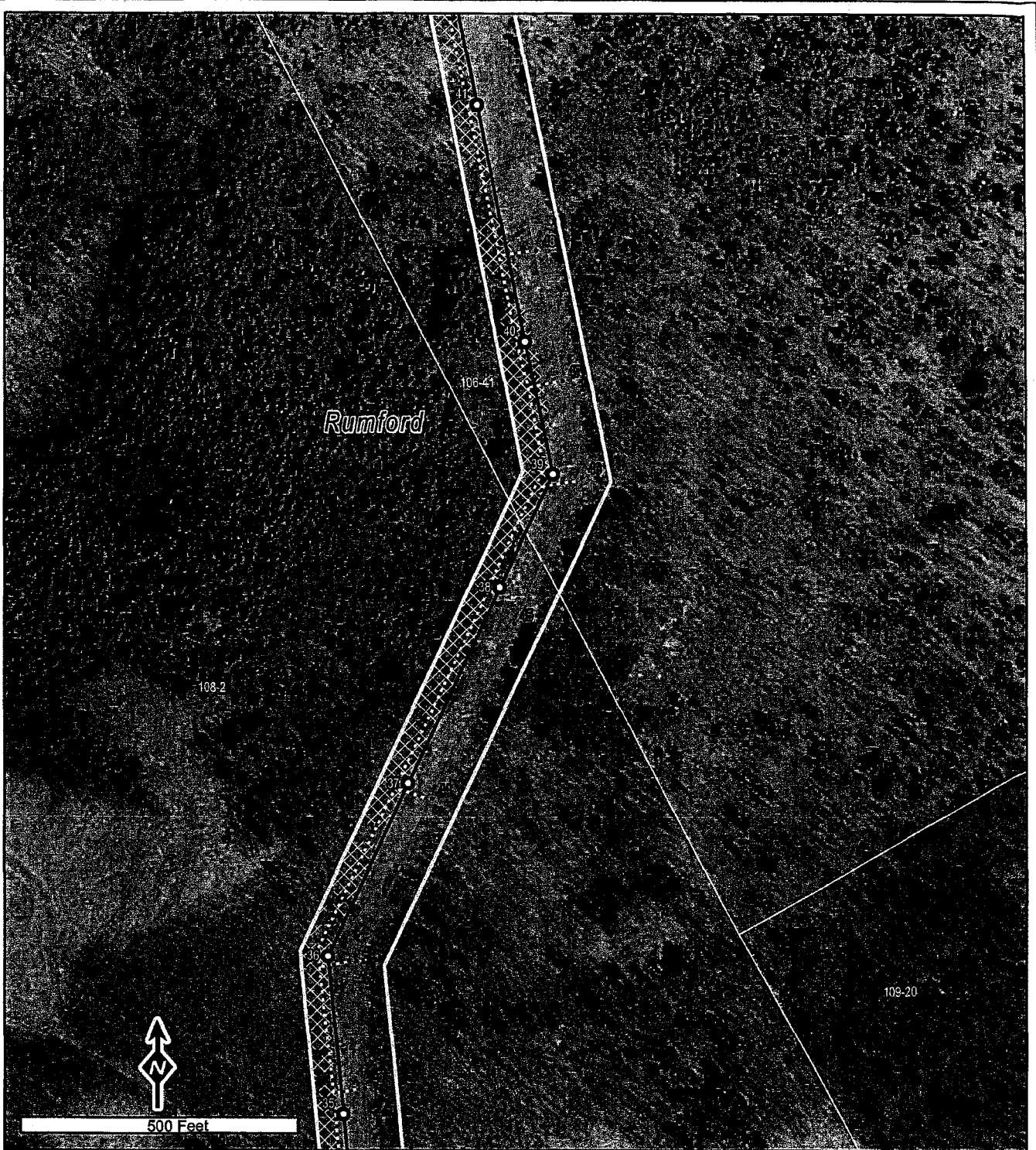
**Exhibit 5-2**  
**Natural Resources Map**

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CMP Section 270 (Existing Section 59)  
 and Roxbury Substation

14 Gabriel Drive  
 Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Data - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
<i>*Proposed off ROW access contingent upon landowner consent</i>	

**Exhibit 5-2**  
**Natural Resources Map**

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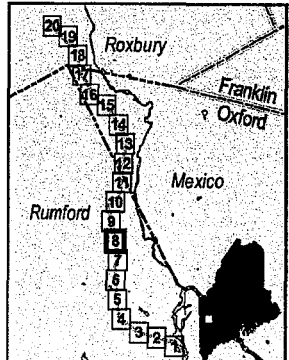
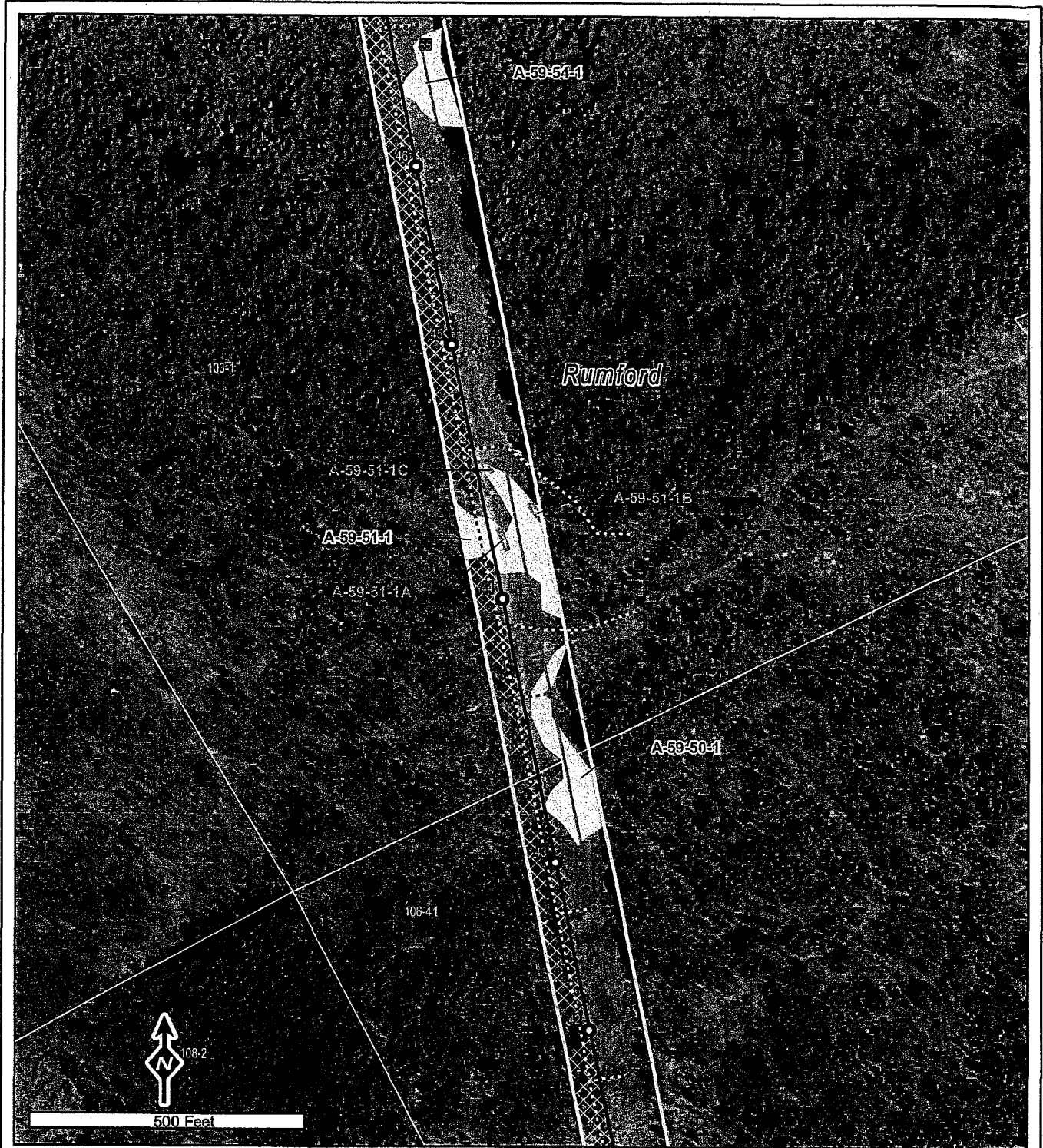
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

---

14 Gabriel Drive  
Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	
●	Proposed Structures
—	Proposed CMP Sect. 270
—	Proposed Section 59
⊠	Proposed Roxbury SS
---	Proposed Access*
■	Proposed Clearing Area
●	Existing CMP Structures to Remain
●	Existing CMP Structures to be Removed
—	Existing CMP Sect. 59 to be Removed
⊠	Non-Natural Pools (TRC)
⊠	Natural Vernal Pools (TRC)
⊠	Significant Vernal Pools (TRC)
■	Surface Water
—	Streams
—	Wetlands (TRC)
—	Wetlands (Stantec)
—	Approximate Parcel Boundary
●	Existing Structure #
●	Proposed Structure #

\*Proposed off ROW access contingent upon landowner consent

**Exhibit 5-2**


**Natural Resources Map**

Page 8 of 20

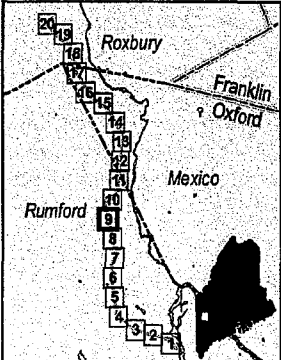
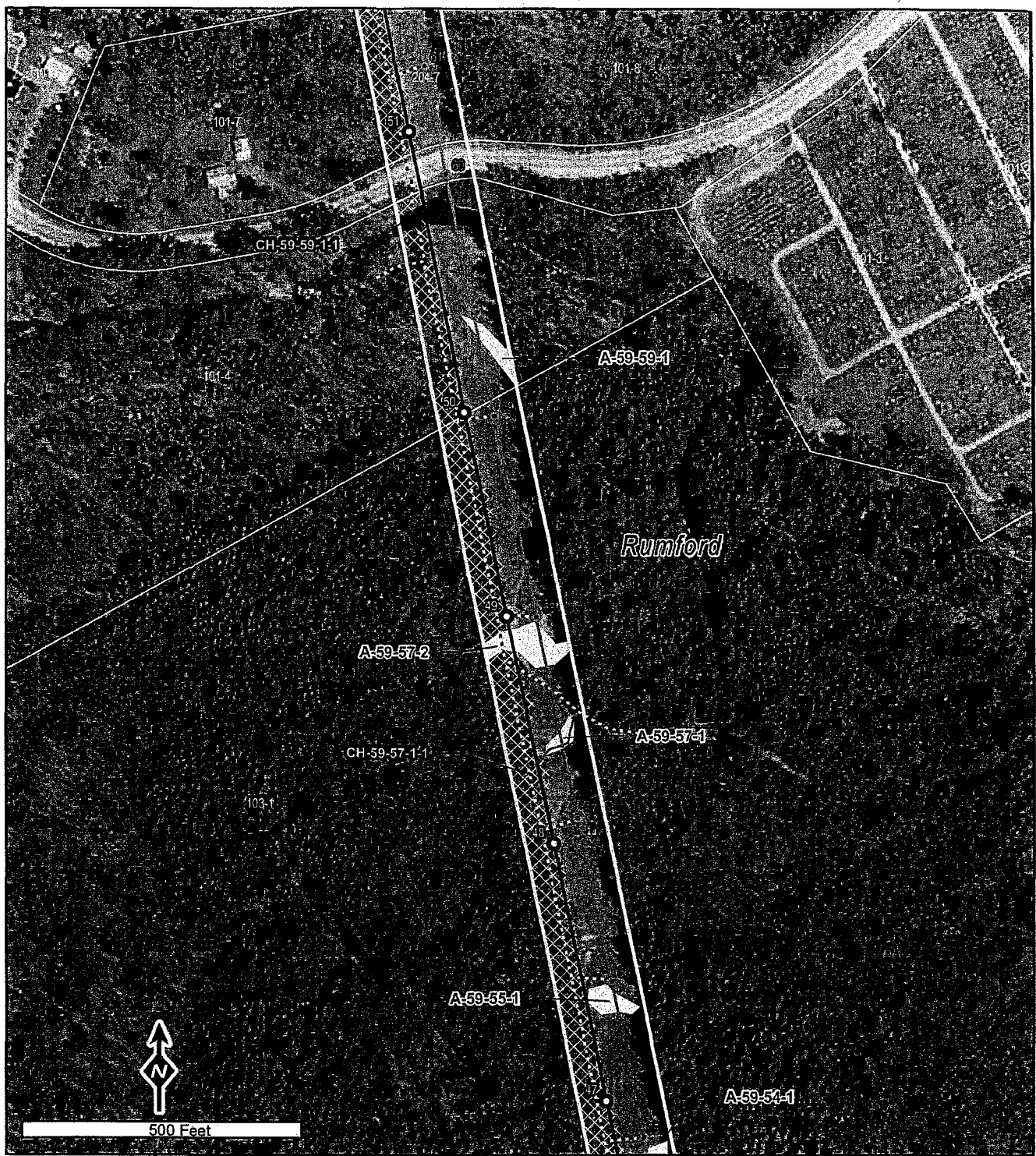
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

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 14 Gabriel Drive  
 Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

Page 9 of 20

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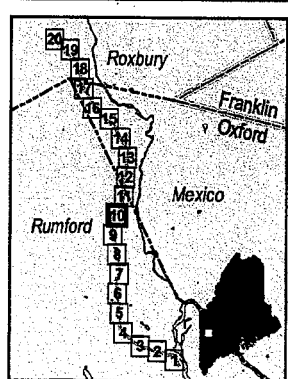
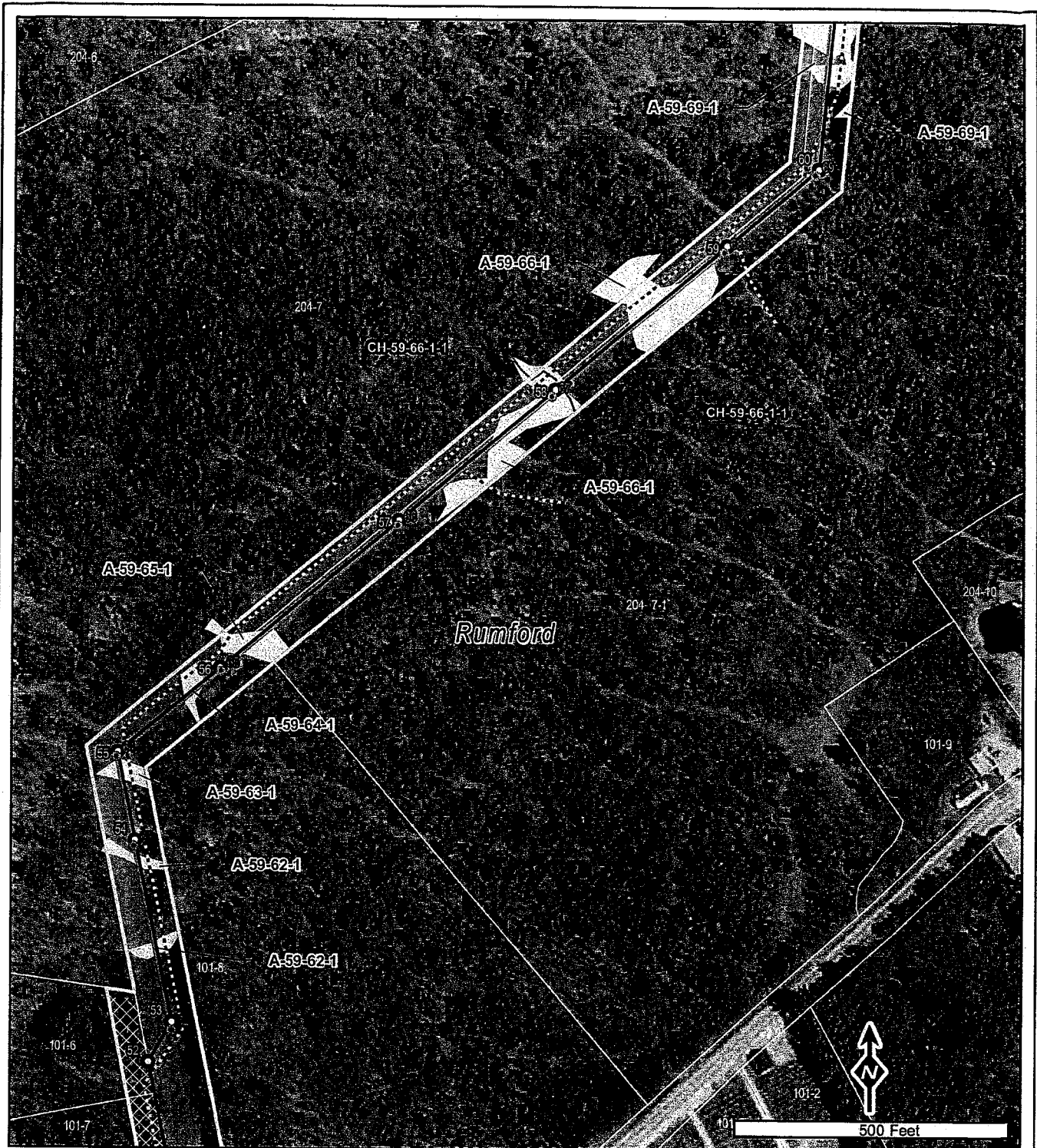
CMP Section 270 (Existing Section 59)  
and Roxbury Substation

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14 Gabriel Drive  
Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec





Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

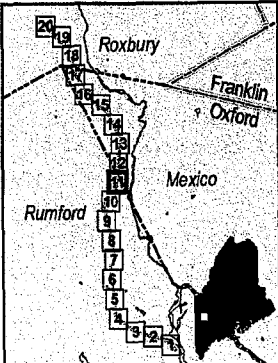
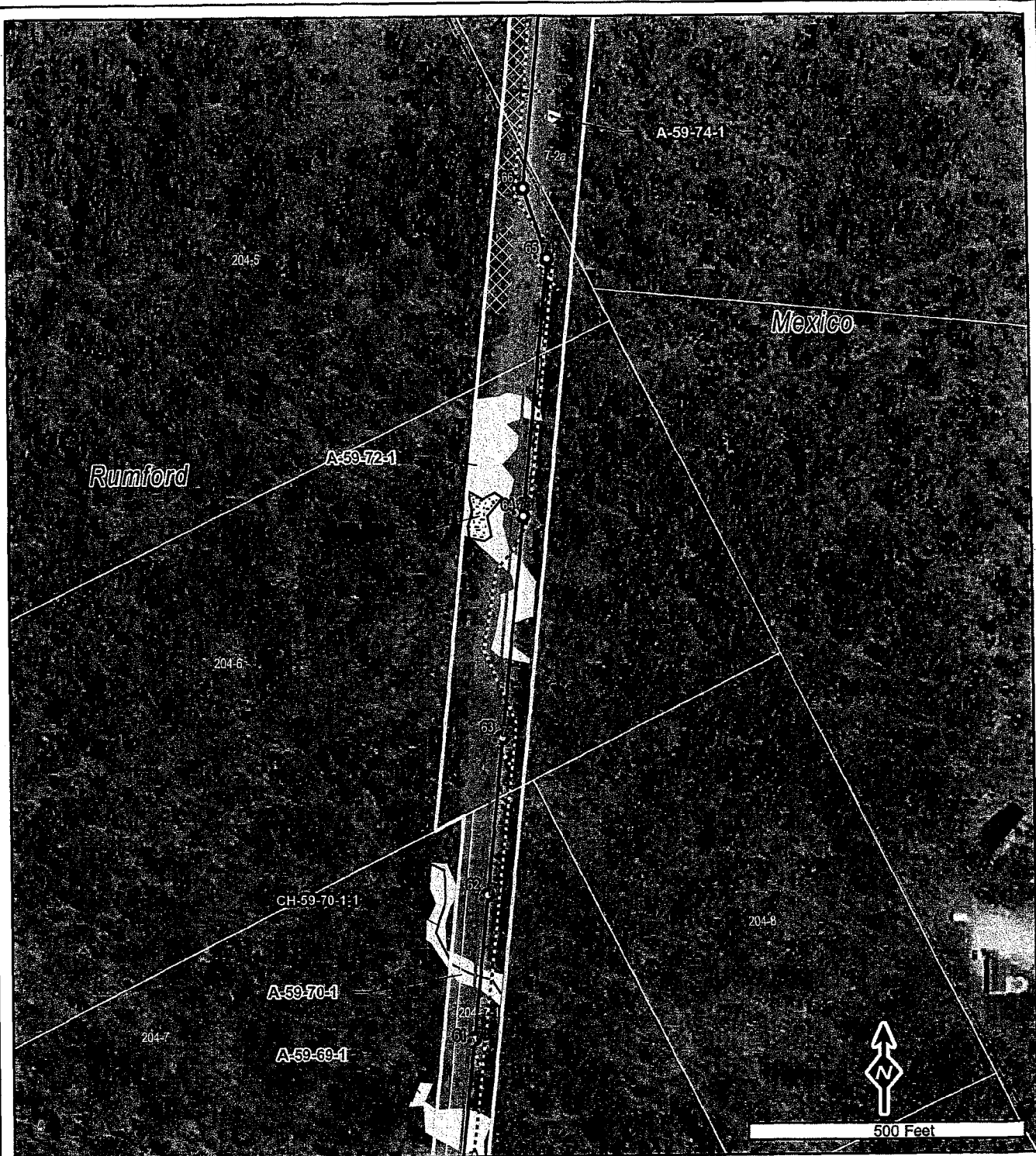
**Exhibit 5-2**

**Natural Resources Map**

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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

TRC 14 Gabriel Drive  
Augusta, ME 04330 10/26/2009



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

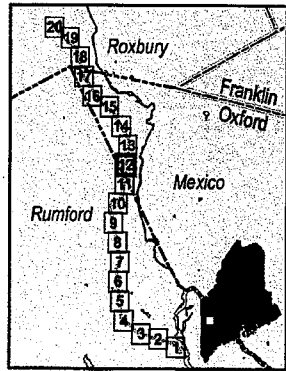
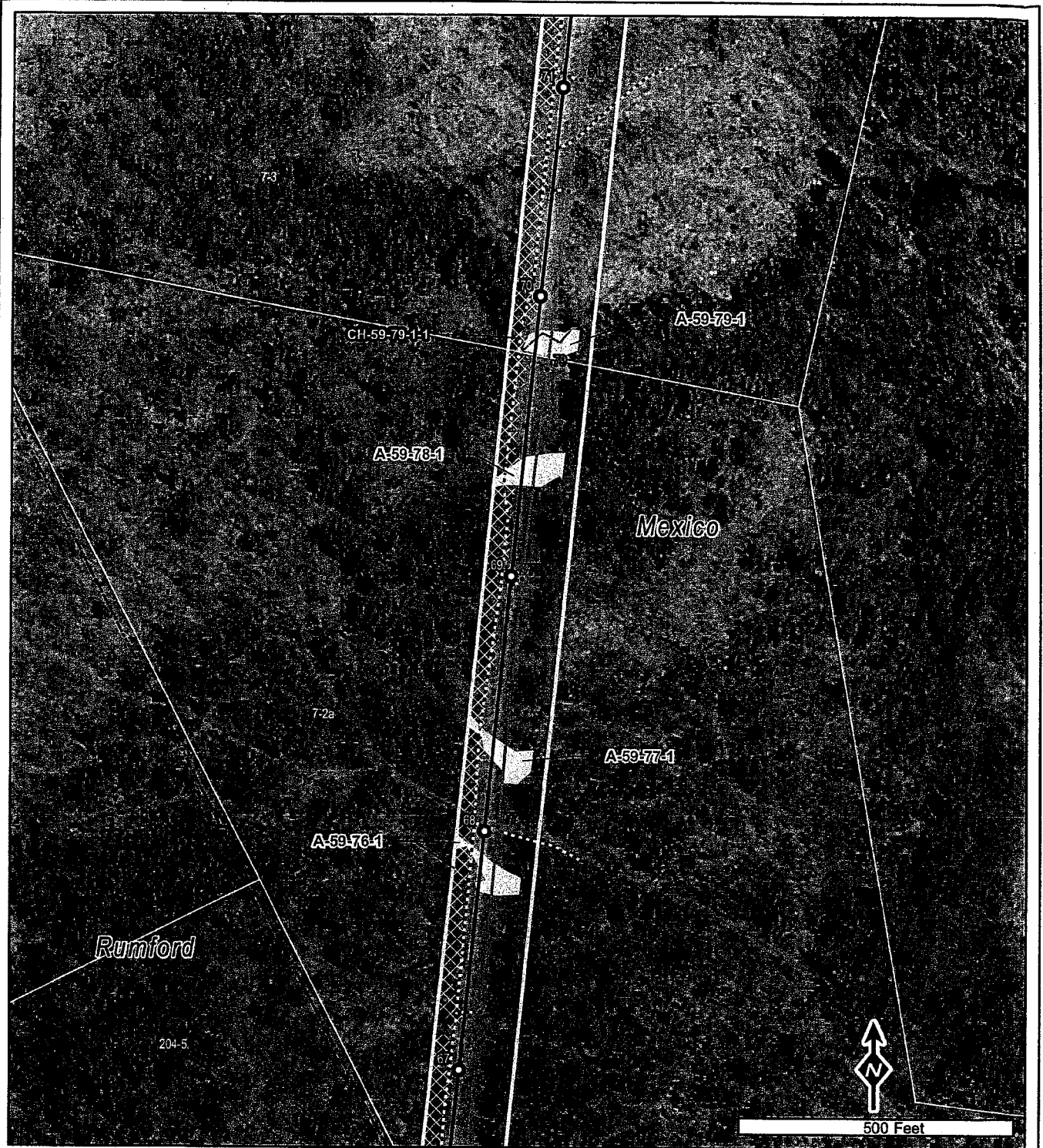
**Exhibit 5-2**  
**Natural Resources Map**

Page 11 of 20

CMP Section 270 (Existing Section 59)  
and Roxbury Substation

14 Gabriel Drive  
Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Data - 2003), CMP, TRC, Stantec



Legend	
<b>Project Area</b>	
● Proposed Structures	▨ Non-Natural Pools (TRC)
— Proposed CMP Sect. 270	○ Natural Vernal Pools (TRC)
— Proposed Section 59	▩ Significant Vernal Pools (TRC)
▨ Proposed Roxbury SS	■ Surface Water
--- Proposed Access*	— Streams
▨ Proposed Clearing Area	▨ Wetlands (TRC)
● Existing CMP Structures to Remain	▨ Wetlands (Stantec)
● Existing CMP Structures to be Removed	— Approximate Parcel Boundary
— Existing CMP Sect. 59 to be Removed	— Existing Structure #
	— Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

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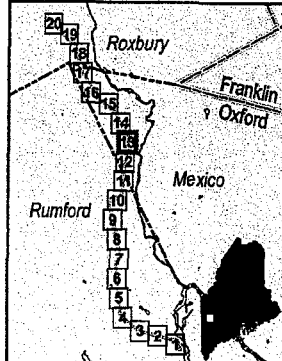
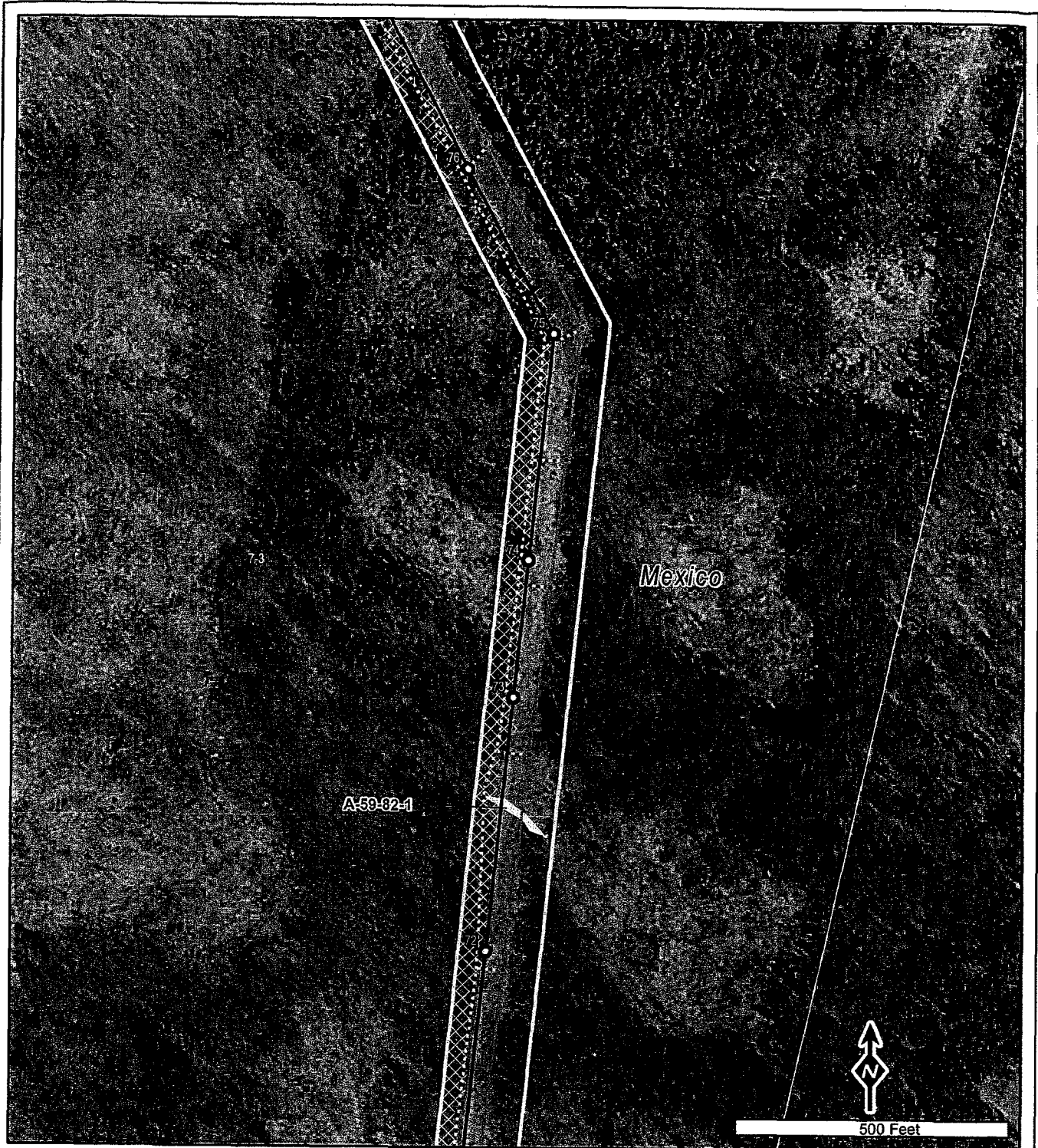
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

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14 Gabriel Drive  
Augusta, ME 04330
10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #

\*Proposed off ROW access contingent upon landowner consent

**Exhibit 5-2**

**Natural Resources Map**

Page 13 of 20

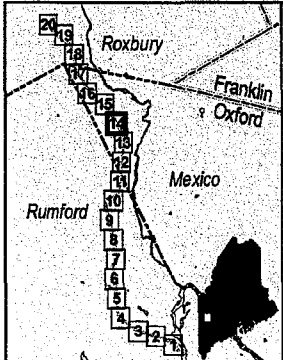
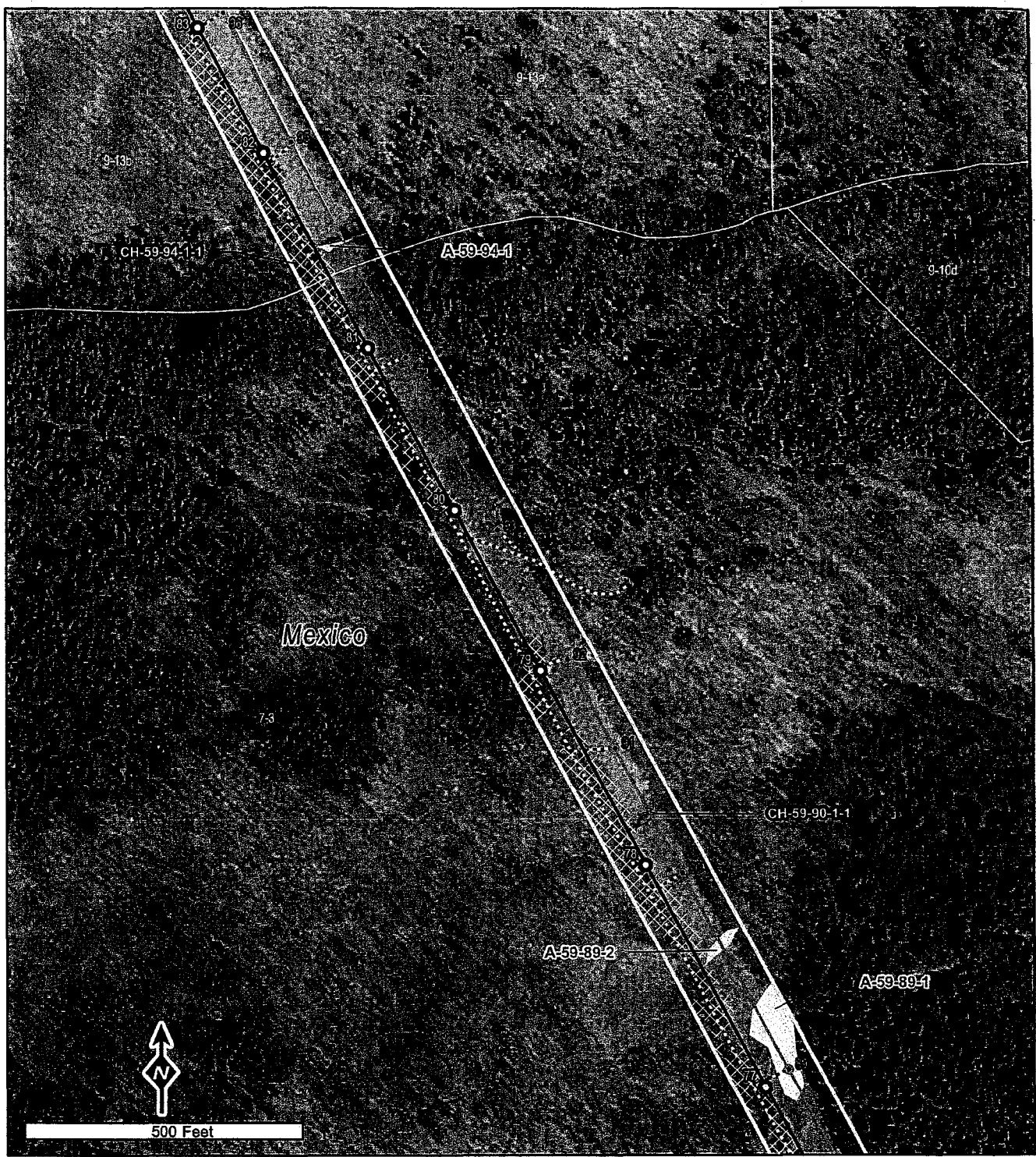
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

---

14 Gabriel Drive  
Augusta, ME 04330
 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

Page 14 of 20

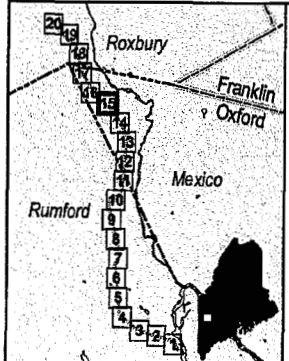
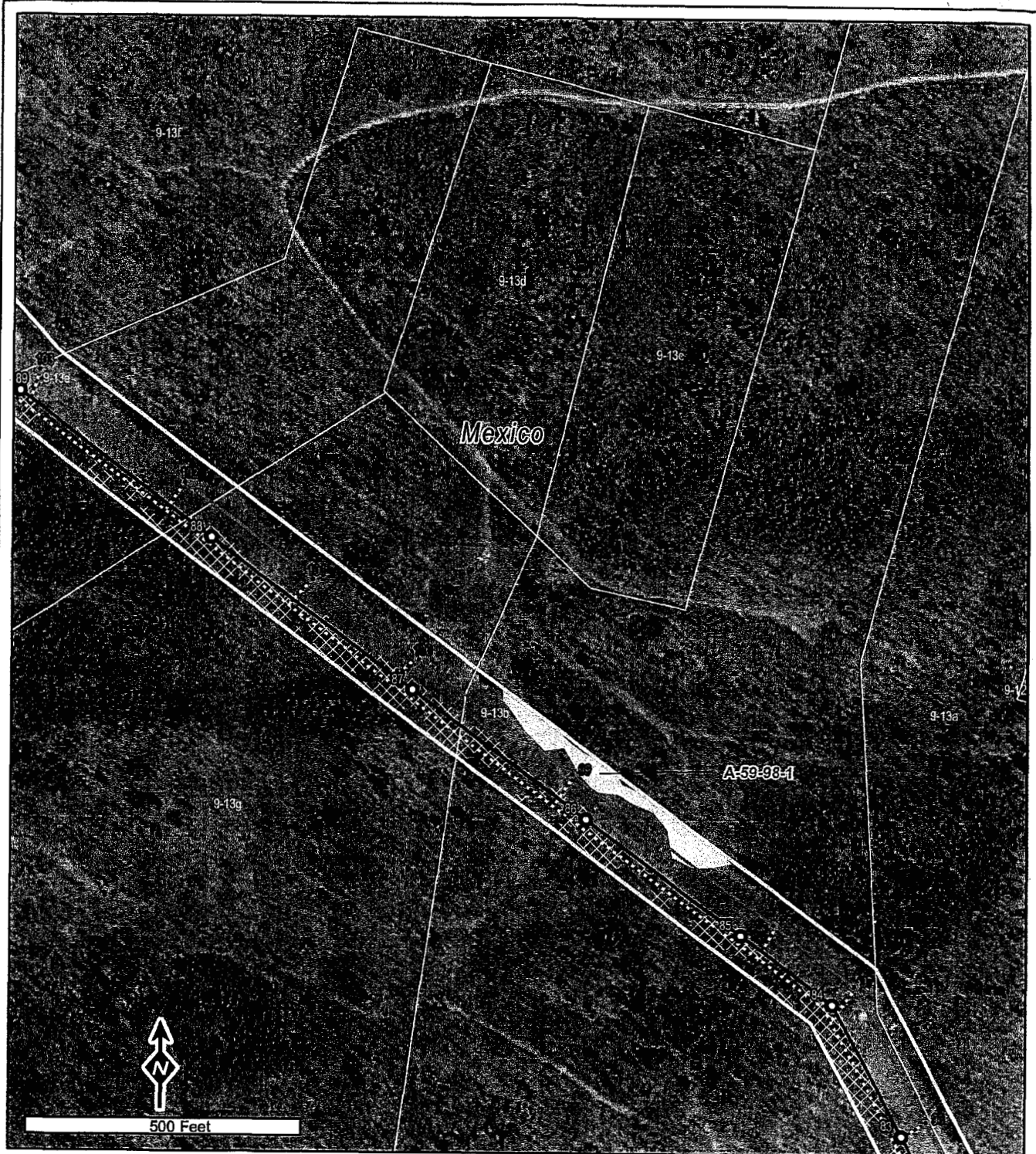
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

---

TRC 14 Gabriel Drive  
Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

Page 15 of 20

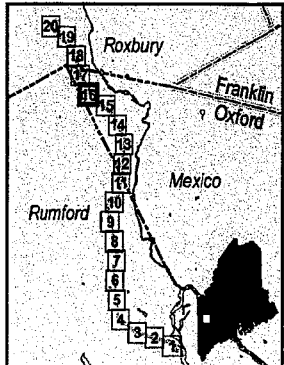
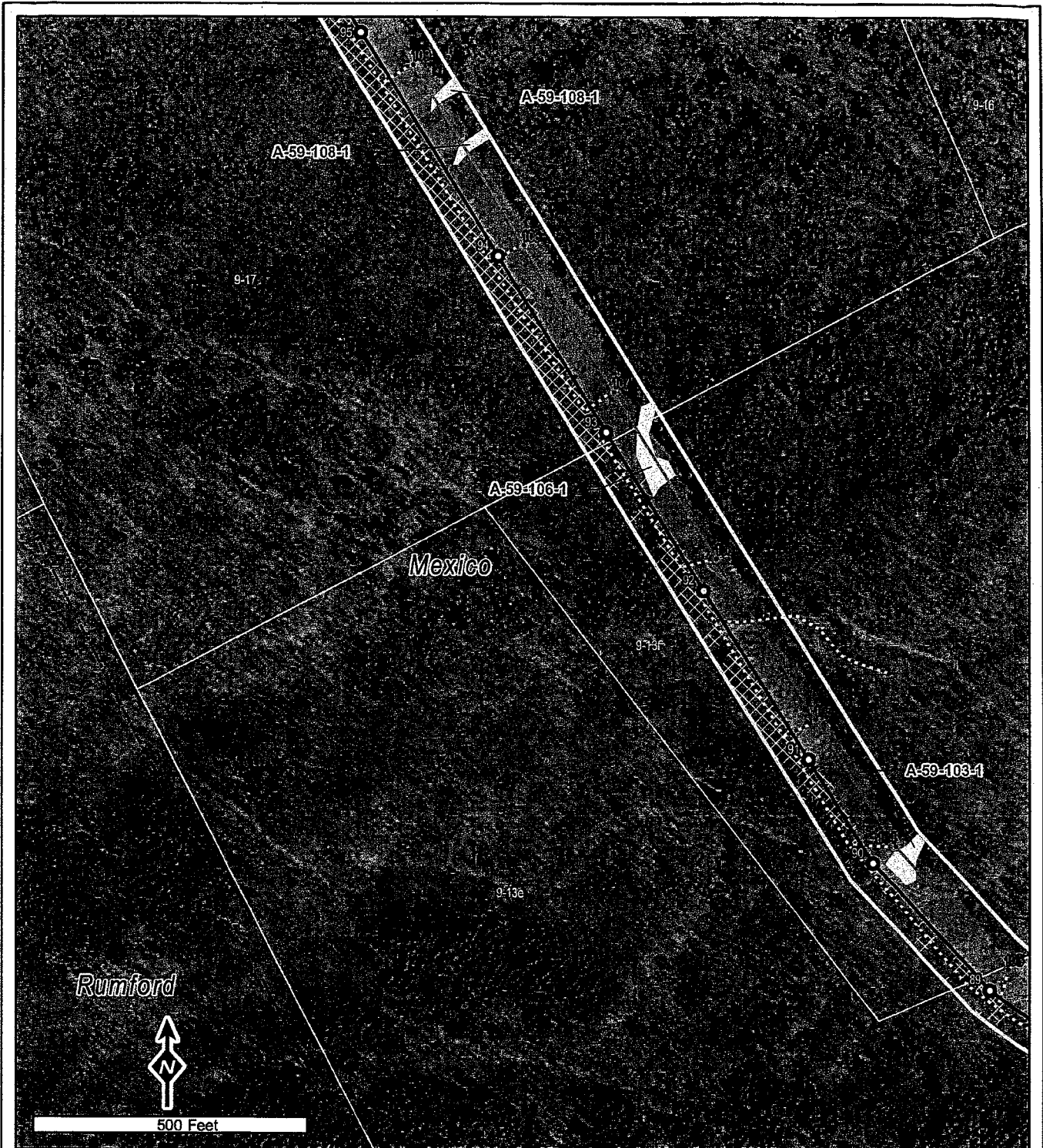
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CMP Section 270 (Existing Section 59)  
 and Roxbury Substation

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14 Gabriel Drive  
 Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Data - 2003), CMP, TRC, Stantec



**Legend**

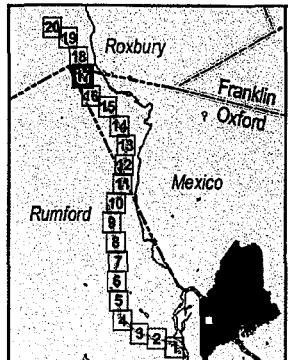
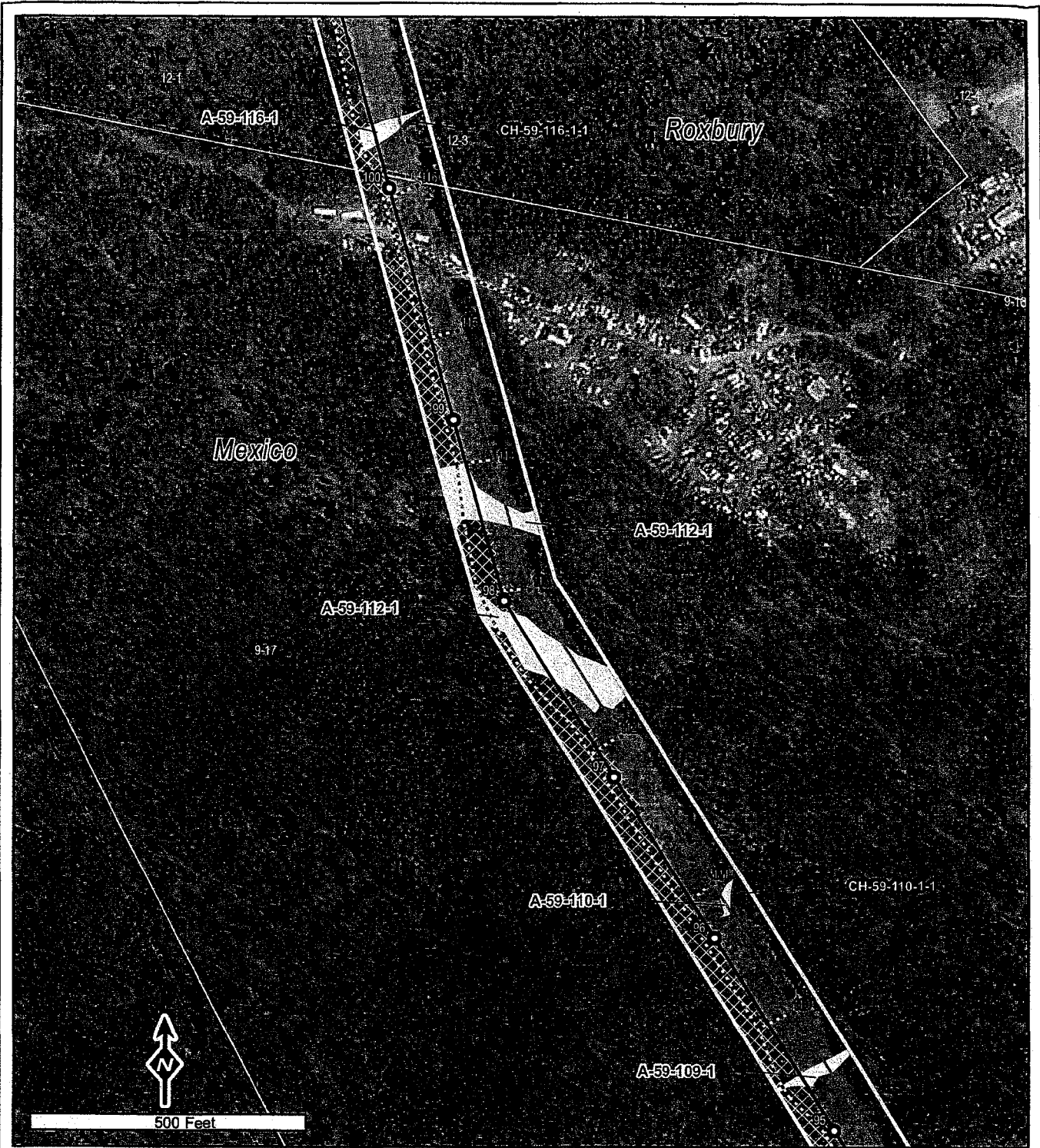
- Project Area
- Proposed Structures
- Proposed CMP Sect. 270
- Proposed Section 59
- Proposed Roxbury SS
- Proposed Access\*
- Proposed Clearing Area
- Existing CMP Structures to Remain
- Existing CMP Structures to be Removed
- Existing CMP Sect. 59 to be Removed
- Non-Natural Pools (TRC)
- Natural Vernal Pools (TRC)
- Significant Vernal Pools (TRC)
- Surface Water
- Streams
- Wetlands (TRC)
- Wetlands (Stantec)
- Approximate Parcel Boundary
- Existing Structure #
- Proposed Structure #

\*Proposed off ROW access contingent upon landowner consent

**Exhibit 5-2  
Natural Resources Map**

Page 16 of 20  
CMP Section 270 (Existing Section 59)  
and Roxbury Substation

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**

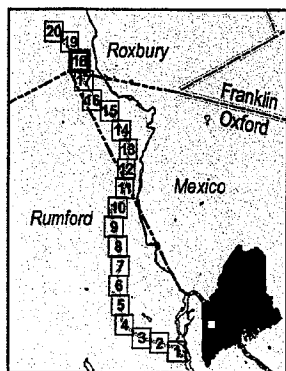
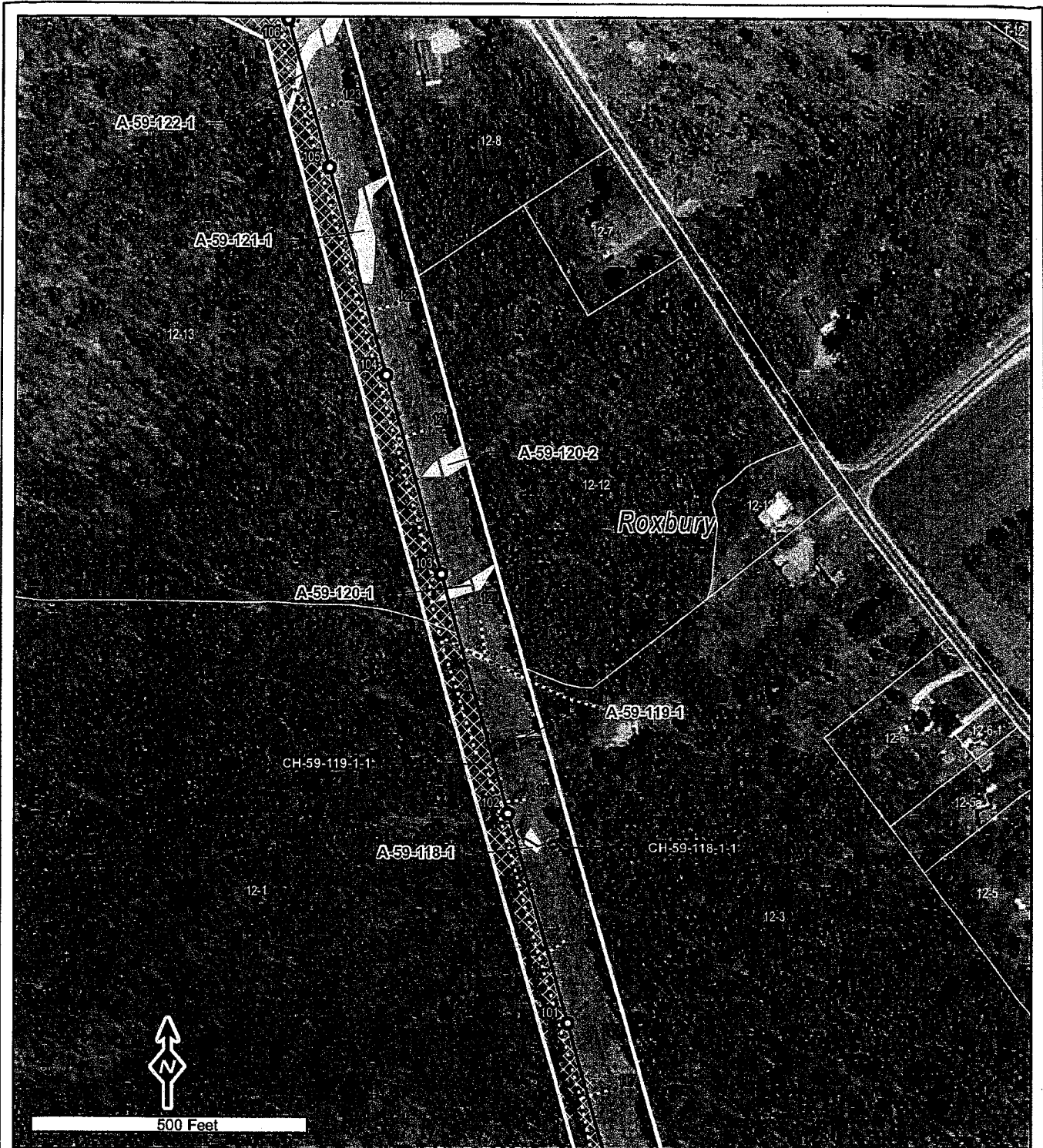
Page 17 of 20

CMP Section 270 (Existing Section 59)  
and Roxbury Substation

TRC 14 Gabriel Drive  
Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec





Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**

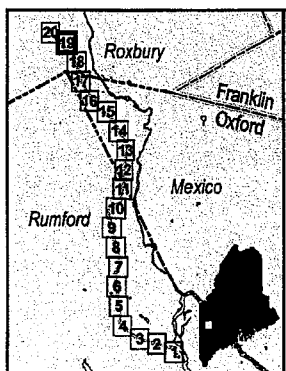
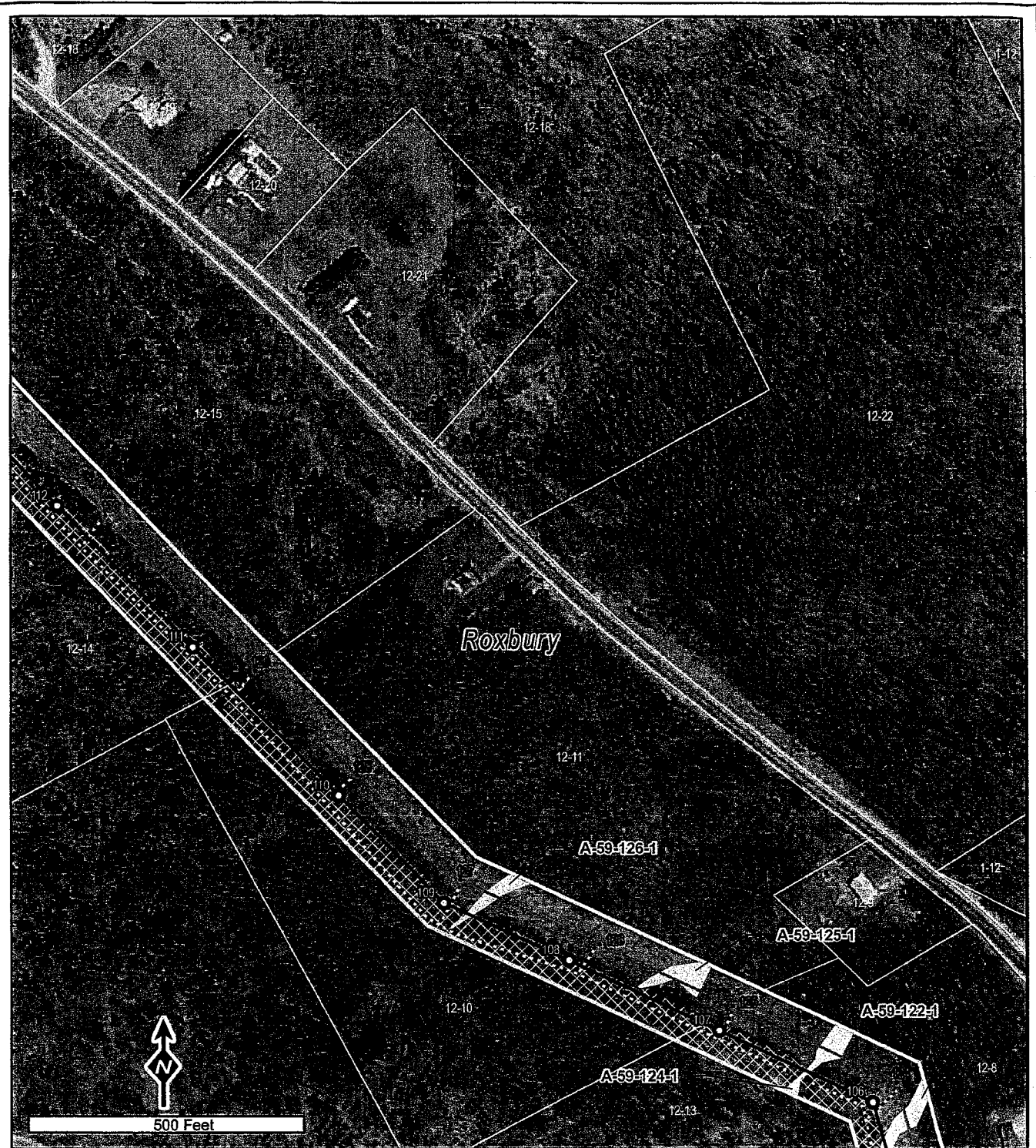
**Natural Resources Map**

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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

TRC 14 Gabriel Drive  
Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



Legend	
[Hatched Box]	Project Area
[Circle with Dot]	Proposed Structures
[Solid Line]	Proposed CMP Sect. 270
[Dashed Line]	Proposed Section 59
[Cross-hatched Box]	Proposed Roxbury SS
[Dotted Line]	Proposed Access*
[Hatched Box]	Proposed Clearing Area
[Circle with Dot]	Existing CMP Structures to Remain
[Circle with X]	Existing CMP Structures to be Removed
[Dashed Line]	Existing CMP Sect. 59 to be Removed
[Hatched Box]	Non-Natural Pools (TRC)
[Dotted Box]	Natural Vernal Pools (TRC)
[Cross-hatched Box]	Significant Vernal Pools (TRC)
[Solid Black Box]	Surface Water
[Dashed Line]	Streams
[Hatched Box]	Wetlands (TRC)
[Dotted Box]	Wetlands (Stantec)
[Dotted Line]	Approximate Parcel Boundary
[Circle with #]	Existing Structure #
[Circle with #]	Proposed Structure #

\*Proposed off ROW access contingent upon landowner consent

**Exhibit 5-2**

**Natural Resources Map**

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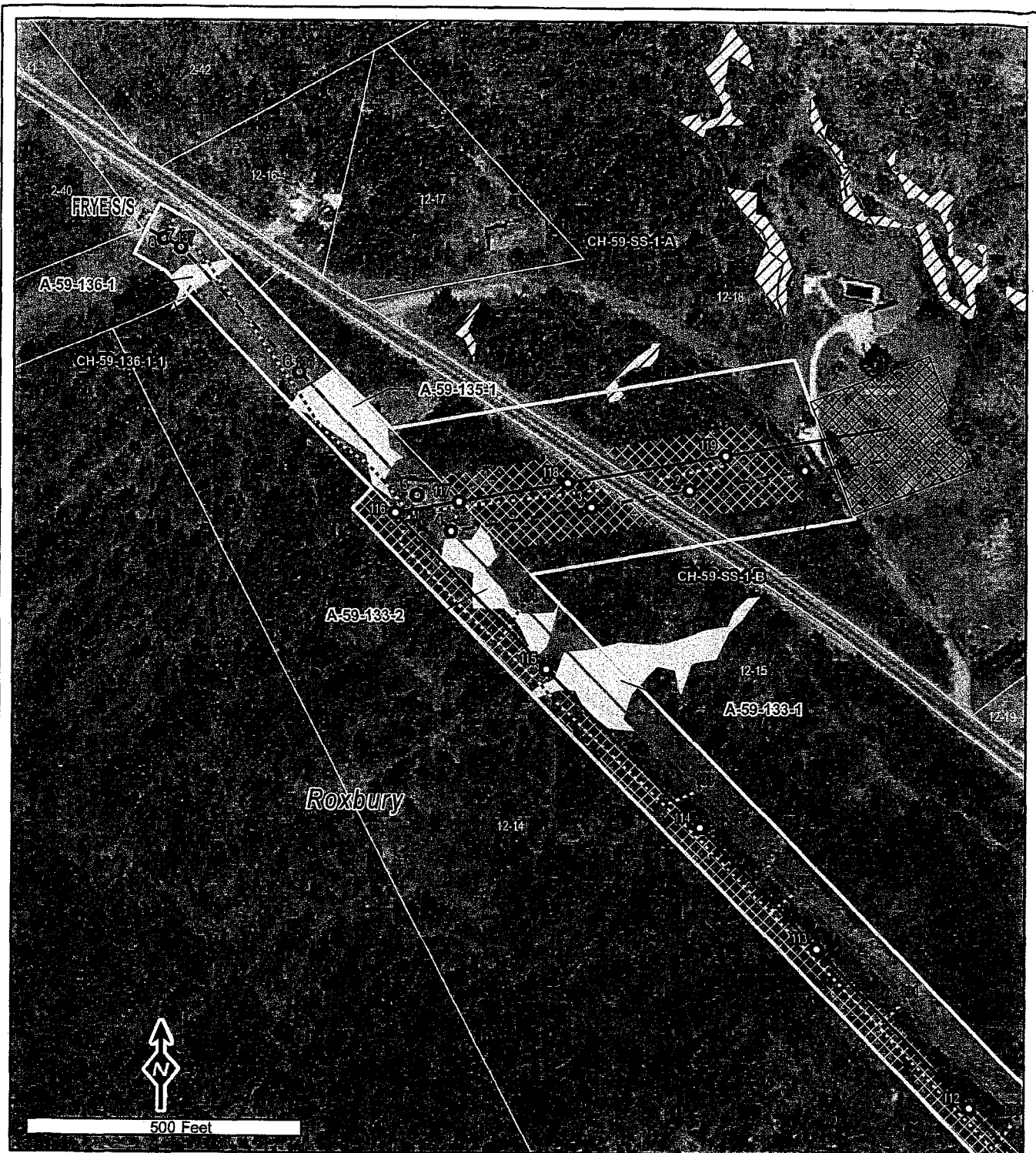
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CMP Section 270 (Existing Section 59)  
and Roxbury Substation

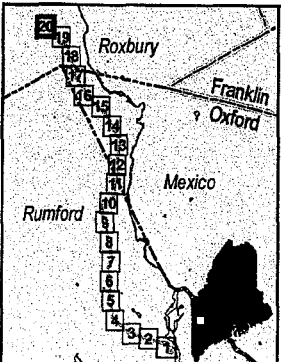
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TRC 14 Gabriel Drive  
Augusta, ME 04330 10/26/2009

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec



500 Feet

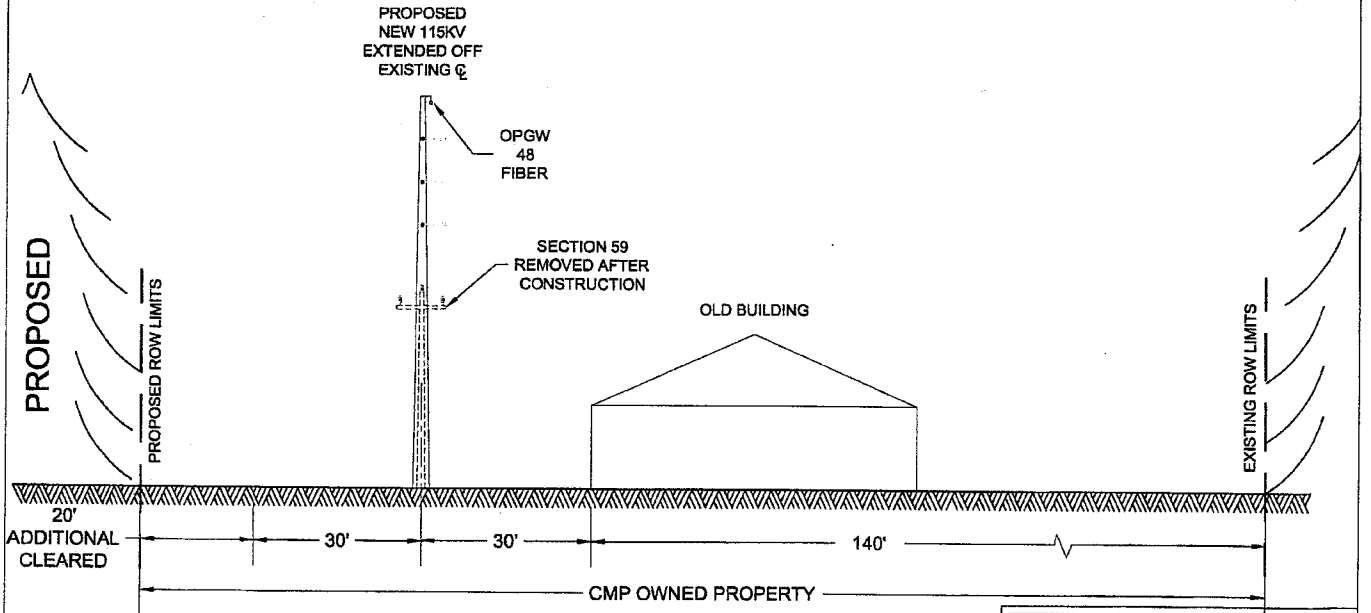
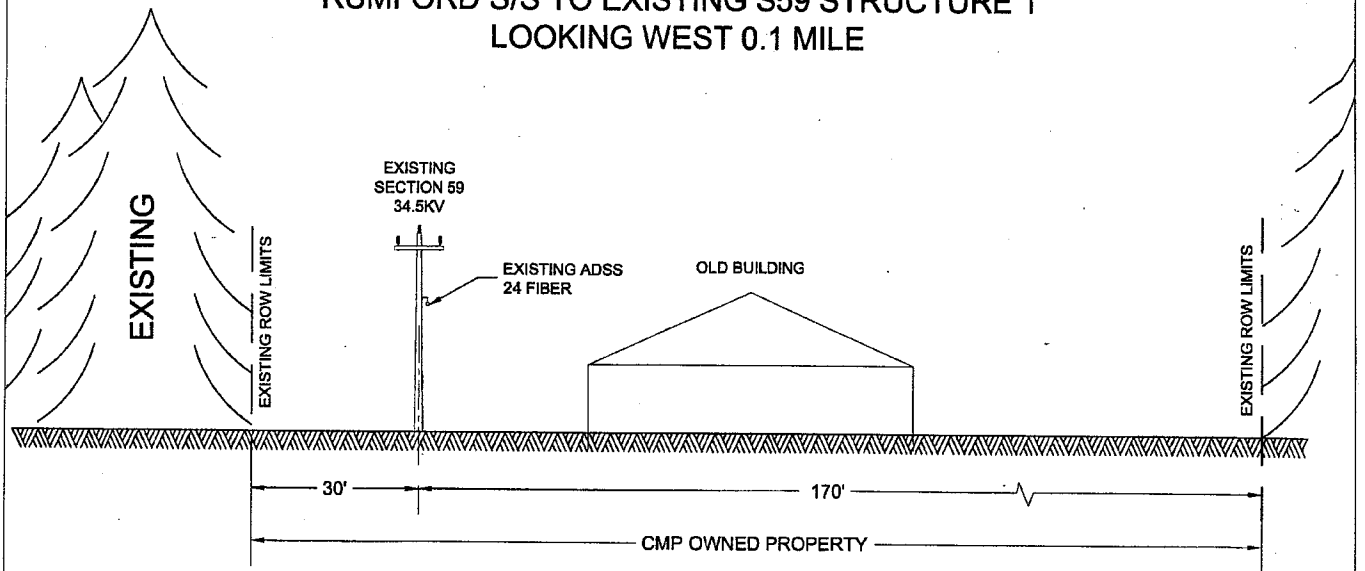


Legend	
Project Area	Non-Natural Pools (TRC)
Proposed Structures	Natural Vernal Pools (TRC)
Proposed CMP Sect. 270	Significant Vernal Pools (TRC)
Proposed Section 59	Surface Water
Proposed Roxbury SS	Streams
Proposed Access*	Wetlands (TRC)
Proposed Clearing Area	Wetlands (Stantec)
Existing CMP Structures to Remain	Approximate Parcel Boundary
Existing CMP Structures to be Removed	Existing Structure #
Existing CMP Sect. 59 to be Removed	Proposed Structure #
*Proposed off ROW access contingent upon landowner consent	

**Exhibit 5-2**  
**Natural Resources Map**  
 Page 20 of 20  
 CMP Section 270 (Existing Section 59)  
 and Roxbury Substation

Data Sources: Maine OGIS (Photo Date - 2003), CMP, TRC, Stantec

**SEGMENT 1**  
**RUMFORD S/S TO EXISTING S59 STRUCTURE 1**  
**LOOKING WEST 0.1 MILE**

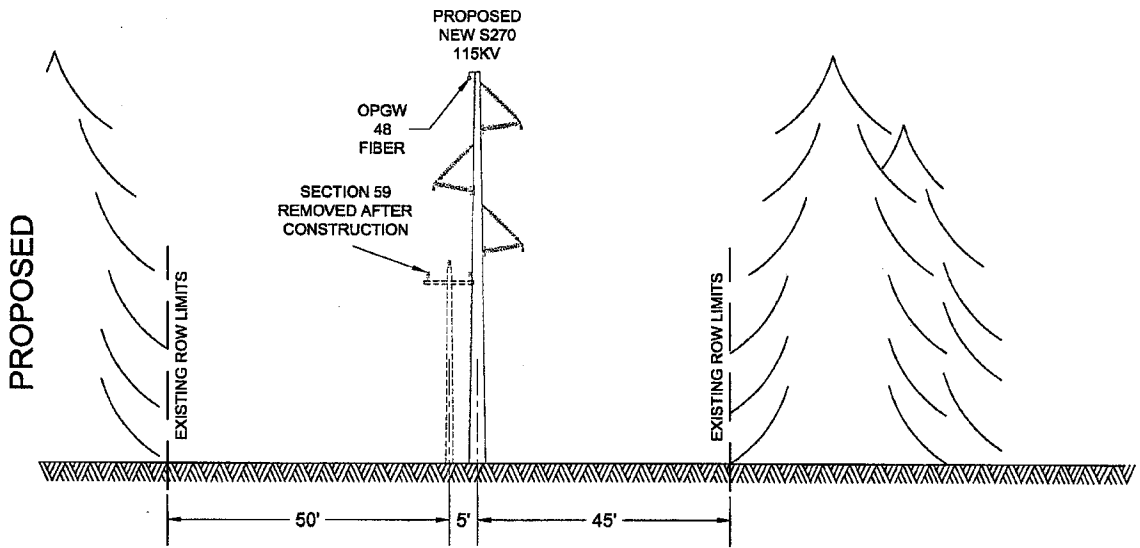
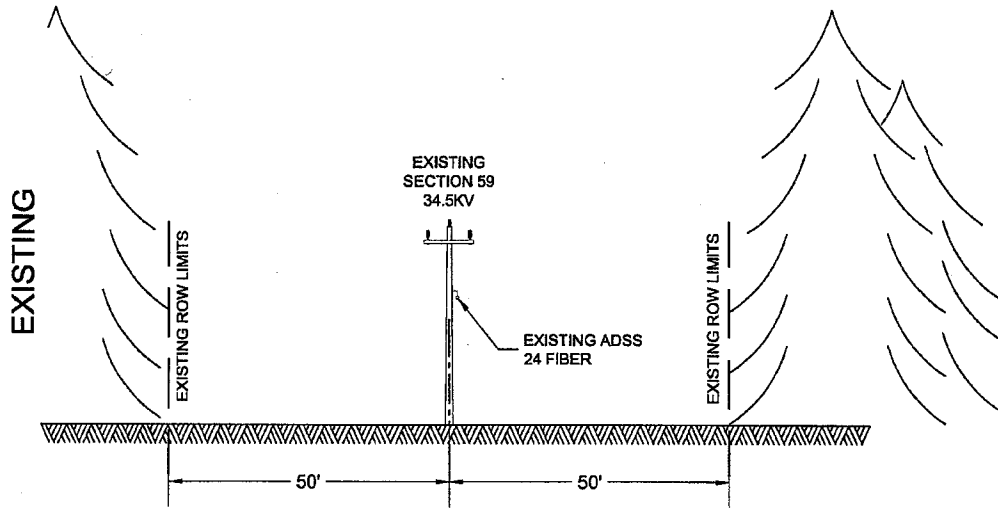


NOTE:  
 SIDE TRIM AS NECESSARY FOR  
 FULL WIDTH OF ROW

**PRELIMINARY**  
 ISSUED FOR  
 BID

<table border="1"> <tr><td>D</td><td>IF PERMIT</td><td>7/13/10</td><td>TRC</td></tr> <tr><td>C</td><td>ISSUED FOR BID</td><td>11/11/09</td><td>TRC</td></tr> <tr><td>B</td><td>IF 70% REVIEW</td><td>08/31/09</td><td>TRC</td></tr> <tr><td>A</td><td>IF 30% REVIEW</td><td>6/24/09</td><td>TRC</td></tr> </table>				D	IF PERMIT	7/13/10	TRC	C	ISSUED FOR BID	11/11/09	TRC	B	IF 70% REVIEW	08/31/09	TRC	A	IF 30% REVIEW	6/24/09	TRC	CMP SECTION 270 115KV UPGRADE R.O.W. CROSS SECTIONS			
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NO.	REV.	DATE	BY	DESIGNED DRAWN	TSW TSW	CHCK. APPR.	MEB ---	DATE 5/7/09	REVIEWED														
CLIENT APPROVAL APPROVED BY --- COMPANY --- DATE ---				TRC Engineers, LLC 249 Western Avenue Augusta, Maine 04330			SK-002																
				CONTRACT DWG NO. SK-002.DWG		PROJECT NO. 165817		SH 1 OF 6															

**SEGMENT 2**  
**EXISTING S59 STRUCTURE 2 TO STRUCTURE 6**  
**LOOKING NORTH 0.15 MILE**



NOTE:  
 SIDE TRIM AS NECESSARY FOR  
 FULL WIDTH OF ROW

PRELIMINARY

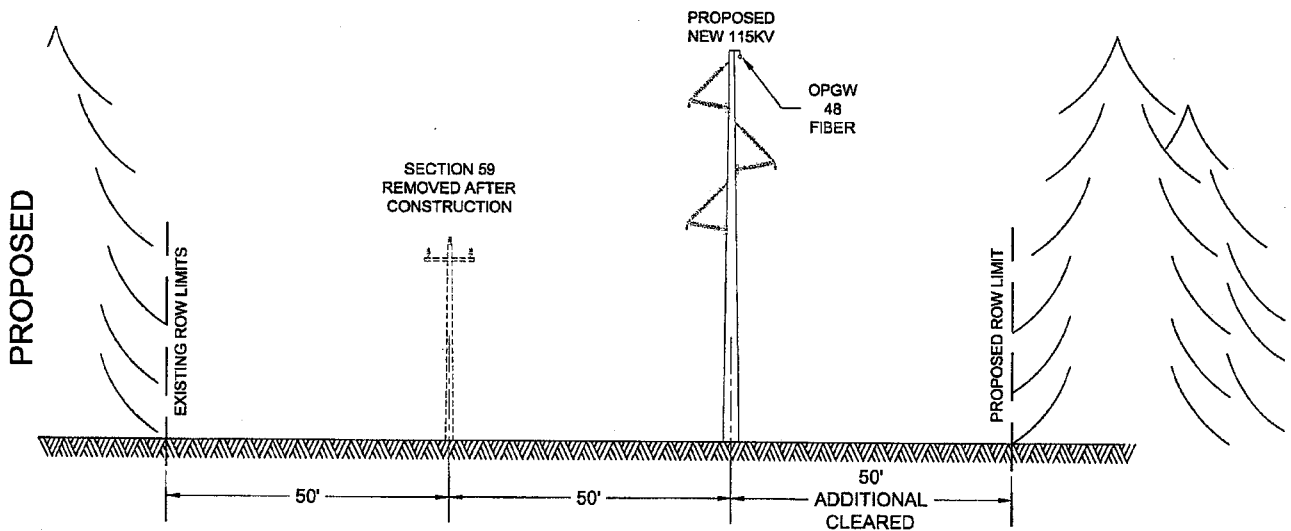
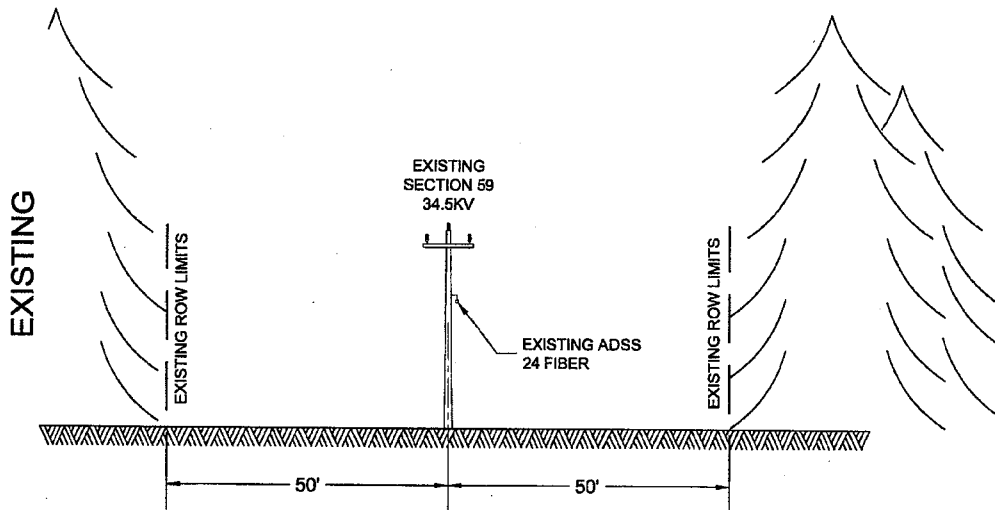
ISSUED FOR  
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D	IF PERMIT	7/13/10	TRC
C	ISSUED FOR BID	11/11/09	TRC
B	IF 70% REVIEW	08/31/09	TRC
A	IF 30% REVIEW	6/24/09	TRC

CMP  
**SECTION 270 115KV UPGRADE**  
**R.O.W. CROSS SECTIONS**

NO.	REV.	DATE	BY	DESIGNED DRAWN	TSW TSW	CHCK. APPR.	MEB ---	DATE 5/7/09 REVIEWED
CLIENT APPROVAL APPROVED BY _____ COMPANY _____ DATE _____				<b>TRC</b> <small>TRC Engineers, LLC              249 Western Avenue              Augusta, Maine 04330</small>		<b>SK-002</b>		
				CONTRACT DWG NO. SK-002.DWG		PROJECT NO. 165817		SH 2 OF 6

**SEGMENT 3  
EXISTING S59 STRUCTURE 6 TO STRUCTURE 8  
LOOKING NORTH 0.1 MILE**

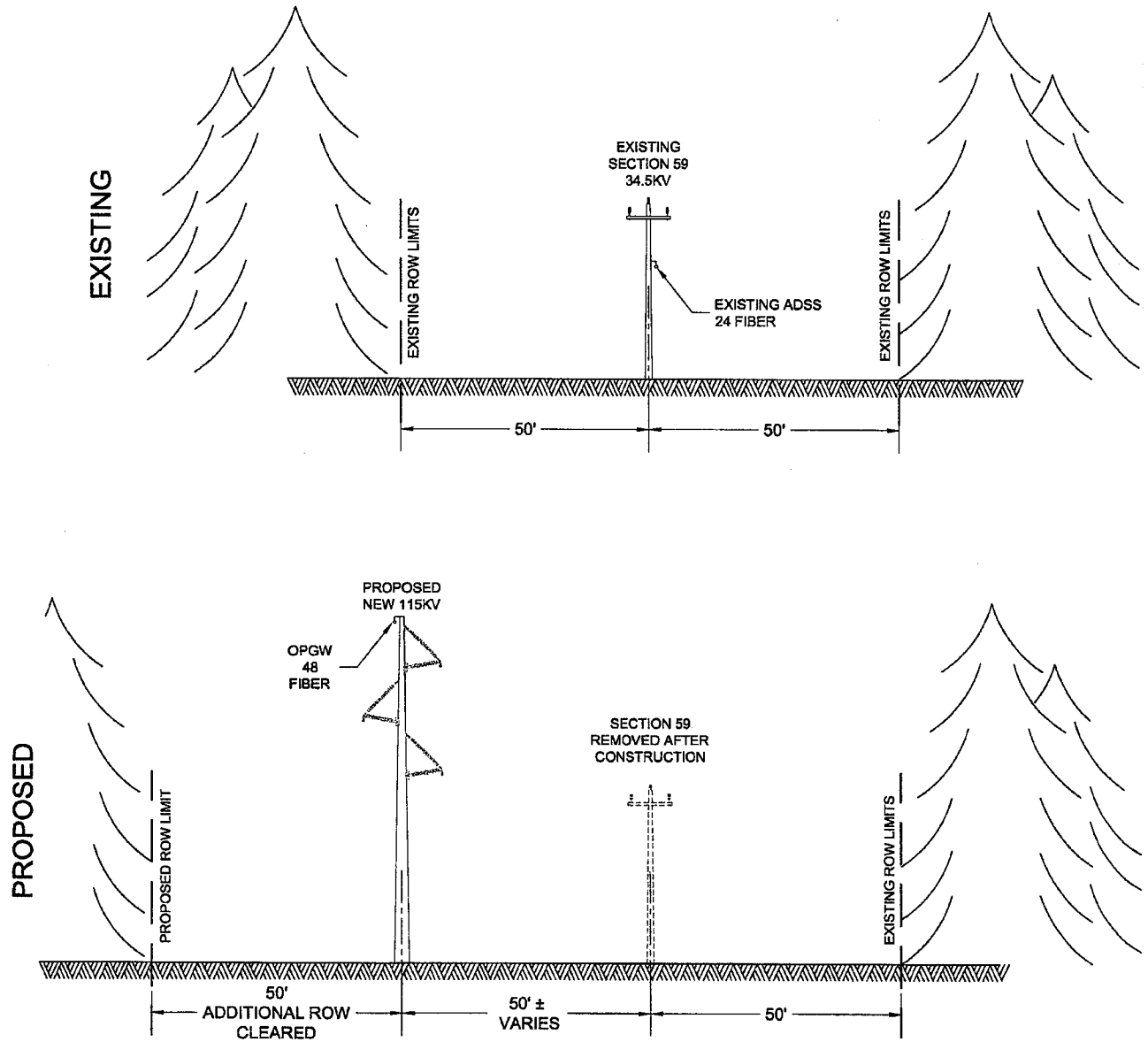


NOTE:  
SIDE TRIM AS NECESSARY FOR  
FULL WIDTH OF ROW

**PRELIMINARY**  
ISSUED FOR  
BID

<table border="1"> <tr><td>D</td><td>IF PERMIT</td><td>7/13/10</td><td>TRC</td></tr> <tr><td>C</td><td>ISSUED FOR BID</td><td>11/11/09</td><td>TRC</td></tr> <tr><td>B</td><td>IF 70% REVIEW</td><td>08/31/09</td><td>TRC</td></tr> <tr><td>A</td><td>IF 30% REVIEW</td><td>6/24/09</td><td>TRC</td></tr> </table>				D	IF PERMIT	7/13/10	TRC	C	ISSUED FOR BID	11/11/09	TRC	B	IF 70% REVIEW	08/31/09	TRC	A	IF 30% REVIEW	6/24/09	TRC	<p><b>CMP</b> <b>SECTION 270 115KV UPGRADE</b> <b>R.O.W. CROSS SECTIONS</b></p>			
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<b>NO.</b>	<b>REV.</b>	<b>DATE</b>	<b>BY</b>	<b>DESIGNED DRAWN</b>	<b>TSW TSW</b>	<b>CHCK. APPR.</b>	<b>MEB ---</b>	<b>DATE</b> 5/7/09															
<p>CLIENT APPROVAL APPROVED BY _____ COMPANY _____ DATE _____</p>						<p>TRC Engineers, LLC 249 Western Avenue Augusta, Maine 04330</p>		<b>SK-002</b>															
				<p>CONTRACT DWG NO. SK-002.DWG</p>		<p>PROJECT NO. 165817</p>		SH 3 OF 6															

**SEGMENT 4**  
**EXISTING S59 STRUCTURE 9 TO STRUCTURE 134**  
**LOOKING NORTH 7.5 MILES**



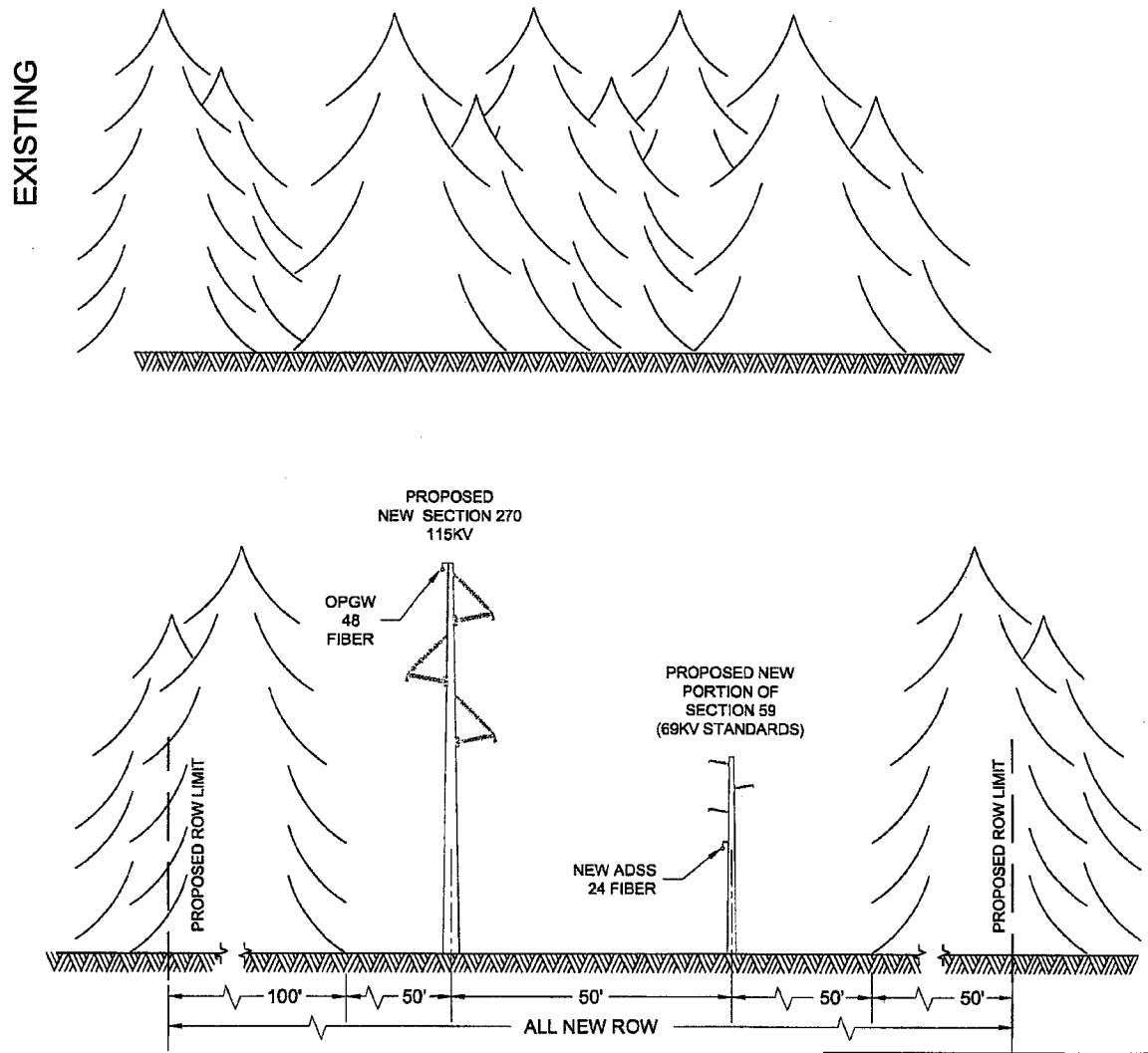
NOTE:  
 SIDE TRIM AS NECESSARY FOR  
 FULL WIDTH OF ROW

**PRELIMINARY**

ISSUED FOR  
 BID

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NO.	REV.	DATE	BY	DESIGNED TSW DRAWN TSW	CHCK. MEB APPR. ---	DATE 5/7/09 REVIEWED
CLIENT APPROVAL APPROVED BY --- COMPANY --- DATE ---				TRC Engineers, LLC 249 Western Avenue Augusta, Maine 04330		SK-002
				CONTRACT DWG NO. SK-002.DWG	PROJECT NO. 165817	SH 4 OF 6

**SEGMENT 5  
EXISTING S59 STRUCTURE 135 TO NEW ROXBURY S/S  
LOOKING EAST 0.2 MILE**



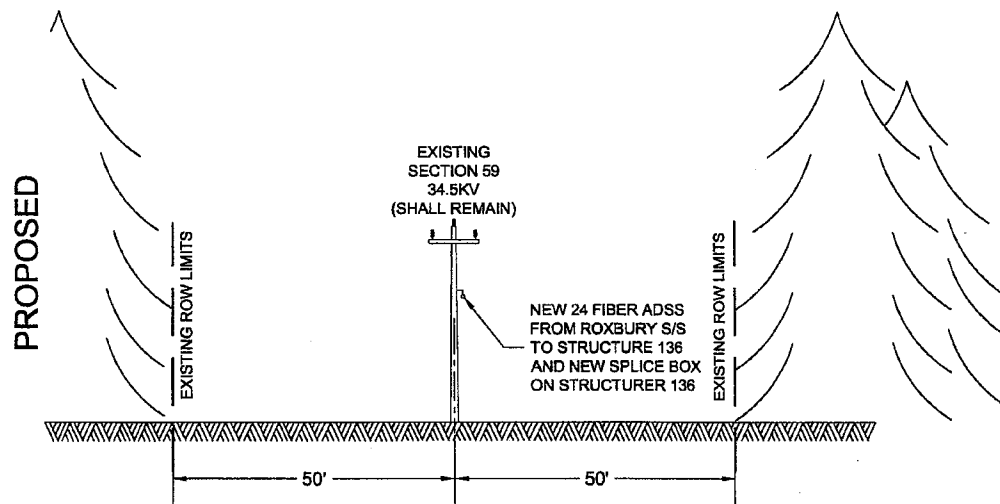
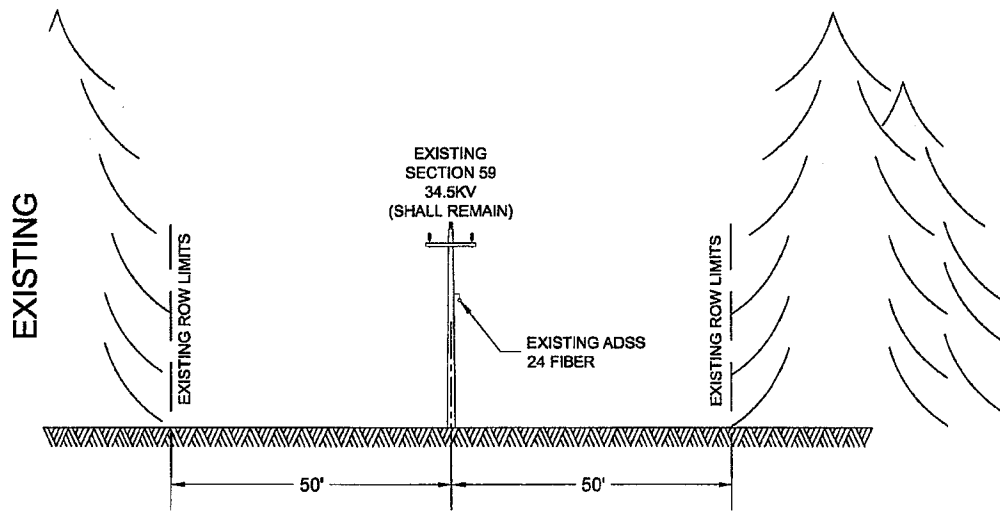
NOTE:  
SIDE TRIM AS NECESSARY FOR  
FULL WIDTH OF ROW

**PRELIMINARY**  
ISSUED FOR  
BID

				<p><b>CMP</b> <b>SECTION 270 115KV UPGRADE</b> <b>R.O.W. CROSS SECTIONS</b></p>				
	D	IF PERMIT	7/13/10	TRC				
	C	ISSUED FOR BID	11/11/09	TRC				
	B	IF 70% REVIEW	08/31/09	TRC				
	A	IF 30% REVIEW	6/24/09	TRC				
NO.	REV.	DATE	BY	DESIGNED DRAWN	TSW TSW	CHCK. APPR.	MEB ---	DATE 5/7/09 REVIEWED
<p>CLIENT APPROVAL APPROVED BY _____ COMPANY _____ DATE _____</p>						<p>TRC Engineers, LLC 249 Western Avenue Augusta, Maine 04330</p>		<p><b>SK-002</b></p>
				<p>CONTRACT DWG NO. SK-002.DWG</p>		<p>PROJECT NO. 165817</p>		<p>SH 5 OF 6</p>



**SEGMENT 6  
STRUCTURE 135 TO FRYE S/S  
0.15 MILES**



NOTE:  
SIDE TRIM AS NECESSARY FOR  
FULL WIDTH OF ROW

**PRELIMINARY**  
ISSUED FOR  
BID

D	IF PERMIT	7/13/10	TRC
C	ISSUED FOR BID	11/11/09	TRC
B	IF 70% REVIEW	08/31/09	TRC
A	IF 30% REVIEW	6/24/09	TRC

**CMP  
SECTION 59  
R.O.W. CROSS SECTION**

<b>NO.</b>	<b>REV.</b>	<b>DATE</b>	<b>BY</b>	<b>DESIGNED DRAWN</b>	<b>TSW TSW</b>	<b>CHCK. APPR.</b>	<b>MEB ---</b>	<b>DATE REVIEWED</b>
								5/7/09
<b>CLIENT APPROVAL</b> APPROVED BY --- COMPANY --- DATE -----						TRC Engineers, LLC 249 Western Avenue Augusta, Maine 04330		<b>SK-002</b>
				<b>CONTRACT DWG NO.</b> SK-002.DWG		<b>PROJECT NO.</b> 165817		SH 6 OF 6

## **Appendix B – Comment Response**

## Record Hill Responses to Comments

DOE received 35 individual comment submissions totaling 167 individual comments. DOE reviewed each comment received on the Record Hill EA and has grouped the comments into the following comment categories as noted in Table 1. The individual commenters are identified in Table 2.

**Table 1 – Comment Response Matrix**

<u>Section</u>	<u>Topic</u>	<u>Commenter Numbers</u>	<u>Comments</u>
1.	NEPA Process	3, 15, 16, 18, 24, 26, 30	3a, 15a, 15m, 16b, 18e, 24a, 24m, 26a, 26l, 30f
2.	Purpose and Need	1, 2, 12, 14, 18, 25, 27, 28, 29, 33	1a, 2a, 2c, 12a, 14c, 18b, 18d, 18l, 25a, 25i, 27a, 28b, 28c, 28d, 28f, 29a, 29b, 29c, 33h, 33i
3.	Proposed Action and Alternatives	1, 3, 16, 18, 25, 29, 33	1a, 3b, 16d, 18c, 18f, 18g, 18h, 18i, 18m, 18n, 18o, 18q, 18r, 25b, 25c, 25h, 29d, 33h
4.	Water Resources	5, 15, 18, 20, 23, 24, 25, 26, 30, 32	5a, 15c, 15e, 15g, 18t, 18u, 18v, 20f, 23a, 24c, 24e, 24f, 25e, 25g, 26c, 26e, 26f, 30d, 30e, 32a
5.	Noise	11, 14, 17, 18, 19, 20, 35	11a, 11b, 14a, 14d, 17c, 18w, 19a, 20g, 35a
6.	Historic, Archaeological, and Cultural Resources	20, 22	20b, 22b
7.	Aesthetic and Visual Resources and Topography	12, 15, 18, 20, 24, 26, 33	12b, 15i, 18k, 18s, 18x, 18z, 18ab, 18ac, 20d, 20e, 24h, 26h, 33e
8.	Shadow Flicker	14	14b, 14d
9.	Occupational Health and Public Safety	11, 14, 15, 21, 24, 26	11a, 11b, 14d, 15h, 21a, 24g, 26g,
10.	Biological Resources	3, 5, 13, 15, 16, 17, 18, 24, 25, 26, 27, 28, 30, 33	3c, 5a, 5b, 13a, 13b, 15b, 15c, 15d, 16c, 17a, 17b, 17d, 17e, 17f, 17g, 17h, 17i, 17j, 18k, 18ae, 18af, 18ag, 18ah, 24b, 24c, 24d, 25d, 26b, 26c, 26d, 27b, 28a, 30b, 30c, 33g
11.	Socioeconomics	2, 5, 7, 14, 15, 17, 18, 20, 24, 25, 26, 33	2a, 2b, 5b, 7a, 14b, 15j, 15k, 17j, 18y, 20e, 24i, 24j, 25f, 26i, 26j, 33a
12.	Cumulative Effects	13, 17, 18	13c, 17c, 18e, 18ai
13.	General opposition and Local Governance	4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 18, 20, 22, 23, 24, 26, 28, 29, 30, 31, 33, 34	4a, 6a, 8a, 9a, 10a, 11c, 12b, 13b, 15f, 15l, 16a, 18a, 18ad, 18j, 18n, 18p, 18aa, 20a, 20c, 20h, 22a, 24k, 24l, 24m, 25a, 26k, 28d, 28e, 29a, 29b, 30a, 31a, 33b, 33c, 33d, 33f, 34a

**Table 2 - Comment Response Key**

<b>Commenter Number</b>	<b>Commenter Name</b>	<b>Comments</b>
#1	Dan McKay	1a
#2	Peter Buotte	2a – 2c
#3	Bob Weingarten	3a – 3c
#4	Judith Allen	4a
#5	Penny Gray	5a – 5b
#6	Kevin Corbett	6a
#7	Penny Gray	7a
#8	Mike	8a
#9	Margery Ripley	9a
#10	Mike	10a
#11	Monique Aniel	11a – 11c
#12	True Engineering, Inc./ Gretchen Schreiner	12a – 12b
#13	Cathy Mattson	13a – 13c
#14	Linda Kuras	14a – 14d
#15	Coastal Counties Workforce Inc./ Christine Dube	15a – 15m
#16	Casco Bay Engineering/ Eric Dube	16a – 16d
#17	Greg Perkins	17a – 17j
#18	Ron Dube	18a – 18ai
#19	Steve Thurston	19a
#20	Colleen Martineau	20a – 20h
#21	Dan McKay	21a
#22	Betsy Bell	22a – 22b
#23	Maureen Hassett	23a
#24	Silver Lake Camp Owners’ Association/ Angela Arsenault	24a – 24m
#25	Alice Barnett	25a – 25i
#26	Leola Ballweber	26a – 26l
#27	Leola Ballweber	27a – 27b
#28	Mountain Spring Farm B&B/ Barry J. Allen	28a – 28f
#29	Steve Thurston	29a – 29d
#30	Leo F. Kersey, Jr.	30a – 30f
#31	Denise Hall	31a
#32	Denis Bourassa	32a
#33	Anne Morin	33a – 33i
#34	Robert & Joann Moulton	34a
#35	Rufus E. Brown, Esq.	35a

The following responses are grouped by category and by subject within each category. For example, all the responses on comments related to bald eagles are addressed in a single response under biological resources.

## 1. NEPA Process

### **Commenters 3, 15, 16, 18, 24, 26, and 30**

### **Comments: 3a, 15a, 15m, 16b, 18e, 24a, 24m, 26a, 26l, 30f**

Several commenters provided comments on the overall process under the National Environmental Policy Act (NEPA). Commenters stated that the EA was deficient and that an EIS should be prepared; that the data used in the analyses should not be provided by the Applicant; that independent environmental studies should be completed; questioned if DOE had actually visited the site; and that the project needed more in-depth research and needed to allow the citizens of Record Hill to provide documentation and testimony.

**Response 1** - DOE prepared the EA for the proposed Record Hill project in accordance with NEPA (40 CFR Parts 1500 to 1508) and DOE's regulations for implementing NEPA (10 CFR Part 1021). In accordance with 40 CFR 1506.5 environmental specialists within the Environmental Compliance Division of the Loan Programs Office (LPO) completed independent reviews of the data used in the analyses contained in the EA (validated all the information provided by the applicant), conducted site visits, and met with local officials and residents. Staff from the DOE LPO Environmental Compliance Division, including the Director, as well as several staff members from the DOE LPO financial and technical teams have visited the Record Hill site and surrounding area, and met with local officials and citizens.

The independent environmental review and information collected during the site visits were used to assess and document the significance of the impacts associated with the proposed action by reviewing the context and intensity of the potential environmental impacts as defined at 40 CFR 1508.27. The consideration of context means that the significance of an action must be analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. In the case of Record Hill, the regional context includes a rural area of Maine situated with numerous seasonal residents, the affected interests include the existing natural, physical, and socioeconomic features, while the locality of the project area consists of land owned by a timber company that manages the land to harvest timber. The intensity refers to the severity of the impact and several considerations are evaluated to determine the intensity, including:

1. Impacts that may be both beneficial and adverse.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

DOE documented its analyses of the impacts in the EA prepared for the proposed Record Hill project and ensured that accurate and sound environmental information was available to public officials and citizens before making a decision whether or not to issue a loan guarantee. In doing so, DOE issued the public Draft EA for the proposed Record Hill project for publication on February 16, 2011, by submitting the document to the State of Maine, posting an electronic copy on the DOE LPO NEPA website, and running an announcement in the Rumford Falls Times. In accordance with DOE's regulations for implementing NEPA that specifies a 14 to 30 day comment period, DOE initially provided a full 30-day comment period (February 16 to March 18, 2011). Based on requests from public officials in Maine, DOE extended the comment period to April 1, 2011, to allow public officials and citizens an extended period of time to review and comment on the public draft EA.

In accordance with NEPA and DOE's regulations for its implementation, based on the findings and conclusions presented in the Final EA, DOE has determined that there would be no significant impacts, the preparation of an EIS is not required, and has issued a Finding of No Significant Impact.

## 2. Purpose and Need

**Commenters 1, 2, 12, 14, 25, 27, 28, 29, 33**

**Comments: 1a, 2a, 2c, 12a, 14c, 18b, 18l, 25a, 25i, 27a, 28b, 28c, 28d, 29a, 29b, 29c, 33h**

Several commenters expressed general concern regarding the purpose and need of the proposed Federal action. The comments questioned the need for using or risking taxpayer money to fund or subsidize the proposed project, and that the federal loan guarantee is not needed for the proposed project because of existing and sufficient financial backing. Commenters also expressed concern about taxpayers providing subsidies for private enterprises, particularly innovative, clean energy development that is unproven economically and technically. Other comments stated that the electricity produced by the project would be too expensive and unaffordable.

**Response 2.1** As stated in Section 1 of the EA, the purpose and need for DOE's proposed Federal action is to comply with DOE's mandate under the Energy Policy Act of 2005 (EPAAct 2005), as amended by ARRA, in selecting eligible projects that meet these goals. EPAAct 2005 established a Federal loan guarantee program for eligible energy projects that employ innovative and commercial clean energy technologies. Title XVII of EPAAct 2005 authorizes the Secretary of Energy to make loan guarantees to eligible projects that "(1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued" (42 United States Code [USC] 16513). The two principal goals of the loan guarantee program are to encourage commercial use of new or significantly improved energy-related technologies in the United States and thereby achieve substantial environmental benefits. In accordance with the direction and authority provided by Congress, DOE issued a final rulemaking for the Loan Guarantee Program in October 2007, issued a final amendment in November 2009, and has prepared several solicitations pursuant to EPAAct 2005 and DOE's final rules.

In July 2009, the DOE Loan Programs Office (LPO) issued a loan guarantee solicitation titled, "Federal Loan Guarantees for Projects That Employ Innovative Energy Efficiency, Renewable Energy, and Advanced Transmission and Distribution Technologies, Reference Number: DE-FOA-0000140," pursuant to Title XVII of EPAAct. As authorized by Congress, and in accordance with its published rules, DOE evaluates the applications received in response to a solicitation, including the application submitted by Record Hill, to ensure the project qualifies for the programs defined in the solicitation. Because the solicitations are open for all to apply, DOE cannot dictate which Applicants and associated projects apply by solicitation and cannot exclude eligible projects from consideration. Creditworthy applications represent the least risk to the government and taxpayer and are the most likely to pay the government back with interest, which is a benefit to the American taxpayer. All the applications received for a solicitation that are determined to be eligible, are evaluated in a competitive process. The competitive evaluation process is a formal evaluation and due diligence process similar to what a private sector lender would conduct, before a single dollar of taxpayer money is put at risk by guaranteeing a loan. The formal loan guarantee due diligence process is a comprehensive evaluation, including market, technical, and legal-regulatory due diligence, and compliance with the National Environmental Policy Act (NEPA) and cross-cutting regulatory compliance, a credit analysis and fully negotiated term sheet. As part of DOE's evaluation of an application, DOE must comply with NEPA. The EA provides an analysis of the potential environmental effects of an action (in this case providing a loan guarantee to Record Hill) that the decision-maker can use as part of the decision on whether to issue the loan guarantee. Financial feasibility of the proposed project is not in the EA as it is not germane to the potential environmental impacts within the scope.

Under the Loan Guarantee Program, DOE does not directly use taxpayer funds to support the project; rather after a thorough review and evaluation of the application, DOE guarantees project debt so that the Applicant can secure a low interest rate loan with only the credit subsidy fee being underwritten with

appropriated taxpayer funds. The operations of the Loan Programs Office are self-supporting (do not use taxpayer funds) as all Title XVII program costs, including personnel, are covered by fees paid by applicants. The Loan Programs Office strives to effectively leverage the financing resources of the Federal Government to enable applicants to build projects that would not otherwise get built, and attract equity that would not otherwise be invested. When loans are re-paid, the nation has benefitted, with interest. In addition, the completed projects lower delivered cost of renewable energy, incentivize build-out of the domestic supply chain, and upgrade and expand infrastructure needed to capitalize on future energy innovation.

The cost of the electricity will be dictated by a power purchase agreement between Record Hill Wind and the project sponsor, Yale University. Because the power will be purchased by the project sponsor, the cost of the electricity will not be absorbed into the residential market and therefore not incurred by the general public.

**Commenters 18, 28 and 33/ Comments: 18d, 28f, 33i**

Three commenters expressed concern about how DOE could consider wind an innovative, or as stated a new or significantly improved technology.

**Response 2.2.** The Project will utilize Siemens latest turbine control technology, Turbine Load Control (TLC), to assure that the turbines are not exposed to loads exceeding their design. This is new technology for the U.S. market. The added benefit of the TLC system is to allow the turbines to continue to generate electricity under turbulent wind conditions by reducing their speed, rather than shutting them completely down, which is the typical method of operation for wind farms.



### **3. Proposed Action and Alternatives**

#### **Commenters 3 and 18/ Comments: 3b, 18m, 18n, 18o –**

Two commenters stated that an adequate alternatives analysis regarding site selection locations was not performed in the EA.

**Response 3.1** Chapter 2 of the EA describes the two alternatives analyzed in detail. These are the Proposed Action (i.e., DOE would issue a loan guarantee to Record Hill Wind for construction of the proposed wind energy project) and the No Action Alternative (i.e., DOE would not issue the loan guarantee). The decision for the DOE's consideration covered by this NEPA review is whether to approve the loan guarantee for the Record Hill project. Record Hill's decision process in selecting the chosen site and turbine siting is described in Section 2.3 and is supported by state and federal approvals (see Section 2.1.4). Further, there are no unresolved conflicts concerning alternative uses of available resources associated with the project area that would suggest the need for other alternatives (42 USC § 4332(2)(e)). Therefore, other than no action, the only other alternatives considered were those analyzed by Record Hill prior to applying for a loan guarantee and subsequently eliminated from consideration.

#### **Commenter 18/Comment 18f**

One commenter stated that the 2.9 miles of transmission line and substation off Route 120 does not conform to what was submitted to Maine DEP or the Roxbury Town Hall.

**Response 3.3** The original submittal to Maine DEP was amended on July 10, 2009 to reflect the now-permitted design. The amendment did not replace the original application, but rather amended those sections that were affected by the design change.

#### **Commenters 18 and 25/ Comments: 18g, 18h, 25c**

Two commenters stated that the acreages associated with the project clearing are not consistent or accurate. One commenter stated 30-60 acres are "required for each turbine" and "6-10 acres clear cut." Another commenter stated that the turbine area is 37 acres and not 18.8 acres and that "6.1 miles of road, 30 feet wide = 22 acres; not 12.7 acres."

**Response 3.4** The total acreages stated in Section 2.1.1 are accurate. Clearing for the generator lead line does not create impervious surface. Additionally, the 12.7 acre number set forth in the EA is in reference to operational area, not construction area. The crane path will be reduced to 16 feet in width after construction.

#### **Commenter 18/Comment 18i**

One commenter requested information regarding the amount of clearing needed for the overhead line, and whether surveys had been completed on it.

**Response 3.5** Clearing for the generator lead will be no greater than 80 feet wide, as such a width will allow for safe operation of the electrical infrastructure. The routes were assessed in 2009 and the data collected during those assessments were set forth in the July 2009 amendments to the MDEP and US ACOE permit applications. Sections 2.1.1 and 2.1.2 provide further detailed discussion.

#### **Commenters 16, 18, 25, 29 and 33/Comments: 16d, 18c, 18q, 18r, 25b, 25h, 29d, 33h**

Several commenters questioned the potential power estimates and nameplate capacity generated by the proposed project. One commenter stated that the 3.1 million megawatt hours (MWh) of production would be significantly reduced under real world conditions. The same commenter also expressed concern about the associated reductions of carbon dioxide, sulphur dioxide, and nitrogen oxides and that "conventional units would not be shut down because of the unreliability of wind."

**Response 3.7** The Department of Energy's Loan Program Office contracted an independent engineer to conduct an analysis of the wind generating potential of the Record Hill project. This analysis showed considerable agreement with a previous independent wind analysis conducted by a separate third-party. The average power generation expected in any one year over the life of the project is 115,000 MWh. It is estimated that half of the years it will be above this number, and half of the years it will be below this number. Because the Siemens turbines have an expected life of 20 years, the EA has been revised to state that "Over its estimated 20-year projected life, Record Hill expects the proposed wind energy facility to produce approximately 2.3 million MWh of electricity under peak conditions." The text in Section 1.1 of the EA that describes the megawatts produced by the turbines and the associated reduced emissions provides the caveat of operating under peak conditions.

**Commenters 1, 18/ Comments: 1a, 18m**

Commenters state that other wind projects (such as off-shore wind) would make more sense.

**Response 3.8** DOE acknowledges the commenters' statements and suggestions. While these type of projects are worthy of consideration, the alternatives that are being considered for this project are limited to the scope of the EA/proposed action.

#### 4. Water Resources

##### **Commenter 5/Comment 5a**

One commentator stated that the project is in violation of the Clean Water Act (CWA).

**Response 4.1.** Section 3.5.2.1 of the EA identifies the potential impacts on resources protected under the CWA, and identifies the permits issued by the U.S. Army Corps of Engineers in accordance with the CWA, which demonstrates compliance. The Record Hill project has been permitted by the U.S. Army Corps of Engineers for a Section 404 programmatic general permit under the Clean Water Act.

##### **Commenters 15, 24, 26/Comments: 15c, 24c, 26c**

Two commenters stated that the proposed project would impact the water quality in Ellis/Roxbury Pond.

**Response 4.2** Section 3.5, Water Resources of the EA contains a discussion of the potential impact on water quality. Specifically, to protect water quality during construction, an Erosion and Sedimentation Control Plan was developed for the project. The plan was developed following the *Maine Erosion and Sediment Control BMPS Manual* and it defines the various erosion control measures to be employed, when and where these measures should be installed, how they are to be maintained, and when they are to be removed. As part of the MDEP Site Location of Development permit (38 M.R.S.A. §§ 481– 490), Record Hill developed a comprehensive stormwater management and control plan and received a Site Location of Development/NRPA permit number for the project (L-24441-24-A-N/L-24441-TF-B-N). In addition, CMP received a Site Location of Development permit and an NRPA permit for the Section 270 transmission line and associated substation (L-24663-24-A-N, L-24663-TF-BN, and L-24663-VP-C-N).

Stormwater modeling completed for the project indicates that there would be no significant increase in discharge rate from the site following construction, and that there should be no adverse impacts to adjacent waterbodies or properties if the stormwater management plan is properly implemented. In addition to the stormwater management plan, a phosphorous control plan was developed for the project, as required by Maine's Site Law. This plan was developed using the MDEP's *Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development*. See **Response 10.6** for a complete response on the water quality of Ellis Pond (a.k.a Roxbury Pond) and associated biological impacts.

##### **Commenters 15, 18, 24, and 26/ Comments: 15e, 18u, 18v, 24e, 24f, 26e, 26f**

Commenters stated that vernal pools and wetlands would not be protected, and questioned the impacts on streams, vernal pools, and wetlands due to blasting and associated activities. One commenter also questioned the actuality of timber harvesting on the ridge lines and its affect on wetlands as noted in Section 3.5.2.

**Response 4.3** As described in the EA (see Sections 2.1.4 and 3.5), the State of Maine has issued permits pursuant to State of Maine, Natural Resource Protection Act regarding the impacts on vernal pools and wetlands, and the U.S. Army Corps of Engineers has issued Section 404 programmatic general permit under the Clean Water Act regarding impacts on wetlands. The impacts associated with the permitted activities (the proposed action) are further described in Section 3.5.5.

##### **Commenters 15, 18, 23, 24, 25, 26, 30, 32/**

##### **Comments: 15g, 18t, 18v, 23a, 24f, 25e, 25g, 26f, 30d, 30e, 32a**

Commenters stated that watersheds and water bodies, such as local rivers (Swift River) and ponds (Roxbury Pond), and the drinking water collected from shallow and drilled wells would be impacted as a result of runoff from the project.

**Response 4.4** The analysis contained in the EA (see Section 3.5) reviewed the watershed, wells, and aquifers in the area and assessed the potential impacts. As stated in the EA, the Applicant would implement measures to protect surface and ground water quality (e.g. no fueling or vehicle maintenance would be performed within 100 feet of wetlands, streams or other sensitive natural resources) and prevent spill and releases (e.g. employees operating construction vehicles are trained to promptly contain, report, and clean up any spill in accordance with standard procedures).

**Commenter 20/Comment 20f**

A commenter expressed concern over the permits issued by the U.S. Army Corps of Engineers and that the impacts have not been evaluated to the satisfaction of many of the local residents. The commenter stated that although a permit was obtained, the transmission line is still undergoing litigation regarding landowner easement issues.

**Response 4.5.** The DOE has no authority to deny a permit issued to an Applicant by the U.S. Army Corps of Engineers under the Clean Water Act. However, DOE did review the permits and the permit conditions and has incorporated the findings and requirements of the permits into the Environmental Assessment. Regarding the transmission line litigation, an easement was executed in March 2011 after the dispute was settled out of court.

## 5. Noise

### **Commenter 11/Comments 11a, 11b**

One commenter suggested that noise levels would be higher at the local residences than at the base of the ridge. The commenter stated that Maine Department of Environmental Protection (DEP) regulations are not good enough to prevent sleep disturbance.

**Response 5.1** A modeling of the noise impacts at the nearest residential locations is displayed in Tables 3-8 and 3-9, all of which are below the nighttime threshold as established by the Maine DEP. The adequacy of Maine DEP regulations is not within the scope of this EA. However, the noise analysis performed is consistent with current state-of-the-art techniques and conclusions regarding the effects of noise on human populations.

**Commenter 14/Comment 14a** One commenter stated that echoing of the noise from the wind farm because of topography and reflections off Roxbury pond would result in unreasonable noise impacts.

**Response 5.2** The Sound Level Assessment for the Record Hill Wind project was completed by Resource Systems Engineering (RSE), an acoustical engineering company with significant experience modeling the predicted sound output of wind farms in pre-development and in assessing actual sound output of operational wind farms. RSE utilized the internationally accepted CADNA/A software to generate noise contours for a proposed wind farm. CADNA/A uses three-dimensional terrain, sound power level as a function of frequency of the proposed wind turbines, and a number of other factors to model the noise contours due to the proposed wind turbine generators.

As the CADNA analysis shows, the noise contour plots shown in the EA already include these effects, and as presented in Section 3.7.3 results of the analysis indicate that sound levels at full sound power production would be between 5 to 11 dBA below the nighttime sound level limit of 45 dBA at the nine receiver points. In addition, results of this analysis indicate that sound levels at full sound power production would be between 12 to 20 dBA below the daytime sound level limit of 55 dBA for these locations.

**Commenter 17/Comment 17c** One commenter referenced a study on the cumulative noise impacts from snow mobiles and skiing on wildlife. The study is a literature review of studies which examine the effects of snowmobiling and skiing on ungulates. The study also reviews the limitations of the research as well as conflicting conclusions between the studies. (Welch, 2003)

**Response 5.3** The effects of snowmobiles and cross country skiing is not analogous to wind turbines in terms of noise impacts or effects on wildlife.

**Commenter 14/Comment 14d** One commenter stated that vibro-acoustical syndrome, defined as a whole-body pathology caused by excessive exposure to low frequency noise, would result from the project.

**Response 5.4** A DOE search of the current research on windpower-induced health effects, such as sleep disturbance, annoyance, poor mental health, and respiratory problems associated with vibro-acoustical syndrome (VCS), identified several peer-reviewed studies suggesting that symptoms associated with VCS can be explained as an indirect effect caused by annoyance towards wind turbines. For example, a study performed by Pedersen et al<sup>1</sup> showed that the people's own conviction of whether wind turbines were good or bad influenced their perception of the wind turbine noise and visual impact. Residents, who

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<sup>1</sup> Danish Energy Authority, performed by Delta Acoustics, Low frequency Noise from Large Wind Turbines, Journal No AV 140/08 Rev.1 December 2008

benefited economically from wind turbines by having them placed on their land, hence living closer to them, were less annoyed and displayed less health effects compared to the people who lived further away.

**Comment 18/Comment 18w** One commenter stated that the impacts from noise would be significant under the Council on Environmental Quality's definition of significance at 40 CFR 1508.27(b) #2, #3, and #5.

**Response 5.5** DOE has performed an independent analysis of the noise impacts from the project in Section 3.7.3 of the Final EA and deemed that they will have no significant effects to public health or safety. Additionally, the noise levels and their impacts on the surrounding community are not considered to be highly uncertain, or involve unique and unknown risks.

**Commenters 19, 20, 35/Comments 19a, 20g, 35a** Three commenters referenced an alternative study produced by the Concerned Citizens to Save Roxbury. The study stated that use of turbines that can operate in high turbulence will result in higher levels of noise pollution of 5 to 10 dBA.

**Response 5.6** DOE reviewed the study, compared it with the study described in the EA, and concluded the following:

A critical turbine characteristic for purposes of sound modeling is the total sound power of the turbine. The total sound power of turbines is guaranteed by most turbine manufacturers. This guaranteed sound power is the "loudest" a turbine will operate when properly functioning (i.e., when not in need of repair). Record Hill Wind is proposing to use the Siemens SWT-2.3-93 turbine for its project and Siemens has guaranteed this turbine's total sound power to be 107dBA (8 meters/second measured at 10 meters above the ground level of the turbine), assuming the use of Turbine Load Control (TLC) technology. Siemens has confirmed that their Turbine Load Control technology does not affect their guaranteed maximum sound power. Siemens confirmed this issue via email on April 13, 2011.

At Record Hill, in addition to having the Siemens guarantee, RSE also had the benefit of an independently conducted, IEC-compliant sound assessment of the Siemens SWT-2.3-93 turbine while in actual operation. This real-world assessment recorded the actual maximum sound output of the Siemens SWT-2.3-93 to be 105.1dBA. Because RSE wanted to be conservative in its assessment, RSE added five (5) decibels to the 105.1dBA figure for a total modeled maximum sound power of 110.1dBA (other conservative factors were also included, including assuming downwind conditions in all directions simultaneously). As mentioned above, Siemens has guaranteed a maximum sound power for its SWT-2.3-93 technology—including TLC—of 107dBA. The 3.1dBA safety factor from the guaranteed figure is not insignificant. The State hired an independent peer reviewer—Warren Brown of En-Rad Consulting—to review the work of RSE in both the initial permitting proceedings and in the project opponent's appeal before the State's Board of Environmental Protection. Mr. Brown agreed that RSE's modeling was technically correct and consistent with standard engineering practices.

The commenter's assertion that TLC technology will result in higher than predicted sound levels is unsubstantiated and is directly refuted by Siemens' statement that TLC does not affect the turbines' total guaranteed sound power. It is worth noting that Siemens has a contractual "make good" obligation on turbine noise output as part of its guarantee.

The DEP concluded that when applied correctly, point source and line source sound propagation produce the same results. In the case of known sound sources in a linear array, such as wind turbines along a ridge, calculations are most accurate when each turbine is modeled as a point source. The net effect of a line of point sources is in fact a line source. However, it is important to understand that oversimplifying this situation by assuming line source propagation (or purely point source propagation) will lead to incorrect results at certain distances from the turbines. RSE's modeling each turbine as a point source leads to the correct result at any distance or location.

Finally, it should be mentioned that RSE has modeled wind projects across Maine using the same “point source” approach. Importantly, RSE has utilized this approach in predicatively modeling projects prior to development, and then has confirmed the conservatism and accuracy of the model by collecting real world operating sound data from the same projects after operation. This "before and after" test is the best confirmation of RSE's predictions. In the Stetson Wind project in eastern Maine for example, RSE utilized the same predictive modeling software with exactly the same conservative assumptions as in Record Hill and then tested the model against the actual operating measurements. The field data collected during project operations at Stetson were found to be from 4 to 9 dBA below RSE's pre-construction modeling predictions at all locations, thus confirming the validity (and conservatism) of the model used in connection with the Record Hill project.

DOE concludes that the Ecoustics thesis that higher than expected noise from the project would occur during high turbulence is incorrect on the basis of the evidence provided by RSE's proven point source models, which display that the expected noise from the project would not exceed DEP standards.

## **6. Historic, Cultural and Archaeological Resources**

**Commenter 20/Comment 20b** One commenter pointed to the potential for impacts on Native American and related cultural resources in the area.

**Response 6.1** The Army Corps of Engineers (ACOE) was the lead agency for conducting the section 106 Historic Preservation Act consultation and any necessary related Tribal consultations. A records search by the ACOE established that there were no Federally-recognized tribes with an interest in Oxford County.

**Commenter 22/Commenter 22b** One commenter stated that there are many historic homes in the project area besides the three that would be affected as determined by the Maine Historic Preservation Commission (MHPC) including the commenter's home "an 1828 cape on the Roxbury/Mexico town line rumored to have been a station on the Underground Railroad in the 1800's."

**Response 6.2** The section 106 review and independent analyses were performed by the U.S. Army Corps of Engineers (ACOE) during their section 404, Clean Water Act permit process. These concluded that there would be adverse impacts to two historic farmsteads, which were discussed in the EA at Section 3.8.3, and documented in the Maine Historic Building Report per a Memorandum of Agreement between ACOE, DOE, and the Maine Historic Preservation Commission.



## 7. Aesthetic and Visual Resources

### **Commenters 15, 18, 20, 24, 26, 33/ Comments 15i, 18s, 18ab, 18ac, 20d, 20e, 24h, 26h, 33e**

Three commenters stated that the project will alter the natural landscape and greatly detract from its rural character and beauty.

**Response 7.1** As noted in Section 3.9.3, the project would change the ridgeline from one that is predominantly natural to one with distinct artificial features that would be highly visible to residents and businesses, roadway travelers, and recreationists on the pond or on hiking trails. Relative to baseline conditions, these turbines would affect the existing visual character and quality of views toward the ridge. The turbines would become prominent visual features on the ridgeline and alter the visual character and quality for all viewer groups. However, as shown in other simulations (Figures 3-6 to 3-13) the turbines would not be very noticeable from farther vantage points (e.g., Byron or Mexico). Moreover, movement of the turbines from this vantage would not be very noticeable due to distance.

**Commenter 18/Comment 18k** One commenter noted that the 115kv transmission line poles would not be hidden from view as there are few 70' tall trees in the project area.

**Response 7.2** As noted in Section 3.9.3, the Section 270 line upgrade would be visible from Memorial Park, Bean Brook, Swift River, SR17, one residential property in Mexico, Maine, and one in Roxbury, Maine. Installation of the transmission line upgrade is expected to have minor visual impacts on the project area.

**Commenters 12, 18/Comments 12b, 18x** Two commenters noted that the highway in the project area (Route 17) is a scenic highway that would be adversely impacted by the project.

**Response 7.3** The Roxbury section of Route 17 is the southernmost extent of the State-designated Rangeley Lake Scenic Byway. Potential impacts to Route 17 are described in Section 3.9 of the EA. As noted in Section 3.9.3, the additional corridor width and taller structures associated with the Section 270 line would increase the corridor visibility somewhat, but views would still be intermittent. Due to the limited visibility of the transmission line outside of the transmission corridor, there would be relatively minor contrasts in line from Section 270 to the scenic byway.

**Commenters 18, 20/Commenters 18z, 18ac, 20e** Two commenters noted that the project will be visible at many points along the Appalachian Trail, and adversely impact the natural quality of the area.

**Response 7.4** As noted in Section 3.9.3, three scenic viewpoints or trails, including the AT, Tumbledown Mountain and its associated trails, and Little Jackson Mountain and its associated trails would have views of the proposed project. A two-mile section of the AT is located within eight miles of the project, but there would be few views of the project from this section of trail because of intervening topography, including other mountain ridgelines. The turbines should have a minor impact on the view from Old Blue Mountain, but the rest of the AT is in forested land and would not have a view of the project. Due to the distance from the AT and their relatively small apparent size, the turbines would not dominate the landscape or create an obvious contrast in scale. The maximum view of the project from Tumbledown Mountain would occur from the mountain's west peak. This viewpoint would be approximately 5.7 miles from the nearest turbine, and all of the project turbines would be visible. Views from the summit of Little Jackson Mountain would be similar to the West Peak of Tumbledown Mountain although the turbines would appear small since Little Jackson Mountain is further from the project area.

## 8. Shadow Flicker

**Commenter 14/Comments 14b, 14d** One commenter expressed concern about the effects of shadow flicker on the west side of Roxbury Pond.

**Response 8** As noted in Section 3.10.2, the project is situated such that no structures are located within 1,000 feet of a turbine with the nearest structure located approximately 2,345 feet from the turbine string. This nearest structure is abandoned and is not habitable. The shadow flicker analysis was designed to assess any potential impact to residences in the vicinity of the project; Figure 3-15 displays the results. This analysis quantified impacts out to 3,280 feet (1,000 meters). Based upon this analysis four potential receptors were identified. Each of these receptors is located south of the turbine string. Of the four potential shadow flicker receptors analyzed using the WindPRO software, none showed a possibility of any shadow flicker impact.

## 9. Occupational and Public Health Impacts

**Commenters 11, 14, 15, 24, 26/Comments 11a, 11b, 14d, 15h, 24g, 26g** Three commenters expressed concern regarding health effects from blade thump, noise, shadow flicker, as well as the potential for suffering from vibro-acoustical syndrome as a result.

**Response 9.1** A DOE search of the current research on windpower-induced health effects, such as sleep disturbance, annoyance, poor mental health, and respiratory problems associated with vibro-acoustical syndrome (VCS), identified several peer-reviewed studies suggesting that symptoms associated with VCS can be explained as an indirect effect caused by annoyance towards wind turbines. For example, a study performed by Pedersen et al<sup>2</sup> showed that the people's own conviction of whether wind turbines were good or bad influenced their perception of the wind turbine noise and visual impact. Residents, who benefited economically from wind turbines by having them placed on their land, hence living closer to them, were less annoyed and displayed less health effects compared to the people who lived further away.

**Commenter 21/Comments 21a** One commenter expressed concern regarding the potential for a hydraulic system rupture resulting in an oil spill.

**Response 9.2** As discussed in Section 3.17.3.1 of the Final EA the Project has an approved Spill Prevention, Control and Countermeasures plan in place for operation and, prior to the start of commercial operations, is required to develop a second plan to address spills during the project's operational phase.

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<sup>2</sup> Danish Energy Authority, performed by Delta Acoustics, Low frequency Noise from Large Wind Turbines, Journal No AV 140/08 Rev.1 December 2008

## 10. Biological Resources

### **Commenters 3, 5/Comments 3c, 5b –**

A commenter expressed concern on the impacts about bald eagles from the turbines and on wildlife from the proposed development and associated habitat fragmentation and introduction of exotic species.

**Response 10.1.** Section 3.13.3.1 of the draft EA discusses the impacts on vegetation and wildlife, to include wildlife habitat and exotic species, and Section 3.13.3.2 discusses the impacts on bald eagles. As presented in the EA, DOE evaluated the impacts associated with habitat loss and exotic species, as well as the impacts on bald eagles and has determined that the impacts would not be significant.

### **Commenter 5/ Comment 5a –**

A commenter stated that the Record Hill project will be or already is in violation with the Migratory Bird Treaty Act (MBTA) and the Clean Water Act (CWA).

**Response 10.2** Section 3.13.1.1 and 3.5.1.1, of the draft EA provides a description of the MBTA and the CWA and their requirements, respectively. Section 3.5.2.1 of the EA identifies the potential impacts on resources protected under the CWA, and identifies the permits issued by the U.S. Army Corps of Engineers in accordance with the CWA, which demonstrates compliance. Section 3.13.3.1 of the draft EA describes the measures that have been taken to minimize and avoid impacts on resources protected under the MBTA. As described in the EA, the applicant has completed several surveys and has worked with the State of Maine and the U.S. Fish and Wildlife Service in compliance with the MBTA to develop post construction monitoring to help ensure that unreasonable adverse impacts to populations are avoided and minimized to the extent practical.

### **Commenter 13/ Comment 13a–**

A commenter inquired about the adequacy of the bird and bat studies/surveys and identified that there are three documented bat hibernacula (caves) near the project area.

**Response 10.3** The Applicant worked with the Maine Department of Inland Fisheries and Wildlife in the development and final approval of pre-construction bird and bat surveys of the project area. An independent consulting company (funded by the Applicant) conducted two seasons of nocturnal radar surveys and acoustic bat surveys, which captured the spring and fall migration period. The results of the surveys were provided to the U.S. Fish and Wildlife Service, who reviewed and approved the survey results for Federally-listed endangered species as well as eagles.

In summary, the acoustic bat surveys identified between 0.6 to 1.5 bat calls per detector night from detectors located in the met towers, and between 11 and 55 bat calls per detector night from detectors located in the trees. The detection rate of bat calls from the detectors located in the met towers was at the low end of detections from the surveys conducted in Maine in 2007, while the detection rate from the detectors located in the trees was in the middle of the overall detection rate. These results also show that the majority of the calls (between 86% to 96%) were documented from the detectors in the trees, indicating that bat activity occurs at heights well below the proposed wind turbines.

*Maine's Comprehensive Wildlife Conservation Strategy* (Maine Department of Inland Fisheries and Wildlife 2005) identifies a total of four caves/mines that represent bat hibernacula in the state of Maine. Three of these hibernacula occur in the Central and Western Maine Ecoregion, which includes the Record Hill project area. The closest of these three hibernacula occurs approximately six miles to the southwest of the nearest project turbine. According to information available through Maine's Beginning with Habitat program, "Bats roosting here [east of the Ellis River] likely feed upon the insects associated with the Ellis River." The other two hibernacula in this area occur approximately 10 miles to the northwest and 10 miles to southeast, respectively, of the Record Hill project area. Bats typically fly from half a mile to six miles from their roosts to feeding sites

([http://www.patracompany.com/IFWBuild/wildlife/human/LWW\\_information/bats.html](http://www.patracompany.com/IFWBuild/wildlife/human/LWW_information/bats.html)). Based on the

information collected from the acoustic bat surveys, information on feeding habits of bats roosting east of the Ellis River near their hibernacula and the typical maximum distance bats fly to feeding sites, DOE determined that the impacts on bats would not be significant as documented in Section 3.13.3.2 of the EA. In addition, throughout the consultations and permitting process with the Maine Department of Inland Fisheries and Wildlife, no issues with the hibernacula were identified or incorporated as part of the permit conditions.

**Commenter 13/ Comment 13b –**

A commenter noted differences between the draft and final permits issued by Maine Department of Environmental Protection.

**Response 10.4** The changes between the draft and final permit were made by the Maine Department of Environmental Protection. The changes included corrections of typographical errors such as the dates of the nocturnal radar surveys, and changes to some of the conditions (e.g. the incorporation of the word “consider” into some of the conditions of operation). The final permit issued by the Maine Department of Environmental Protection is the current and valid permit for the proposed project.

**Commenters 15, 16, 17, 18, 24, 26, 27, 28, 33/ Comments 15b, 16c, 17b, 18ah, 24b, 26b, 27b, 28a, 33g** Eight commenters were concerned about the impacts of the turbines on eagles. One commenter stated that the “developer’s study” stated that the eagles only fly within a short radius of the active nest at Ellis Pond.

**Response 10.5** Two seasons of raptor migration surveys and a summer survey specifically targeting bald eagle use of the area were conducted from 2007 to 2009. Two adult bald eagles were observed on September 4, 2007. Both were seen migrating at approximately 70 meters over Flathead Mountain. A juvenile bald eagle was observed on September 20, 2007, migrating west of the project ridgeline at an altitude of 200 to 300 meters. Two bald eagles were observed during the spring 2008 raptor migration survey on May 1 and May 6, 2008. These individuals were observed flying parallel to the ridgeline over the valley to the west of the project. One eagle was observed flying low along the valley, while the other was estimated at 200 meters above the valley. Seven bald eagles were observed during the summer 2009 raptor migration between July 13, 2009 and August 16, 2009. These individuals were seen flying over Ellis Pond. In their review of the survey data the Maine Department of Inland Fisheries and Wildlife biologists determined that results from the studies showed relatively low use of the ridgeline by bald eagles, and the U. S. Fish and Wildlife Service approved the project without objection after seeing the results of the summer eagle use survey.

In describing the existing conditions of the affected environment (Section 3.13.2), the EA describes the location of the active nest on the island located in Ellis Pond and describes the movements of bald eagles to include the statement that “they [bald eagles] also often expand their feeding grounds for many miles to lakes, ponds, and other waterbodies. Additionally, the discussion of the raptor and migratory bird surveys in the EA documents that bald eagles fly over the ridge line where the turbines would be constructed. In describing the potential impacts (Section 3.13.3), the EA states that based on the surveys, the majority of the raptors fly below the maximum height of the turbine blades and that studies documented that diurnal raptors avoid modern wind turbines; therefore, there would not be a significant impact on these populations.

In addition, pursuant to the Section 404 Programmatic General Permit issued by the U.S. Army Corps of Engineers, the Applicant must submit an Eagle Risk Minimization Plan to the Corps, U.S. Fish and Wildlife Service and the Maine Department of Inland Fisheries and Wildlife prior to operation. In addition, DOE consulted with the U.S. Fish and Wildlife Service on the potential impacts on bald eagles, and FWS determined that based on the project as currently proposed, no additional consultation or mitigation measures are required.

**Commenter 15, 24, 26, 28, 30, 33/Comments 15c, 24c, 26c, 28a, 30b, 33g –**

Six commenters stated that the proposed project would impact the water quality in Ellis Pond, which would adversely affect the fish in the pond and the ducks and loons that stop over at the pond, and that the turbines would adversely affect the loons.

**Response 10.6.** Stormwater modeling completed for the project indicates that there would be no significant increase in the discharge rate from the site following construction, and that there should be no adverse impacts to adjacent waterbodies or properties if the stormwater management plan is properly implemented. In addition to the stormwater management plan, a phosphorous control plan was developed for the project, as required by Maine's Site Law using the MDEP's *Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development*. Because there would be no adverse effects on the water quality of Ellis Pond, there would be no impact on the fish in the pond and the ducks and loons that stop over at the pond. Section 3.13.3, discusses the impacts on migratory birds and fishery resources that would be impacted by the proposed project.

During the Maine permitting process, the Maine Department of Inland Fisheries and Wildlife commented that loons are protected by state and Federal laws that prohibit the harassment of wildlife; however, they are not classified as a rare, threatened, or endangered avian species. MDIFW stated that there is a potential risk that loons may collide with a turbine associated with the Record Hill Wind Project. However, MDIFW believes that this risk is low since most of the loon flights would occur during daylight hours when they could see the structures. The surveys conducted for the proposed project found that loons do not utilize the ridgeline where the turbines would be located, and MDIFW concluded that neither the local loon population nor migrating loons, would be adversely impacted by the Record Hill Wind Project. DOE concurs with this conclusion.

**Commenters 15, 24, 25, 26, 28, 30, 33/ Comment 15d, 24d, 25d, 26d, 28a, 30c, 33g –**

Seven commenters expressed concern on the impacts on land based wildlife when the turbines are up and running.

**Response 10.7.** Section 3.13 of the EA describes the affected environment and describes the potential impacts on flora and fauna, to include land based wildlife. As described in the EA, the project area is currently owned by a commercial timber harvesting company and the area is subject to timber harvesting operations. The impacts on land based wildlife were found not to be significant based on the existing conditions, and that suitable wildlife habitat is available in the immediate vicinity of the proposed action that the displaced wildlife could utilize. In addition, MDIFW found that based upon the established purpose of the project, the proposed design represents the least environmentally damaging alternative and that the project would not “*degrade any significant wildlife habitat, unreasonably disturb the subject wildlife, or unreasonably affect use of the site by the subject wildlife...*”

In addition, after initial site clearing of the Record Hill Wind Project area, white-tailed deer, moose, black bear, and red fox have been observed in the area. The Searsburg Wind Project in Vermont has conducted a wildlife camera survey at that site that has documented similar game species within immediate proximity to the turbines.



**Photo:** White-tailed deer. Stetson Wind Project, Maine. Stantec Consulting, 2009.

**Commenter 17/ Comment 17a –**

A commenter noted that virtually no research has been done in Maine on the impacts of wind farms on mammals.

**Response 10.8.** DOE notes that the Applicant and State of Maine, through its permit processes, have reviewed and mitigated potential impacts on biological resources to include mammals. DOE, through the development of this EA has reviewed the information and analyses completed by the applicant and the State of Maine and has concluded that, given the available information, that the impacts on wildlife would not be significant (see Section 3.13).

**Commenter 17/ Comment 17d –**

A commenter noted that the Maine Audubon Society opposes a wind project in Redington, Maine, and implies that the same may be true for Record Hill.

**Response 10.9** DOE did not receive any comments on the Record Hill EA from the Maine Audubon Society.

**Commenter 17/Comments 17e-17j**

A commenter provided several comments regarding the potential impacts of a linear project (such as a wind farm) on wildlife, to include individual disruption, social disruption, habitat avoidance, habitat disruption, direct and indirect mortality, and population effects.

**Response 10.10** DOE notes that the article cited by the commenter does not include a discussion of turbines as a linear project, and that the article focuses on the types of roads and linear developments created by the oil and pipeline industries in western Canada, which is an entirely different ecosystem than those present in the project area.

In Section 3.13 of the EA, DOE describes the affected environment and goes on to describe the impacts associated with the construction and operation of the proposed project on the terrestrial wildlife. In accordance with NEPA, the impact assessment takes into account the existing environment, which is land that is owned by a timber company that is actively harvested for timber, and that has several existing logging roads throughout the property. In addition, the area is subject to hunting. As described in the EA, because the majority of the existing logging roads would just be upgraded, and the majority of the power transmission line would be within and adjacent to an existing powerline right of way, the proposed project would not have a significant impact on the local wildlife, to include individual disruption, social

disruption, habitat avoidance, habitat disruption, direct and indirect mortality, and associated population effects.

**Commenter 18/ Comment 18k, 18ae –**

A commenter indicated that the project may impact essential fish habitat associated with the Atlantic salmon.

**Response 10.11** As described in Section 3.13, DOE has reviewed the measures to protect the habitat associated with the Gulf of Maine Distinct Population Segment of the Atlantic salmon that are incorporated into the proposed action, and the findings of the USACE Section 404 permits (USACE Permit Numbers NAE-2008-03763 and NAE-2009-01866). DOE has concluded that the proposed action would have no impact (a no effect determination pursuant to Section 7 of the ESA) on the Atlantic salmon, and no impact on its designated essential fish habitat. In addition, the proposed action would have no impact on designated critical habitat for the salmon, as none is located in the project area.

In addition, USACE consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service during the Section 404 permit process and determined that the wetland and stream impacts would have no impact, and therefore no effect (pursuant to Section 7 of ESA), on the Gulf of Maine Distinct Population Segment of the Atlantic salmon, and its essential fish habitat.

**Commenter 18/ Comment 18af –**

One commenter expressed concern that birds that fly over the ridge would be flying directly into path of the turbines and that the turbine would represent a significant loss of habitat.

**Response 10.12** As discussed in Section 3.13, DOE evaluated the impacts on flora and fauna, to include birds and concluded that the impacts would not be significant. DOE found that the resident bird species that currently utilize the project area would be expected to continue their use with potential temporary displacement during the actual construction phase. Based on the results of the nocturnal radar surveys, raptor surveys, and acoustic bat surveys in 2007 and 2008, the operation of the wind turbines would not pose a significant threat to birds or bats. The radar surveys indicate that passage rates at the project are comparable to other turbine sites in the state. Flight height and flight direction data indicate that the majority of targets or animals are flying at a height sufficient to avoid the proposed turbines and blades. Raptor surveys indicate that passage rates of raptors is low in the project area, which is due to the lack of large landscape features that would concentrate raptor activity and migration. For additional information see responses 11c and 11e.

**Commenter 18/ Comment 18ag –**

One commenter questioned the impacts on vegetation and wildlife and the data associated with the bird and bat surveys.

**Response 10.13** DOE evaluated the impacts on vegetation and wildlife by reviewing the context and intensity to determine the significance of the impact. As described in Section 3.13.3.1, the implementation of the proposed action would not result in a significant impact. Regarding the bird and bat survey data, it has been filed with the State of Maine, and was used in developing the permits issued by the State of Maine, see response 11e for additional information.

**Commenter 18/ Comment 18ah –**

One commenter questioned the timeframe for clearing activities and its impacts on migratory birds and on the potential impacts of the turbines on the birds.

**Response 10.14** The timeframes for clearing activities as presented in the EA are accurate; Record Hill and CMP are planning to conduct the remaining clearing activities during the winter months.



Per the application submitted to the State of Maine for the Record Hill project, the majority of North American land-birds migrate at night, most likely to take advantage of more stable atmospheric conditions for flapping flight (Kerlinger 1995). Conversely, species using soaring flight, such as raptors, migrate during the day to take advantage of warm rising air in thermals and laminar flow of air over the landscape, which can create updrafts along hillsides and ridgelines.

Nocturnal radar surveys from sunset to sunrise (using X-band marine radar) were conducted in the spring and fall 2007 migration periods to monitor nighttime migratory bird activity at the project site. The radar site was located at the summit of Flathead Mountain. The spring radar survey included 20 nights of sampling from April 22 to June 8, 2007, and the fall radar survey included 20 nights of sampling from September 5 to October 13, 2008.

In spring, the overall passage rate for the entire survey period was 539 targets per kilometer per hour (t/km/hr) with a seasonal average mean flight height of all targets of approximately 1,023 feet (312 meters) above the radar site 20 feet (6 meters) above the ground. In fall, the overall passage rate for the entire survey period was 420 t/km/hr with a seasonal average mean flight height of all targets of 1,198 feet (365 meters) above the radar site. The overall mean flight heights by hour, night, and season suggests that a small portion of night migrants have the potential to encounter wind turbines along the ridgeline during spring and fall migration seasons.

Diurnal raptor surveys to monitor raptor migration activity were conducted for 14 days in the fall of 2007, and for 15 days in the spring of 2008. In 2007, a total of 96 individual birds of 12 different species were observed, with an overall passage rate of 1.12 raptors/observation-hour. In 2008, 118 individual birds of 12 different species were observed, with an overall passage rate of 1.15 raptors/observation-hour.

This information was reviewed by DOE and was summarized to support the findings presented in Section 3.13 of the EA to document that the impacts on raptors and migratory birds would not be significant.

#### **Commenter 17/ Comments 17b**

One commenter suggested possible disruption to bird species mate calling activities “due to high frequency and low frequency sounds being emitted from the turbines.”

**Response 10.15** DOE evaluated the impacts on vegetation and wildlife, including birds, by reviewing the context and intensity to determine the significance of the impact. As described in Section 3.13.3.1, the implementation of the proposed action would not result in a significant impact. Specific to the possible disruption to bird species mate calling activities, DOE reviewed a Technical Report prepared by the National Energy Renewable Laboratory, titled Avian Hearing and the Avoidance of Wind Turbines (NREL/TP-500-30844) dated June 2002. The report notes that compared to most mammals, including humans, birds do not hear well at either high or low frequencies. At the high-frequency end of the audiogram, there are no cases in which birds hear at frequencies higher than about 15 kHz. Generally, birds do not hear as well as mammals, including humans, at low frequencies. The significance of poor low-frequency hearing in birds is that the bulk of the energy generated by wind turbines is at lower frequencies (less than 1–2 kHz). On average, the spectral limit of "auditory space" available to a bird for vocal communication extends from about 0.5 to 6.0 kHz, with the majority occurring above 2.0 kHz. Because the noise emitted by wind turbines is at a lower frequency than most birds vocalize and can even hear well, there would be no notable disruptions to bird species mate calling activities.

## 11. Socioeconomics

**Commenter 17/Comment 17j** One commenter suggested that impacts to recreation would be adverse as a result of the project.

**Response 11.1** As stated in Section 3.12.2, the project's impact to recreation would be relatively minor. Hunting would continue to be allowed on the lower slopes but not where people are working on the ridgeline. This is consistent with historic and current policies on these lands. Brook fishing opportunities would remain as they are now. Erosion control methods would ensure that stream quality is maintained in all streams. Snowmobile access on the Yellow Gate Rd. and Bunker Pond Rd. would remain unchanged. The Bunker Pond Rd. summer and fall usage for vehicles and ATVs would also not be changed due to the project. During construction vehicle access on the Mine Notch would be restricted. The ATV trail which crosses the access road has been relocated for reasons not related to the project. The trail followed an old discontinued county road which inappropriately crossed some forested wetlands. In addition, the trail was closed by an adjacent landowner. A new location has been approved on this tract that restores the connection with the existing trail network, avoids crossing the access road and is more environmentally acceptable.

**Commenter 2, 14, 15, 24, 26/ Comments 2a, 2b, 14b, 15k, 24j, 26j** Several commenter expressed concern about the potential for lowered property values in the region as a result of the project.

**Response 11.2** The EA did not address the potential impact of the Record Hill project on property values because such effects are outside the scope of the environmental assessment. However, DOE reviewed a study prepared for the DOE Office of Energy Efficiency and Renewable Energy on the impacts of wind power projects on residential property values in the United States (LBNL, 2009<sup>3</sup>). The study presents data on almost 7,500 sales of single family homes situated within 10 miles of 24 existing wind facilities in nine states. The conclusions of the study were drawn from eight different pricing models, as well as both repeat sales and sales volume models. The various analyses used were strongly consistent in that none of the models uncovered conclusive evidence of the existence of any widespread property value impacts that might be present in communities surrounding wind energy facilities. Specifically, neither the view of the wind facilities nor the distance of the home to those facilities was found to have any consistent, measurable, and statistically significant effect on home sales prices. Although the analysis cannot dismiss the possibility that individual homes or small numbers of homes have been or could be negatively impacted, the study found that if these impacts do exist, they are either too small and/or too infrequent to result in any widespread, statistically observable impact.

**Commenters 5, 7, 15, 18, 20, 24, 25, 26/ Comments 5b, 7a, 15j, 18y, 20e, 24i, 25f, 26i** Eight commenters expressed concern regarding the impacts on local tourism from the project.

**Response 11.3** The EA did not directly address the potential of the proposed Record Hill wind project to impact tourism. However, Section 3.9 did address the potential impacts to visual resources, including trails, scenic byways, rivers, ponds, and parks; all of which are likely to be used by visitors to the region. Section 3.9 concluded that while the turbines would be visible from some of these locations, the impact would not be significant. Tourist attitudes to the project may depend on whether the turbines are viewed for a short period while driving or hiking through the area or for longer periods when visible from tourist

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<sup>3</sup> Ernest Orlando Lawrence Berkeley National Laboratory (LBNL). December 2009. *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*. Environmental Energy Technologies Division. LBNL-2829E.

accommodations. Attitudes may also differ among visitors depending on whether wind power projects (and other renewable energy projects) are viewed favorably or unfavorably. Landscape and scenic views are likely to be important qualities valued by visitors to the region and therefore, the potential visual impacts of the project are likely to be important to tourist attitudes. Studies on the impacts of wind power developments on tourism tend to be based on surveys of visitors and anecdotal evidence. DOE was not able to locate any studies that use empirical data to evaluate the before and after effects of wind farms on the tourist trade. Several survey-based studies from the United Kingdom and France have shown that there is unlikely to be much of a negative (or positive) effect on tourism due to the presence of large scale wind developments. Many factors weigh into tourists' decisions to visit an area and into the amount tourists spend. DOE was not able to identify a direct causal link between the proposed project and any potential reduction in the tourist economy. DOE has concluded that while there is some uncertainty in the likely effect of the project on tourism, the economic impacts on the tourism sector would be negligible.

**Commenter 33/ Comment 33a** One commenter stated that the number of jobs created is not enough to warrant the project.

**Response 11.6** As stated in Section 3.14.2 of the EA, direct and indirect beneficial impacts on socioeconomic resources would occur as a result of up to 200 additional job opportunities. Short-term impacts would include employment opportunities (i.e., timber harvesters and equipment operators) as well as increased activity at local businesses such as hotels and restaurants during construction of the proposed project. Long-term benefits would include three to five full-time jobs for employees to operate the facilities as well as seasonal work associated with road maintenance.

## 12. Cumulative Impacts

**Commenter 13 and 18/Comments 13c, 18e, 18ai** Two commenters noted that there are five to seven other proposed projects in the region, including one posed by First Wind, which could cumulatively contribute to an adverse impact on bat species.

**Response 12.1** Currently, there is one pending application for a windpower project in the neighboring towns of Carthage, Canton, and Dixfield. This project is over 10 miles from the Record Hill project and not expected to contribute to a cumulative impact on any resource areas. There is currently only one proposed project in the Roxbury area, which is posed by First Wind. Maine DEP had a meeting with First Wind for the project that would potentially span ridgelines in Roxbury and the neighboring town of Rumford. However, no application has been received, and therefore DOE has no information with which it could use to assess the incremental contribution to cumulative effects on the specific resources that are also affected by the Record Hill project.

**Commenter 17/ Comment 17c** One commenter suggested that there will be cumulative impacts to wildlife and referenced a study on the cumulative noise impacts from snow mobiles and skiing on wildlife. The study is a literature review of studies which examine the effects of snowmobiling and skiing on ungulates. The study also reviews the limitations of the research as well as conflicting conclusions between the studies. (Welch, 2003)

**Response 12.2** The effects of snowmobiles and cross country skiing is not analogous to wind turbines in terms of noise impacts or effects on wildlife. DOE reviewed the potential cumulative impacts of the project as described in Section 3.18.

### **13. General Opposition and Local Governance**

**Commenters 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 18, 20, 22, 23, 24, 26, 28, 29, 30, 31, 33, 34**  
**Comments 4a, 6a, 8a, 9a, 10a, 11c, 12b, 13b, 15f, 15l, 16a, 18a, 18ad, 18j, 18n, 18p, 18aa, 20a, 20c, 20h, 22a, 23a, 24k, 24l, 24m, 25a, 26k, 28d, 28e, 29a, 29b, 30a, 31a, 33b, 33c, 33d, 33f, 34a**

Several commenters were generally opposed to DOE issuing a loan guarantee to Record Hill LLC., requesting that DOE not issue a loan guarantee, put tax dollars at risk, or to generally support or promote wind projects. Several of the comments classified as general opposition referenced natural (wildlife impact) or physical impact (viewshed impact) associated with the general opposition, and the substantive resource-specific comments are addressed under the relevant resource section. One commenter stated that her artistic craft would be adversely affected by the altered natural landscape. Other commenters expressed concern regarding local and state permitting issues.

#### **Response 13**

As defined in 40 CFR 1500.1, NEPA procedures ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. DOE appreciates the participation of the public officials and citizens throughout the NEPA process, as the Agency uses the NEPA process to help officials make decisions that are based on an understanding of the environmental consequences.

As discussed in Response 1, DOE completed an independent review and documented its analyses of the environmental impacts in the EA prepared for the proposed Record Hill project. DOE ensured that accurate and sound environmental information was available to public officials and citizens before making a decision whether or not to issue a loan guarantee. In doing so, DOE issued the public draft EA for the proposed Record Hill project on February 16, 2011, by submitting the document to the State of Maine, posting an electronic copy on the DOE LPO NEPA website, and running an announcement in the Rumford Falls Times. In accordance with DOE's regulations for implementing NEPA that specifies a 14 to 30 day comment period, DOE initially provided a full 30-day comment period (February 16 to March 18, 2011). Based on requests from public officials in Maine, DOE extended the comment period to April 1, 2011, to allow public officials and citizens an extended period of time to review and comment on the public draft EA.

As discussed in Response 2.1, in addition to the NEPA process, DOE performs a formal loan guarantee due diligence process that includes financial, technical, market, and legal-regulatory due diligence. As described above, DOE has completed a thorough evaluation of the project, to include environmental factors, prior to making a decision whether or not to issue a loan guarantee. The rigorous due diligence process is intended to minimize the risk to the American taxpayer.

Regarding concerns related to local and state permitting issues, DOE has no control over the state and local process and must defer to affected officials to address any concerns with these processes. DOE appreciates the participation of the public officials and citizens throughout the NEPA process, and as described above, has given careful consideration to all comments received.

**From:** dan mckay [mckaydan2@gmail.com]  
**Sent:** Tuesday, February 22, 2011 6:22 AM  
**To:** Marhamati, Joseph  
**Subject:** "Record Hill Draft EA Comments."

**Deepwater wind power given boost from report**  
**The University of Maine study should give the state 'a major leg up' in attracting developers.**

1A

The vision is for thousands of megawatt generation. The available resource (wind) provides capacity ratings far exceeding land-based units. Public disturbance is far less than land - based.

Capital costs are higher due to different site factors, but federal funding has been received by the University to develop R & D.

Just seems to me, that if taxpayer money is to be used to provide impetus to wind, deepwater wind power makes more sense here in Maine than land-based. I believe Former Governor Angus King has alluded many times to deepwater wind and promotes it's development.

Location,location,location.....big factor.....physically and politically.

I think of wind power, at best, an experiment, but if the DOE is compelled to do this thing, at least do it in a way that has chance for the best " bang for the buck " .....Thank you

Dan McKay  
Dixfield, Maine

**From:** Peter Buotte [jsailboat@myfairpoint.net]  
**Sent:** Friday, April 01, 2011 8:58 PM  
**To:** Marhamati, Joseph  
**Subject:** Comment on DOE Application for Record Hill Wind LLC Roxbury, Maine

Mr. Marhamati,

2A Please accept my following comment on the DOE Application for Record Hill Wind. It bothers me that my tax dollars could be funding something that will decrease local property values and have a negative effect on the area tax base. In speaking with a local real estate agent that represents property in Roxbury, the current state of the housing market is bad enough without adding in extra outside factors. During my conversations with the real estate agent he mentioned that while showing property in the area and disclosing that there is a Wind Farm in the permitting stage, 2B people's attitudes and interest levels change. The most widely make comments are that they want to see what is going to happen in regards to views, sounds, and value due to the Wind Farm before they go any further . When you decrease the group of potential buyers it has a negative impact on the value of the property in the area. My question also is why 2C should US taxpayers assume the risk for a LLC which supposedly has enough funds to complete the project. The investors that are reaping big rewards should bare the risk not the taxpayers. This is just one of the many reasons why I feel that the Record Hill Wind LLC request for a US taxpayer backed federal loan guarantee should be denied.

Sincerely,

Peter Buotte  
29 Isthmus Rd.  
Rumford, ME 04276

**From:** Bob Weingarten [bpw1@midmaine.com]  
**Sent:** Friday, April 01, 2011 9:58 PM  
**To:** Mcmillen, Matthew C  
**Cc:** Marhamati, Joseph  
**Subject:** Comments on Draft EA for Record Hill Wind, LLC, Roxbury, ME

Matthew McMillen  
Director, Environmental Compliance  
DOE Loan Programs Office

Dear Mr. McMillen,

I am writing to offer my comments concerning the draft Environmental Assessment (EA) issued by the Department Of Energy for reaching a determination as to whether a loan guarantee should be provided to Record Hill Wind LLC for the construction of a wind energy project in Roxbury, Maine.

3A

I am a resident of Vienna, Maine and live in the general vicinity of the proposed site. After reading the EA and discussing it with a number of other residents, I would like to strongly urge DOE to hold off on approving the loan guarantee and move to implementing a full Environmental Impact Study on this project.

The EA is deficient in a number of areas, which points to the need for an EIS employing objective data not sourced solely from the developer.

In the EA the DOE has failed to adequately identify and properly evaluate alternatives to the proposed site, as required by NEPA. While it is claimed that the developer examined 20 other sites, the EA does not contain any specifics as to these other sites, therefore a comparative analysis cannot be undertaken. It is truly impossible to conclude that Roxbury Pond is the best available site from the limited data found in the EA.

3B

The wind blows nearly everywhere, not just on mountains, and these days wind power developers are siting projects in locations that do not jeopardize such a valuable and fragile natural resource as Roxbury Pond.

Since the developer's wind power project does not depend on any particular natural feature of the Roxbury Pond location, alternatives to the proposed site are numerous and should be thoroughly investigated before allowing the extreme adverse impacts to wildlife, the natural environment, and the recreational resource that construction and operation of turbines, transmission lines and access roads at Roxbury Pond will certainly create.

3C

While the turbines present great risk to the eagles at Roxbury Pond, the proposed roads and transmission lines represent an even larger potential threat to wildlife because such infrastructure can result in extensive habitat fragmentation and can provide avenues for invasion by exotic species.

3B

This project can be just as effectively accomplished elsewhere in Maine or in New England. A scientific study and new wind map published in the Journal of Geophysical Research- Atmospheres gathered wind resource data from 8000 spots across the globe. They found that 13 percent of the 8,000 spots were capable of averaging Class 3 wind speeds throughout the course of the year. The authors state: "Class 3 winds are greater than 15.4 mph (6.9 meters per second), which is considered strong enough to be economically feasible for electricity production". Many of the alternative sites would be less damaging to the natural environment





than building at Roxbury Pond. Therefore, I urge a full EIS with detailed analysis of feasible alternatives.

Thank you for the opportunity to present these comments. Please consider them and make them a part of the official record.

Sincerely,

Bob Weingarten  
Vienna, ME

**Marhamati, Joseph**

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**From:** Judith Allen [jmcam@roadrunner.com]  
**Sent:** Wednesday, February 23, 2011 11:18 AM  
**To:** Marhamati, Joseph  
**Subject:** Federal loan guarantees

4A

**Please cut all federal loan guarantees which will fund wind projects in the mountains of the State of Maine. When they are improved to the point where they are beneficial instead of detrimental then put them offshore.**

**Judith C. Allen**  
**Strong, ME**  
[jmcam@roadrunner.com](mailto:jmcam@roadrunner.com)

**From:** Nadianichols [nadianichols@aol.com]  
**Sent:** Wednesday, March 30, 2011 7:46 AM  
**To:** Marhamati, Joseph  
**Subject:** Fwd: Record Hill Project

Please accept these comments as public record.

5A

The Record Hill Project, along with all the other projects in Maine's expedited permitting process and those already in operation, will be, or already are, in violation of both the Federal Migratory Bird Act and the Clean Water Act. I'm sure you are aware of this; the wind industry admits it openly but they control all the law offices in the state and feel there is nothing to fear from us rural low income Mainers. They are also working hard to change the Migratory Bird Act. If bats were a protected species, as they should be, none of these projects would have gotten off the ground.

5B

There are bald eagles on Roxbury Pond. I'm sure you are aware of this, as well. I'm sure you're also aware of pending legislation that would give constitutional rights back to the citizens of Maine. Baldacci's expedited wind law was seriously flawed. Law suits are pending in Mars Hill and Vinalhaven. Aside from the ecological destruction and the negative impacts on water and wildlife, industrial wind will bankrupt Maine's biggest economic engine: tourism. North Carolina has put a moratorium on mountain top wind in recognition of the fact that their economy depends on tourism. Our economy is no less tied to the scenic viewsheds in Maine. Industrial wind doesn't belong here. We don't need the electricity. We don't need to destroy the best parts of our state to provide electricity to southern New England when Canada is eager to sell them cheap renewable hydro.

I speak for the eagles and ravens, the lynx and the bobcat, the deer and the moose. I speak for the fischer and the fox, the kestrel and the thrush and all the wildlife who have no voice in this process that takes away much of what they need to survive. I speak for the residents who are being bulldozed by the falsely subsidized greed of big wind.

This is wrong. This is criminal.

JUST SAY NO.

Thank you.

Penny Gray  
co-owner, Harraseeket Inn  
Freeport Maine  
Maine Master Guide  
270 River Road  
Carthage Maine

**Marhamati, Joseph**

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**From:** Klcorbett [klcorbett@aol.com]  
**Sent:** Thursday, March 31, 2011 8:14 AM  
**To:** Marhamati, Joseph  
**Subject:** Matthew.McMillen@hq.doe.gov

Mr Marhamati,

6A I do not support the use of our tax dollars being used to support the project at Roxbury Pond.

Kevin Corbett  
57 Saunders Rd  
Woodstock, ME 04219

**From:** email@addthis.com on behalf of nadianichols@aol.com  
**Sent:** Wednesday, March 30, 2011 7:44 AM  
**To:** Marhamati, Joseph  
**Subject:** Maine's mountains are an economic treasure | Guest Columns

Please accept this addition to the comments I have already submitted regarding Record Hill.  
Thank you. Penny R. Gray

7A

[http://www.sunjournal.com/guest-columns/story/1004289?sms\\_ss=email&at\\_xt=4d93177e0e39b9e6%2C0](http://www.sunjournal.com/guest-columns/story/1004289?sms_ss=email&at_xt=4d93177e0e39b9e6%2C0)

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## Maine's mountains are an economic treasure

By Penny Gray

Mar 27, 2011 12:00 am

In the 1970s and '80s, there was a rush to dam all of the rivers in Maine when Federal Energy Regulatory Commission laws were eased to meet an energy crisis. What stopped that from happening? Something called the Maine Rivers Study. Maine was the first state in the nation to survey its rivers and designate them in three classes. The rivers that were spared, the Dead, Kennebec and Penobscot, have become multimillion-dollar economic assets for Maine with large economic multipliers that ripple through rural and state economies, providing thousands of jobs. It would have been a tragedy to destroy those assets.

The state is about to make that mistake with its mountains. Three hundred miles of the state's ridge lines and wild mountain areas are being targeted to solve a perceived energy crisis in southern New England, but the expedited legislation pushed through by former Gov. John Baldacci was deeply flawed. Not one representative of Maine's largest employment sector — tourism — was on the governor's task force.

There was no discussion of the current mountain and wild land economies that support Maine's rural areas. There was no Maine Mountain Study.

What is the economic value of a viewscapes that tourists travel to from all over Maine, New England, the U.S. and the world to see and experience?

What will this multimillion-dollar value be when these same viewscapes are bristling with blades, dissected with industrial roads and transmission lines, and blinking with red aviation lights?

What will this value be when there are so few unspoiled landscapes left in this state?

Will Maine be positioned to be a world tourism leader and destination because it wisely assessed these viewsheds and their greater economic value and set them off limits to wind power and other transforming, fragmenting development?

Or will Maine's economy be bankrupted by the rush to industrialize its most valuable assets?

The Maine Department of Tourism figures prove that tourism is by far Maine's biggest economic engine. In 2009, 34 million tourists provided more than 170,000 full-time jobs, \$535 million in tax revenues, and \$10 billion in goods and services.

The Department of Environmental Protection permitting applications for industrial wind mandate proof of tangible benefits for the host community. What about all the other communities within a 30-mile radius that have to live with it, visually?

What about Mount Blue State Park, one of the state's most scenic and popular recreation destinations? The proposed Saddleback Ridge project is right on Mount Blue's doorstep.

Do the tangible benefits of all of Maine's proposed industrial wind projects combined even come close to tourism's figures?

Has the cumulative visual impact of these projects on 12,000 square miles of Maine's scenic viewshed been evaluated from an economic perspective? And if not, why not?

The tangible benefits of tourism will last forever only if residents protect Maine's iconic viewsheds from inappropriate development. The tangible benefits gained by host towns such as Carthage won't be enough to decommission one single turbine in 20 years if Patriot Renewables declares bankruptcy prior to its 15th year of operation, which is a very real possibility when the federal subsidies dry up.

Furthermore, those two to three jobs created are hardly worth the enormous TIF package Patriot Renewables was granted by the town.

At a recent DEP meeting held in Dixfield to discuss the Saddleback Ridge project, only four people out of more than 100 spoke in favor, and all were making money from it.

Complaints were voiced by Patriot Renewables representatives about people from out of town attending this meeting and speaking against their project. Perhaps they are unaware that nearby Mount Blue State Park belongs to all Mainers, and that their proposed project will negatively impact many neighboring towns as well.

Industrial wind provides no benefits for the majority of Mainers, and even less for Maine's mountains, waters and wildlife. Worse, it could very well destroy the tourism infrastructure rural natives count on for their very survival.

***Penny R. Gray is a Maine master guide and co-owner of the Harraseeket Inn in Freeport. She lives in Carthage.***

**From:** Mike [zeus52@207me.com]  
**Sent:** Friday, April 01, 2011 11:19 PM  
**To:** Marhamati, Joseph  
**Subject:** NO

8A

Please do not give one red cent to the scam artists trying to develop industrial garbage wind turbines aka Record Hill Wind. These con artists are after subsidies and do not care about the people or wildlife which will be impacted. The cumulative effect will reach sickening levels and there will not be any place in our beautiful state where one may go to find a natural skyline. It is wrong for many reasons. Thank you. Mike DiCenso

**Marhamati, Joseph**

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**From:** Margery Ripley [margery.ripley@gmail.com]  
**Sent:** Thursday, March 31, 2011 8:29 AM  
**To:** Mcmillen, Matthew C  
**Subject:** please consider

9a Un known health side effects, fast track approvals based on developer paid for environmental studies, millions spent on promoting a "rural life" vacation area wasted by placing a HUGE ugly distraction and wildlife devastating project in the middle of it, FALSE claims of health benefits based on closing down fossil fuel plants( not possible because wind is so undependable)

PLEASE think of our long term need for a safe productive planet not just keeping your job.

If there were no subsidies or at most the subsidy levels were the same as other energy production methods, there would be NO ONE investing in commercial wind power.

I am crying over what you are not just allowing, but PROMOTING in this doomed to failure project-- commercial wind !



**From:** Mike [zeus52@207me.com]  
**Sent:** Wednesday, February 16, 2011 8:59 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill draft Comments

10A

Good God..... JUST SAY NO!!!!!!!!!! I am watching the Rollins project go up here in Lincoln and I have to say these industrial turbines are the worst idea ever to afflict Maine. The Record Hill project is more of the same. The trans. lines are too expensive. Have you priced copper lately? The Bristol Bay watershed of Alaska will be destroyed by strip mines for the foolish rush into the fad of wind turbines. Rare earth mines in China are plundered with zilch env. regs. just to supply the parts for the tech. industry. How can wind turbines be environmentally practical if they can never make up the c02 it takes to produce, deliver, install and maintain them? Boot the greedy ex-Enron developers out of the Record Hill area and out of Maine. Thank you . Mike DiCenso

**Marhamati, Joseph**

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**From:** sherwats2 [sherwats2@wildblue.net]  
**Sent:** Friday, April 01, 2011 9:23 PM  
**To:** Mcmillen, Matthew C; Marhamati, Joseph  
**Cc:** Darryl Brown  
**Subject:** Record Hill Draft EA Comment  
**Attachments:** DEP Memo on Noise.pdf; Mills 2-09 to 9-09.pdf

Dear Mr. Marhamati and Mr. McMillen,

11A As a retired physician who has done comprehensive research on the available literature on wind turbine noise and human health, I believe it would be improper for the DOE to participate in the Record Hill Wind project. Mounting evidence from all over the world suggests that the wind industry and governments have been far too ambivalent about the impacts of locating grid scale wind turbines in otherwise quiet rural areas. Ridge mounted turbines are particularly problematic since there can often be sufficient wind high above a ridge for turbine operation even though noise levels near the base of the ridge, where homes are located, can often be 15-20 dBA lower than the noise reaching the homes from the turbines. The cascade of health effects which result from sleep disturbance induced by such an increase above background noise levels includes high blood pressure, anxiety and depression, headaches, poor job or school performance.

11B As an example of how the Maine DEP is not protective of citizens, Maine's noise regulations do not currently include limitations on increases above background noise levels, or language specific to the low frequency noise emitted by wind turbines, which is the component of turbine noise most responsible for sleep disturbance. This despite clear language in the report to the Governor's Task Force on Wind Power by DEP Commissioner David Littell, advising that "noise generated from wind turbine does low frequency noise does have attributes that warrant particular focus in the review of projects, including the low frequency modulating noises generated as turbine blades pass by towers." (See attached "DEP Memo on Noise".) Three years after this report was given Maine's noise regulations still do not require that low frequency noise from wind turbines be predicted, or assessed. In isolated rural areas such as Roxbury Pond, where nighttime noise levels become very quiet due to the absence of human activity, it is my professional opinion that the presence of turbine noise has the potential to cause significant health problems for some residents.

As further evidence that Maine DEP has failed its duty, morally if not ethically, to protect its citizens, I am attaching a series of emails, obtained through a Freedom of Access request, between then CDC head Dr. Dora Mills and DEP staff. These emails show that Dr. Mills exhibited a lack of expertise, and a desire to refute claims of adverse health effects, instead of exhibiting the scientific curiosity and empathy that such claims should have produced. This has been a great concern of mine, both ethically and scientifically, because the DEP relied on Dr. Mills as a 3rd party independent expert to provide opinions in wind project applications, including Record Hill Wind. Ironically, shortly before leaving office, Dr. Mills apparently had a change of heart. She contacted Senator Tom Saviello and asked him to submit a bill to require the DEP to address turbine noise through rulemaking hearings, which he has done.

11C For these reasons it would be unacceptable for the DOE to partner with this project.

Monique Aniel, MD  
PO Box 345  
Oquossoc, ME 04964

**Marhamati, Joseph**

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**From:** True Engineering Inc [smartcarts@fairpoint.net]  
**Sent:** Tuesday, March 15, 2011 11:12 AM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Draft EA comments

Dear Mr. Marhamati, I am writing to you out of concern regarding the proposed Record Hill Wind turbine project in the town of Roxbury, Maine. Please evaluate the environmental impacts very carefully and familiarize yourself with the problems that people are having here in Maine living near these industrial wind farms (see windwatch.org and windaction.org in the Maine section). The disasters here at Mars Hill and Vinalhaven are only two of many across the country; wherever these turbines have been sited close to communities problems have followed, and they have not lived up to anyone's expectations of performance or "livability". As an investment, it is well-known that nobody would bother to put these turbines up were it not for taxpayer funding and subsidies. Mr. T. Boone Pickens, who as you know has invested a fortune in wind energy and was one of its biggest promoters, was heard to say recently on National television that he is through investing in it..."No-one can make money on these things". Clearly, this is not an industry that makes good sense from either an economical or environmental standpoint, and the developers have come to you for funding because they cannot find it elsewhere. This is not a worthwhile investment. The Section 1603 cash grant program would allow these developers to fund 30% of their projects on the backs of the taxpayers. I do not believe that the public should have to fund any private commercial enterprise, and this one is particularly onerous because of the cost to the immediate environment, the quality of peoples' everyday lives and the values of their properties. The past performance of these turbines has shown them to be inefficient, unreliable and unprofitable. They are at best a poor and outdated energy source, and at worst an environmental travesty. At the very least, they are the biggest "Green scam" out there. Record Hill Wind won approval for their project in the town of Roxbury by a margin of less than 6 votes. Were that same vote taken again today (three years later) with what the people now know about this technology, it would never pass. There has never been wide support for this project that will have such a negative impact on the lives of the townspeople or the environment of the Swift River Valley.

12A

To my mind, the goal of protecting the environment should be to preserve the quality of life that we all share, human and animal alike. These huge industrial projects are in direct conflict with this goal when they are sited on valuable mountaintops for the gain of a few at the expense of so many. The Swift River Valley is a beautiful and popular vacation area, and a valuable asset to Maine's ecology and economy. It is also a State Scenic Highway and an inappropriate location for a project of this magnitude. I implore you to not allow this special place to fall victim to special interests; please do not approve any funding for Record Hill Wind. Respectfully yours, Gretchen Schreiner (writing from Standish, Maine)

12B

**From:** fryewood@roadrunner.com  
**Sent:** Friday, April 01, 2011 10:05 PM  
**To:** Mcmillen, Matthew C; Marhamati, Joseph  
**Subject:** Record Hill Draft EA Comments -- Bat Studies  
**Attachments:** Bats in Maine and concerns regarding Wind Turbine Developments.pdf

April 1, 2011

Mr. Joseph Marhamati  
Mr. Matthew McMillen

Record Hill Draft EA Comments -- Bat Studies

Draft EA 3.13.2.3 Biological Surveys and Results

From the Draft EA "The 2007 nocturnal radar surveys conducted on the ridgeline in both the spring and fall, documented the passage rates of nocturnal migrating animals, which would include birds (primarily passerines) and bats. This technology does not distinguish birds and bats therefore observations are described as targets....."

13A

How are the studies done to date within the Record Hill Wind project area considered even minimally adequate? With the research by the Biodiversity Institute proving that there are three documented caves in Maine of which two are located in Rumford, Maine less than five miles from the project area, I would think that this would be of great concern. To date, it would appear that the White-Nose Syndrome (WNS) has not yet infected the bats in this area. Millions of dollars of Federal money has been spent and more requested to study this disease in order to save the bat species that are so beneficial to agriculture, the fragile ecosystems and the environmental balance in general.

The attached copies of some of the articles in my file, while no where near all of the documents available; show a great interest in these valuable mammals. There is also much concern regarding interaction with Wind Turbines and it would appear that many more studies with far greater scope and duration need to be done.

I have cut-and-pasted some of the highlights, but I urge you to review the attachments as well as visit [www.windaction.org](http://www.windaction.org) and [www.wind-watch.org](http://www.wind-watch.org) where many more articles specific to Wind Turbine interaction can be easily accessed.

13B

I assume that you have reviewed the actual Maine Department of Environmental Protection Permit and Section 7.5 which addresses Wildlife and Fisheries and specifically Migratory Birds, Bats, and Raptors. I will forward you the copy in a separate e-mail. Please notice the duration of the studies as well as the change in language from the Draft Permit and the Final Permit. The years of studies seem to differ as does the language in the subsection titled "Modified Operations", "On-Site Habitat Management" and "Habitat Protection". This is a critical issue for these mammals and loss of their valuable contribution to the ecosystem should warrant some investigative research into the entire process of pre-application studies, equipment used to conduct the surveys, application, and permitting.

13C

Another concern that should be considered, is the fact that currently at least 5-7 other Wind Developments are in some stage of application or permitting within less than a 15 mile radius of the Record Hill project with one being proposed for the nearby Town of Rumford and that project includes the additional ridges of North Twin

↑ and South Twin Mountains also located in Roxbury, Maine. The cumulative effects of these projects could have devastating impacts on the bat species in this area that are located near the two bat caves in Rumford.

I can provide additional material and maps with overlays of the specific projects should you desire them.

Thank you for your attention to this specific issue.

Cathy Mattson  
1011 Roxbury Rd  
Roxbury, Maine 04275

207-364-2616

### **Relevant excerpts from the attached articles:**

Yates said bats provide a valuable service, eating the equivalent of their own weight in insects each night. For the little brown bat, that's 6 grams, about the weight of six paper clips.

Bats are an important defense against insects that spread disease and threaten agriculture, Yates said. They're also under siege, from diseases, contaminants and environmental changes.

He has studied only a handful of the 1,100 known species of bats. Maine is home to eight species.

Tree bats appear to be especially affected by the blades of wind power turbines, but no one knows why. Yates said it could be that tree bats follow ancient migration routes along the mountain ridges where the turbines are most often erected.

He said another theory is that tree bats, which swarm in the tallest available tree during mating, are confusing the soaring turbines with trees.

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With bats threatened by careless wind-turbine development in major flyways and, more pressingly, by the new and dreadful [White Nose Syndrome](#), protecting them isn't just ethical. It makes bottom-line sense.

If bat mortality "continues unabated, we can expect noticeable economic losses to North American agriculture in the next four to five years," wrote the researchers, whose study was published online March 31 by *Science*. "A wait-and-see approach to the issue of widespread declines of bat populations is not an option."

The estimates are an informed, back-of-the-envelope calculation based on earlier research by study co-author Tom Kunz, a Boston University bat specialist who in 2006 published the most detailed look ever at the relationship of bats to insects and agriculture.

Estimated annual value of insectivorous bats in agriculture by county. Multiply values by \$1,000, e.g., 2100 to 3400 equals \$2.1 million to \$3.4 million (*Science*).

Kunz's emphasis reflects two critical threats to bats' future. One is the installation near bat caves and flight routes of wind turbines, which suck bats into their blades. By 2020, wind turbines will kill about 60,000 bats each year in the mid-Atlantic states alone.

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*"The cumulative impacts on bat populations from proposed and/or constructed wind farm developments, especially in the eastern United States, may lead to further population declines, placing multiple bat populations at serious risk of extinction." — Dr. Thomas Kunz, Director of the Center for Ecology and Conservation Biology, Boston University*

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**An unexpected side effect of wind power:** bats on ridgetops in the East show an unexplained tendency to collide with the blades of wind turbines. While that may not seem important to the average person, bats are vital to the health of the environment and to many human economies. They are primary predators of night-flying insects, including many agricultural pests that cost farms and forests billions of dollars of damage annually. Some are important pollinators and seed dispersers.

There are 9 species of bats in NY and 46 species in the U.S. Nine of them account for almost 90% of the deaths and several of those species are in decline. Bats have a longer life cycle than birds and their numbers will decline much quicker. It's not clear why some bats are susceptible to colliding with turbine blades, but the Government Accountability Office has stressed the need for further study. Unfortunately, turbines continue to be slapped up at an alarming rate on ridge tops in the East, before proper study can be done. Often, no pre-construction study is done at all, even when requested by the US Fish and Wildlife Service. The USFWS has drawn up guidelines for turbine placement, but has no authority to enforce the guidelines.

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Bat Hibernation in Maine -- Presentation in Rumford at the Rumford Memorial Library on March 18, 2011.

The speaker for the event is David Yates of the Biodiversity Research Institute. His subject is Bat Hibernation in Maine. Though it is not well known, there are three bat caves in the State of Maine, and two of them are in Rumford; both are on or near Mahoosuc Land Trust conservation sites: Rumford Whitecap and the Concord River preserve.

Yates will discuss the role bats play as an indicator species to determine levels of mercury in the environment.

Dave is a Unity College graduate (1999), where he earned a degree in Environmental Sciences with an emphasis in Wildlife Biology and Management. He has an M.Sc. from Antioch University New England in Environmental Studies with an emphasis in Conservation Biology.

**Marhamati, Joseph**

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**From:** Linda Kuras [lkuras1@roadrunner.com]  
**Sent:** Wednesday, March 30, 2011 11:47 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Draft EA Comments DOE/EA 1824  
**Attachments:** 086.JPG; 087.JPG

Mr. Marhamati,

14A Noise during the operational period is not expected to result in a 'significant' impact. What is the measure of 'significant'? My grandparents emigrated from Lithuania in the early 1900's. In 1995 I converted our family camp to a year round retirement home. Our pond is a basin surrounded by mountains. I love my home and my lifetime of memories here. The sound carries and bounces off the mountains as in an echo. A wood splitter across the pond can rouse you from a sound sleep. The fact that these Industrial Turbines will be geared for high winds so that they will not have to be turned off is a double red flag resulting in unbearable night noise in the winter months. I don't want to be the victim of an experiment for an inefficient energy source. We are being sacrificed to post construction monitoring. The existing power line was the main attraction in selecting our area. I believe the noise level of this project will far exceed the noise level the state deems tolerable due to the topography and the echo of noise over the water. The three projects currently operating in Maine all have citizens suffering the impacts of excessive noise. Solutions still are 'in the works.'

14B I also want to go on record asking you not to grant funding to Record Hill Wind LLC . The deprivation of a person's property by destroying it's value is protected by a Constitutional Guarantee. Not only will I be subject to noise infringement, but the shadow flicker on my camp and two homes on the West shore of Roxbury (Ellis) pond will be double the assault. I have attached photos to show you how the mountains will reflect the turbines turning right 'on' our houses at times. The sun rises behind the proposed turbines every summer morning. Underplaying the aspect of shadow flicker in this draft exhibits blatant disregard for the citizens of Roxbury pond. This project barely passed a town vote and would have been defeated if the summer residents had voting ability. 8 votes is not 'unanimously welcomed.' RHWLLC's promise of a discount on the electric bill as well as a property tax reduction barely sealed the deal for them.

14C The President of Record Hill Wind in filing to the DEP of Me. stated they had sufficient funds to complete construction without any additional capital. They don't NEED a loan guarantee. They even are partnered with the Yale Endowment Fund.

I understand you personally have been here. Have you traveled down West Shore Road and considered what the taxpayers here will think of our own tax dollars being put to use to lower our own property values as well as our daily existence at home. I invite you to stay in my small rental the next time you are in the area. You could quickly see what a doomed project this is going to be. This is no place for a wind farm.

14D Vibro-acoustical syndrome as well as shadow flicker will deprive me of my property rights. These effects also lower my property value. For these personal and desperate reasons , please deny Record Hill Wind a federal loan guarantee they have already stated to the DEP they don't need.

Sincerely,  
 Linda Kuras  
 P.O. Box 121  
 Roxbury, Me. 04275  
 207-545-2147

**From:** Coastal Counties Workforce Inc [ccwi.virtual@gmail.com]  
**Sent:** Friday, April 01, 2011 7:42 PM  
**To:** Marhamati, Joseph  
**Cc:** Mcmillen, Matthew C  
**Subject:** Record Hill Draft EA Comments (Christine Dube)

Dear Mr. Marhamati,

I am greatly concerned that the Department of Energy's Environmental Assessment is not adequate to allow the project to move forward. I am requesting the Department of Energy to do a full Environmental Impact Study. This request is based on much correspondence with professional experts as well as local residents with specific interest areas.

Some of my concerns are:

- Environmental Studies: No independent environmental studies were done; requests were made to Maine DEP to do one; the only environmental studies done were those by the developer as part of their permit application. Did not take into consideration the following:
  - Eagles who have nested on French Island for the past 25+ years; they have already constructed their nests this year. There is much concern about them soaring too close to the wind turbines. These eagles stay year round and fly over the ridge (where the turbines will be erected) to feed at the Swift River. The developer's study stated the eagles only fly within a short radius of the island; however, an avian biologist countered that eagles minimally fly a 5-8 mile radius daily.
  - There are several families of nesting loons and duck species at the pond who depend on the water quality. In the fall, there are as many as 100+ migratory loons that stop for a week or two just before the ice is in. I have seen these personally for the past 3 years. It is quite a site to see. My concern is that they will be severely impacted by the turbines on the ridges. Degrading water quality will also affect the fish which the loons, eagles and ducks feed upon. In February, an annual Fishing Derby is held which more than 500 people attend to take part in this activity.
  - Land based wildlife (such as deer, moose and bear) have already been impacted by the work which has been done to date. As a result of the ecological damage done to the area, hunters have witnessed minimal activity this past season as compared to before construction. It has been proven in New York and other states that animals will not remain in an area where turbines are located due to the noise. We are already experiencing a decrease in wildlife due to the blasting and groundwork that has been done. What will the result be when the turbines are up and running?
  - Vernal pools and wetlands are not being protected. Vernal pools are shallow depressions and are often found in forested wetlands. Usually, they fill up with water, but only for part of the year. Peepers and toads call them home. And sometimes, so do animals like spotted turtles, ribbon snakes and different types of inland waterfowl. Pools with endangered, threatened or rare species like these are called "significant vernal pools". Wetlands scientists say protective buffer zones surrounding the pools are keeping certain species from going extinct. Currently Maine law prohibits development within 250 feet of significant vernal pools, unless the builder gets a permit from the state which is the case regarding this project. What attracts many people to Maine is that the state still has a vibrant wildlife community and research shows that if the state conserves vernal pools, it will also conserve wildlife.
  - Roxbury Pond is a fragile environment and needs to be carefully and responsibly addressed by environmental experts who are not influenced by project preferences.



- 15G • Watershed: Because of the location of this project (3 miles along the mountain ridges), the watershed will be compromised on both sides of the mountains; namely, the Swift River, Roxbury Pond and possibly Garland Pond. The amount of blasting and the degradation of the proposed project area is of significant concern to these fragile watersheds. Roxbury Pond has 42 natural run offs and a 30 square mile watershed. There is no public drinking water supply available and residents throughout the area depend on shallow wells, drilled wells and some even from the pond itself.
- 15H • Health Impacts: Improper evaluations of the health impacts this project will have on people living within 5 miles of the project site as based on previous projects in Maine that are currently in litigation; such as, Mars Hill, Freedom and Vinal Haven. Health impacts as they relate to: noise, shadow flicker and blade thump.
- 15I • Quality of Place: Maine is branded for its Quality of Place as referenced by the Brookings Institute Report. This is a peaceful, scenic, tranquil, natural area to be enjoyed during the four seasons. This is why people choose to visit this area and why they continue to return. Currently, pond residents can see mountains as far away as the New Hampshire border to the west. This proposed project would be a dominate feature of the otherwise natural landscape and will greatly detract from its rural character and beauty. Because of their siting and overall dominance of the horizon, they will be a visual blight on the landscape for as far as the eye can see.
- 15J • Ecotourism: This area as well as most of Maine relies heavily on the tourism-based industry for its livelihood. Many property owners offer rentals of seasonal cottages. Many own and operate campgrounds, local stores, bed and breakfast facilities, farmers' markets and numerous small businesses. There are many registered guides providing their services for hunting, fishing or hiking. Once what the visitors find that all of this does not exist in the area, what will be the incentive for them to return for future vacations?
- 15K • Property Values: Not only will property values decrease due to this industrial project; but it could have an effect on the tax base for the town. Many owners are very concerned about this impact.
- 15L • Record Hill Wind, LLC website: No longer active even though they said they would be managing this project for the long term. All of the DEP Third Party Inspector's reports and photos are unavailable. Reports for meetings that were held are also apparently removed. Why has all the information on their website been removed? Inquiries indicate that Wagner Wind Energy will be managing the project; but research to verify this has not been found. Who owns this company, when was it organized and is there any affiliation with Independence Wind or has the company either merged or perhaps been acquired?
- 15M This project needs much more in-depth research from an environmental, ecological and economical aspect. I urge you to please allow the people of this area to provide you with both the documentation and the expert testimony before you approve this application.

Thank you for the opportunity to comment on this. Please do not hesitate to contact me should you have any questions.

Sincerely,  
 Christine Dube  
 207-751-3231

**Marhamati, Joseph**

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**From:** Eric Dube [ericd@cascoengineering.com]  
**Sent:** Friday, April 01, 2011 10:04 PM  
**To:** Marhamati, Joseph  
**Cc:** Mcmillen, Matthew C  
**Subject:** Record Hill Draft EA Comments (Christine Dube)

Dear Mr. Marhamati,

16A Why is it that Cities are the largest consumers of energy, the largest polluters and emit the bulk of the carbon into the atmosphere but not one windmill similar in size to the proposed windmills is constructed in the City of Portland, Augusta or Bangor? Could it be that the people who live in Cities don't want them due to their aesthetic views or flickering of light all day. They would rather have them far from their view, somewhere where they have probably never visited. To put it bluntly – Out of Sight, Out of Mind. Forgive my sarcasm but I am beyond frustrated at this ridiculous proposal of installing windmills on scenic vistas where people from other areas of the country visit due to the fact that Maine truly is Vacationland.

16B Have you even been to the Record Hill Area? I bet I can I can answer that question for you, I would bet my house on the fact that you or Matthew have Never been to the site in question. What a tragedy.

I own my own engineering business in the Portland area and I work to develop sites all of the time so I do have experience in this field. I also base my opinions on facts and numbers.

16C **Fact:** There have been Eagles nesting on French Island for many, many years. I have also witnessed them in person (along with many, many others) flying over the Record Hill range to the Swift River. I find this ironic that the windmills are installed for clean energy and the environment yet we humans destroy a piece of the environment and nature to install and operate them. Kind of silly when you step back and look at the big picture. As usual, the rules only apply to other people, not the Government.

16D **Question:** Can you guarantee that the windmills will produce the power estimates used as the basis to install the proposed towers? The answer – Sadly, no you can not. I have major concerns with the fact that these windmills will most likely not produce the energy that was originally promised. What a shame. Plus add in the fact that the Government (which is us by the way) is subsidizing the installation of the windmills.

I could go on for many hours discussing the major faults with this concept but I fear it will fall on deaf ears so I will end it here with this statement:

I challenge you to contact me via cell phone and make an appointment with me to visit the site before this project continues. I will make myself available at ANY time you wish.

I look forward to hearing from you personally regarding this challenge.

Regards,

Eric Dube  
Casco Bay Engineering  
424 Fore Street  
Portland, ME 04101  
Tel 207.842.2800  
Fax 207.842.2828  
Cell 207.712.7022  
[www.cascoengineering.com](http://www.cascoengineering.com)

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**From:** Coastal Counties Workforce Inc [mailto:ccwi.virtual@gmail.com]  
**Sent:** Friday, April 01, 2011 7:42 PM  
**To:** joseph.marhamati@hq.doe.gov

From: Greg Perkins [gregperkins096@yahoo.com]  
Sent: Friday, April 01, 2011 11:11 PM  
To: Marhamati, Joseph  
Cc: thurston.steve@gmail.com  
Subject: Record Hill Draft EA Comments

**RE: Dept. of Energy proposed federal loan guarantee to Record Hill Wind  
Comments on behalf of the Concerned Citizens to Save Roxbury, PO Box 121, Roxbury, Maine 04275**

Dear Mr. Marhamati,

I am writing this letter out of concern for the impacts of industrial wind turbines on the wildlife species found in the higher elevation areas of Maine. In particular, I am concerned about the proposed Record Hill wind farm development in Roxbury. I am requesting that you make my comments part of the record.

Virtually, no research has been done in Maine on the impacts of wind farms on mammals; whereas anecdotal evidence from areas where wind turbines have been constructed in the northeast indicates that the noise (both high frequency and low frequency) from wind turbines may have very disturbing effects on mammal populations. For instance, wind turbines potentially causing the death of 400 goats on an island in Tiawan. Sleep deprivation appears to be the cause of these animals dying.

<http://af.reuters.com/article/oddlyEnoughNews/idAFTRE54K0PJ20090521>

There is much more evidence of avian mortality from research already completed on similar wind power developments throughout the world. French Island on Roxbury Pond has an active bald eagle nesting site. Certainly, these eagles are at risk from certain death from the collision of turbine blades as the young are learning to fly. Another negative impact from turbine noise on bird populations may result from various species mate calling activities being disrupted from both the high frequency and low frequency sounds being emitted from the turbines. Since ample evidence of avian mortality due to industrial wind turbines can be found in the literature, the following comments will focus on mammals.

**NOISE**

A literature review on the effects of snowmobiles and cross country skiers on ungulates by Theresa Welch, a graduate student in Environmental Studies at the University of Montana (<http://www.wildlandscpr.org/node/215>) found the following:

“Research has shown, however, that both groups have the potential to negatively affect ungulates; therefore our primary concern should be on cumulative detrimental impacts. Although none of the published studies have proven that either type of recreation influences ungulates at the population level, Creel et al. (2002) and Hardy (2001) have presented evidence that individuals are feeling stress from wintertime recreation. The cumulative effects of this stress may someday lead to a reduction in ungulate populations.”

It is this “cumulative effect” on wildlife – fragmentation of habitat, noise effects from turbines, etc. that needs more extensive study.

Maine Audubon found the Redington Wind Power site to be unacceptable because of its potential impact of

wildlife ([http://www.maineaudubon.org/act/redington\\_072006.pdf](http://www.maineaudubon.org/act/redington_072006.pdf)). The organization stated, “**This project poses unacceptable risks to rare wildlife and fragile habitats in the heart of a pristine high elevation ecosystem.**”

1.

Jalkotzy et al. (1997) found that linear developments, such as wind farms, affect wildlife in several ways:

### **“1. Individual Disruption**

This refers to wildlife disruption that occurs in the immediate vicinity of a linear feature. Although all linear developments can cause problems, roads probably have the greatest impact on wildlife populations (Foreman et al. 2003). Larger-ranging, more sensitive species are most affected by roads in sometimes not so obvious ways. Wolves, for example, are sensitive to road activity near their natal dens and these disturbances can cause wolves to move pups to less-disturbed areas (Chapman 1977).

The effects of trails on wildlife can have similar negative impacts. In general, smaller linear barriers tend to be less disruptive because they usually have narrower rights-of-way, more curvilinear and less intense human use (Foreman 1995). Large carnivores tend to be quite sensitive to human presence on trails. Both grizzly bears and black bears avoided trails and tended to maintain an average distance of 274m from trails. Avoidance distances by bears increased to 883m of trails in areas that were more heavily used (Kasworm 1990). Mountain lions were found to adopt a greater degree of nocturnal feeding behavior in order to avoid humans on trails (Jalkotzy et al. 1997).

### **2. Social Disruption**

Social disruption is considered any change to the social structure of a population that results from a linear barrier. Changes can include displacement into habitat areas already occupied by other animals of the same species, changes in group structure, or mortality in different age classes as a result of the linear feature (Foreman 1997). Again, these impacts vary significantly for different species and can therefore be difficult to quantify in terms of general impacts on wildlife when comparing and contrasting roads and trails.

### **3. Habitat Avoidance**

When wildlife avoid habitat because of linear barriers or the activities associated with them, habitat can be lost or not used to its full potential (Jalkotzy et al. 1997). Elk tend to avoid habitat close to roads, particularly in areas where they are hunted (Czech 1991). In northwest Montana, grizzlies avoided habitats within 274 m of trails (Kasworm 1990). Mace (1996) found that grizzly bears in the Swan Mountains of Montana appeared to move away from trails during spring, summer, and autumn. They concluded that grizzly bears had become negatively conditioned to human activities and avoided what would otherwise have been valuable habitat. In general, the impacts of trails depend on the types of activities and frequency of use (e.g., hiking, snowmobiling, and biking). Studies revealed a broad variation among species in their response to human presence and specific recreational activities on trails.

### **4. Habitat Disruption or Enhancement**

Linear developments can disrupt habitat by introducing exotic plants, and pollutants like dust, salt and vehicle emissions (Foreman 1995). Habitat can also be altered when vegetation is removed for road construction or when new plants or grasses are planted in highway right-of-ways. Whether these human activities disrupt or enhance a particular habitat can usually be linked to the width of the linear feature. The effects of habitat disruption on wildlife are probably small when compared with the effects of habitat avoidance (Jalkotzy et al. 1997).

### **5. Direct or Indirect Mortality**

Direct mortality is a result of the road itself (e.g. wildlife-vehicle collisions or power line collisions/electrocutions), while indirect mortality can result when roads or trails provide greater access for hunting, trapping, and poaching. A report compiled by Hellmund Associates cited research where aggressive

↑ bird species were observed following trails and displacing other sensitive species, resulting in increased predation on songbirds and other neotropical birds. Changes to the area surrounding a trail can have impacts that extend for hundreds to thousands of feet and are referred to as the trail distance effect (Hellmund Associates 1998).

## 6. Population effects

Population effects are defined as wildlife populations suffering losses as a direct result of linear developments. Roads and vehicles can have a tremendous negative impact on terrestrial vertebrates, but seem to have less impact on overall population size (Foreman and Alexander 1998). There are many information gaps that make it difficult to assess the impacts of roads, but there is growing evidence that linear developments can affect the distribution, movements, and overall populations of wildlife species (Jakotzy et al. 1997). For example, there is concern that development within the petroleum and forest industries has impacted woodland caribou populations (James et al. 2000).”

They go on to say about measuring impacts of linear developments, “Cumulative effects of roads, trails, and other linear barriers on wildlife should be measured through a cumulative effects assessment (CEA) and utilize geographic information systems (GIS). Fairbanks and Tullouse (2002) urged managers to incorporate research findings on wildlife into GIS mapping to help assess the impacts of proposed linear developments. The three main ways to measure the cumulative impacts of linear features are: 1) measure road densities, 2) assess road/trail design, and 3) **conduct an ecological evaluation prior to development** (Hellmund Associates 1998).”

The state of Maine is a unique place with many unique areas like Roxbury Pond. Any place where deforestation has to occur to accommodate a wind farm development, by definition, has detrimental effects on the geography and wildlife of the area. Wind farms, while being part of the solution for mitigating global warming, are best sited in open areas such as offshore locations. There is just too much potential for destroying both the quality of place (and, ultimately the outdoor recreation economy of Maine) through the destruction of our matchless wildlife and scenic values by allowing the construction of industrial wind developments such is proposed for Record Hill.

Because of the above mentioned potential impacts to local wildlife populations, I feel very strongly that the construction of the Record Hill project should not occur, and that a federal loan guarantee should not be used to support its construction.

Yours truly,

Greg Perkins  
P.O. Box 1233  
Holden, Maine 04429

1. Jakotzy, M.G., P.I. Ross and M.D. Nasserden. 1997. The Effects of Linear Developments on Wildlife: A Review of Selected Scientific Literature. Prepared for Canadian Association of Petroleum Producers. Arc Wildlife Services, Ltd., Calgary. 115 pp.

**Marhamati, Joseph** Response in Sections 1, 2, 3, 4, 5, 7, 10, 11, 12, and 13

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**From:** rdube6@roadrunner.com  
**Sent:** Friday, April 01, 2011 4:14 PM  
**To:** Marhamati, Joseph  
**Cc:** Mcmillen, Matthew C  
**Subject:** Record Hill Draft EA Comments  
**Attachments:** DoE Response Regarding Record Hill DRAFT EA Comments.pdf; Guest column by Penny Gray 3-27-11.pdf; Doing Wind Right 3-31-11.doc

Dear Mr. Marhamati,  
Please find enclosed my comments to the Record Hill Draft EA along with a copy of a column by Penny Gray and also a copy of a meeting which took place last evening which indicates the growing concerns of many Mainers in regards to industrial wind.  
Thank you for the opportunity to submit this information. Please do not hesitate to contact me should you have any questions.  
Thank you,  
Ron Dube  
Roxbury  
207-353-4540

March 31, 2011

Joseph Marhamati  
DOE Loan Programs  
Environmental Compliance Division  
Washington DC

**RE: “Record Hill Draft EA Comments”**

Dear Mr. Marhamati:

I would like to start with a few general comments and then will proceed to address my concerns. Some statements will not be so much as “significant” but rather points of clarification or rebuttal on my part. Obviously there are varying degrees of significance pointed out that cumulatively carry quite a bit of weight; and along with other submittals should tilt the scales of justice for the citizens and the environment. I believe you will consider the developers’ submittals are not to be taken as gospel for they are for the most part opinions based on the results of studies they paid for. Reverse Engineering, simply put, means here are the results needed and apply engineering as required to justify them.

I have kept your guidelines of significant (1508.27), and its definitions (context and intensity) in this report to help me establish to you why DOE should perform a full environmental analysis on its own. I have also reviewed your policy, DOE P 141.2, Public Participation and Community Relations; as an encouragement that my assessment and others, have our statements applied as significant. Please remember your “core values”.

18A

Roxbury Pond residents pay 66% of the taxes in town but only a small percentage live there year round and are registered to vote. The others have no voice other than at the Silver Lake (Roxbury Pond) Camp Owner’s Association at which 99% voted to oppose this development. The town vote on this project was held in mid winter and narrowly passed (89 – 82); by people who were told they would get free electricity (with conditions) and their taxes would go down. Putting food in front of hungry people and asking for their vote is flat out bribery and unethical, but these are the traits of the wind developers.

18B

Record Wind Hill currently has funding from Yale, why do they need \$102 million from the Department of Energy?

When the Planning Board met with Matt McMillan, September, 2010, it was after the developers escorted the DOE group around and showed them their version of things. In fairness, I believe people who do not support this project should have access to the same DOE people to discuss and show them their version. One of Matt’s last statements that day, still rings in my ears, “We have a lot of money to give away”. I hope that statement

does not reflect a blind effort to do so and that no matter what the opposition to this project submits, it won't summarily be dismissed and the project funded.

Keep in mind we are trying to protect what is, from what shouldn't be.

I have reviewed the EA draft and commented on the following parts:

### **1.1 Purpose and Need for Action**

18C

In addressing items noted in paragraph 3, Record Hill Wind states they will develop 3.1 million megawatt hours under peak conditions. These units typically run between 25 – 30 % capacity; that being the case, the reductions of carbon dioxide, sulphur dioxide and nitrogen oxides can be reduced by 75% at best. Conventional units will not be shut down because of the unreliability of wind.

### **1.2 Background**

18D

How can DEE consider wind to be an innovative technology or as stated a new or a significantly improved technology? These things have been around for quite some time and the newness has worn off.

### **1.3 Scope of This Environmental Assessment**

18E

I believe that potentially significant impacts will be identified and that the DOE should prepare its own environmental impact statement. The cumulative impacts that could result from the proposed action relates to other possible projects in the same area. This project can be considered the cornerstone of all wind projects knocking at the door of the Western Maine mountains.

### **2.1 Proposed Action**

18F

The 2.9 miles of collector lines and substation location off Route 120 is not as shown in the original submittal to Maine DEP and as on file at Roxbury Town Hall. There is a significant difference in what is proposed and what is actually on file.

#### **2.1.1 Wind Turbines and Associated Infrastructure**

18G

Turbine area is 37 acres; and not 18.8 as stated in the proposal. The mountain roads are 22 acres on the mountaintop alone, not including clearing for generating lead line from the turbines to the substation – 2.9 miles. Also there are no existing logging roads along the mountain tops. This section indicates a significant difference.

##### **2.1.1.1 Wind Turbines**

18H

6.1 miles of road, 30 feet wide = 22 acres; not 12.7 acres.

##### **2.1.1.2 & 4: Electrical Collection System**

18I

As noted in 2.1, this 2.9 mile overhead line run, and collector/substation on Route 120 are not shown on the Maine DEP copy in Roxbury Town Hall. What amount of clearing is required for routing of the line and has this area been assessed? Where is the survey on this corridor and substation?



### **2.1.1.5 Office and Operations and Maintenance Building**

18J

The permits for these three buildings in this area have been put on hold by the Roxbury Planning Board for lack of information as this is not shown in the Maine DEP submittal on file at the Roxbury Town Hall.

### **2.1.2.2 CMP Section 270 Transmission Line**

18K

The new proposed transmission line routing passes over Scotty Brook. It has been reported that Atlantic Salmon use the Androscoggin, Swift Rivers and Scotty Brook to spawn.

I noticed the new 70' high, 115 KV poles shown in the attached drawings (SK-002 1-6) as being next to 70' high trees. This ploy is done to make the reader think that they will be hidden from view. There are very few, if any, 70' high trees in this area.

## **2.2 No Action Alternate**

18L

It appears that Record Hill Wind has the necessary assets for the project and a letter from Robert Gardiner (RHC) to Jim Cassida (Maine DEP) on 3/4/11 states: "Although Record Hill Wind anticipates a loan guarantee from under this DOE program, Record Hill Wind possesses sufficient funds to complete construction without any additional source of capital". Why are they asking for an additional \$102 Million from DOE? Also, is Record Hill Wind getting an additional \$70 Million cash grant from Section 1603?

### **2.3.1 Site Selection**

18M

Angus King (RHW) keeps talking about off shore wind which would minimize environmental impacts to the most practical extent. Why destroy one already known valuable economic asset (tourism in the Western Mountains) with a questionable offsetting one that can be located off shore before too long? They claim that 20 sites were screened; would it be possible to get a copy of this list of these areas? I don't think such a list exist.

#### **2.3.2.1 Turbine Siting**

18N

Initially the project had 19 units in Roxbury and 6 in Byron (an adjoining town). Byron tossed them out and subsequently they stuffed three more in Roxbury. As noted in the second paragraph of this section, the collector substation was changed from the initial to the final design. Again – these changes noted about the substation are not reflected on the DEP application on file at Roxbury Town Hall. This electrical collector route and substation needs Maine DEP evaluation.

#### **2.3.2.2 Transmission Line Corridor**

18O

As noted at the end of this section, the substation location was selected by Central Maine Power; why was it not selected by Record Hill Wind?

## **3.2.1 Regulatory Framework**

18P

The Governor's Task Force and wind power development consisted of wind proponents and was "emergency" legislation. This was deemed to be "immediately necessary for the preservation of the public peace, health and safety". It has divided towns, pitting

18Q

neighbor against neighbor, instigated by outsiders “wind developers”; not really “preserving public peace”. How health and safety ties into “immediately necessary” is pure speculation. This does not displace power generation; other sources must be ready when a fickle wind does not blow. I don’t see how environmental quality can be “improved” by destroying it. The megawatts currently installed or permitted are rated capacity - not actual.

18R

### **3.2.3 Potential Impacts of the Proposed Action (Climate)**

The 3.1 megawatt hours “under peak conditions” is actually about .85 million megawatt hours under true conditions. All figures listed in Tale 3.-1 should be adjusted to reflect this and the fact that no existing units are taken off line.

18S

### **3.3.2 Potential Impacts of the Proposed Action (Topography)**

The removal of 3.5 miles of mountain top will not “significantly” alter the sites natural typography? How does this version of “significant” differ from 1508.27?

18T

### **3.4.2 Project Setting**

The cleared mountain tops “60+ or minus acres, will encourage runoff on both sides of a fairly steep grade down to Roxbury Pond on one side and the Swift River on the other side. Runoff is bad enough now even with minimal growth on the mountain tops.

18U

### **3.5.2 Project Setting – Surface Water and Wetlands**

77 streams will be put at risk and channel silt, etc. into two pristine watershed areas; is this significant? We believe this is extremely significant.

There are 245 delineated jurisdiction wetlands noted on the ridgelines. “These wetlands are generally small and in most cases have been altered by activities associated with timber harvesting.” First, I have not noticed any timber harvesting on the ridge lines; and second, if they have already been altered that means it is ok to keep doing so? That doesn’t seem like a good plan to help the environment. I don’t like how vernal pools and scrub-shrub cover are summarily mentioned and dismissed. Are these areas significant?

18V

#### **3.5.2.1 Potential Impacts of the Proposed Action (Water Resources)**

I don’t like the rationale used that “unavoidable impacts” to small isolated and relatively low functioning resources are not significant and can be bulldozed. Collectively; enough of these “low functioning” areas support the life of many animals and vegetation in the area.

Why do we have any rules at all concerning wetlands when \$15,025.26 paid to a “mitigation fund” will take the place of rules. All this is justified by the “least environmentally damaging alternative” that meets the overall purpose. What happens when phosphorus takes over the pond and renders it stagnant? Is this not significant? We can prevent disasters or encourage them with projects such as this.

### **3.7 Noise**

Noise = unwanted sound. There are currently 3 wind facilities that were deemed ok by Maine DEP for sound levels; however, each facility is now in court to find some sort of relief from the noise for the surrounding residents.

18W

Maine DEP won't ever return phone calls from residents affected at the first facility. I would deem this to be significant and listed in 1508.27 under #2, #4, and #5. We are taxpaying citizens; not guinea pigs. I know enough other people are commenting on this subject.

### **3.8.4 Potential Impacts of the Proposed Action (Historic Archaeological and Cultural Resources)**

18X

If you look at Figure 3-12, the photo from the Mitchell Farmstead; you see a sign on Route 17 (road in picture) on the right side – it says “Scenic Highway”. It appears that the definition of “scenic” by developers and the highway department are quite different.

### **3.9 Aesthetics and Visual Resources**

It never ceases to amaze me, how a group of lawyers and others whose only concept of “green” is money, can use weasel words and twist common sensibilities to justify their obvious mistakes. Buzz words like “perceived visual impression” and “thus defined” are not what keeps thousands of tourists coming back to Maine’s Western Mountains. No one from Boston packs up the family and heads north to come to the Western Mountains to be in an industrial wasteland. “Visual expectations” are not wind turbines. “The measure of the quality of a view must be tempered with the overall sensitivity of the viewer.” And in this case, the insensitivity of the developer. It is hard to comprehend how billboards have been outlawed; but 415’ monstrosities are legal.

18Y

#### **3.9.1.1 Federal (Appalachian Trail)**

This project will be seen from many places along the Appalachian Trail and distance does not diminish the ugliness and displacement of these units. They do not fit harmoniously into this environment as anyone who cares about the environment can clearly see. This project will breed others and soon the mountain tops will look like a pin cushion. How significant are the people who recreate in these mountains? It is stated that the trails provide “maximum outdoor recreation potential” and “enjoyment of the nationally significant scenic, historic, and natural qualities of the area”; not unnatural.

18Z

#### **3.9.1.2 State**

“Maine Wind Power Development Law” was written by a consortium of people in the wind business and was written to be deciphered as pro-wind only. By this law, Roxbury was one of the areas that was put in the expedited area which allowed developers to put this project on the fast track and also to legally minimize any opposition to wind projects. When government and wind developers define “scenic”, you can bet it will go against any standard definition.

18AA

### 3.9.2 Project Setting

2<sup>nd</sup> Paragraph: *“The project area landscape is scenic, as are areas surrounding the project area, and the presence of human activity upon the landscape does not greatly detract from the natural character”*. This will greatly detract from the natural character of an admitted scenic area. *“Does not greatly detract”* is written by a developer who will justify and compromise any values to pad his bank account. This, to me, is the “most significant” reason not to fund this rape of the land.

18AB

Table 3-10: Scenic Viewpoints: This project will be seen from more points on the Appalachian Trail than it stated in the table; Old Speck Mountain (Grafton Notch State Park) for one. They actually admit the three (3) ponds in the area “possess high quality scenic value.” Just because some camps are “oriented with their backs toward the project” doesn’t mean they don’t have a back door or back yard from which to view the project.

18AC

As is quoted by the developer, “the ponds are used for recreation and include passive recreational uses such as, fishing, boating, and nature viewing.” Not turbine viewing. “The project will be visible from the pond.” This ends the paragraph about the scenic values with no stated conclusion. I have heard it said in meetings put on by the developer that some have to suffer for the greater good. I find this to be significant that they can so easily dismiss people, their quality of life, their interests, possibly their health and the surrounding environment. Are we to be dismissed as insignificant and with no voice in the process? Who are they to determine that Roxbury is to be sacrificed, and for whose greater good – theirs?

### 3.9.3 Wind Turbines and Associated Infrastructure

Maine DEP found that “wind generating facilities would not have an unreasonable adverse effect on the scenic character”. Just what would have to be put there to have them say a “reasonable adverse effect”? What is 415’ tall and uglier than a wind turbine? Maine DEP has been part of the problem right along as most of the people in charge have been appointed by the developer (in his role as the previous Governor of Maine); but no one sees a conflict of interest. I deem this to be “significant”.

18AD

Further in the same paragraph, they talk about the crane paths only; not the tower bases, as being screened by vegetation. If you level the tops of the mountains, you remove the vegetation, this will be a non-repairable scar visible for miles.

In the next paragraph, the lawyer weasel words hit the absurd level of calling ugly wind turbines 415’ high and referencing them as “distinct artificial features”. Same paragraph, “the turbines become prominent, visual features on the ridgeline and alter the visual character and quality for all viewer groups.” That admittance alone, should stop this project. They go on to say, “the turbines would not be very noticeable from farther vantage points”. So what is the recommendation of these statements? Not given. I have one. Since moving the pond seems impractical how about moving the turbines out to sea? I surmise the real conclusion here is if you weren’t bought out or paid off by the

developer, you are supposed to just take it. That is really what Maine DEP and the developer are saying. This is significant.

I have included an editorial comment by Penny Gray, a Maine Master Guide, which recently appeared in a local newspaper. She captures the true meaning of this and other projects about to take place in the Western Mountains of Maine.

#### **3.13.2.1. Vegetation and Wildlife**

18AE

Based on the fact that Scotty Brook provides a habitat for brown trout, rainbow trout and others; and then pointing out that the “Androscoggin and its associated tributaries are designated as essential fish habitat for Atlantic salmon”, it seems highly probably that Atlantic salmon have ventured into the Swift River and Scotty Brook. Activities associated with this project will most likely affect the watershed of the Swift River and put the Atlantic salmon in harm’s way. “Correspondence from the USFWS identified that the proposed project occurs within the range of the federally endangered Gulf of Maine distinct population segment of Atlantic salmon”. I deem this to be highly significant.

Also, the paragraph about the bald eagles in the area, states that “they also often expand their feeding grounds for many miles to lakes, ponds and other water bodies”. This they do, and in doing so, fly over these very mountain tops to get to the Swift and Androscoggin Rivers.

#### **3.13.2.2. Biological Survey and Results**

18AF

As noted in the 2<sup>nd</sup> paragraph about nocturnal bird flights, they were “not necessarily utilizing the ridgeline itself, but they were passing through the air space above the ridgeline.” “Above the ridgeline” is where 22, 415’ high whirling bird and bat killers will reside.

As it is noted, several bird species on conservation watch lists, “are on the conservation watch lists because of certain declines in their regional population trends, mainly due to loss of habitat”. Projects such as this and others proposed in the area, will just increase the loss of habitat, significant? Yes.

#### **3.13.3.1. Impacts on Vegetation and Wildlife**

18AG

In the 3<sup>rd</sup> paragraph it states, “the temporary and permanent changes on vegetation and the habitat conditions would impact wildlife that are present in the area. Direct and indirect impacts to wildlife include: injury, mortality, and displacement; however, the impacts are not considered significant.” This is the slanted opinion of the developer. When does it cross the line and become significant?

Same paragraph further along: “flight height and flight direction data indicate that the majority of targets or animals are flying at a height sufficient to avoid the proposed turbines and blades.” Why isn’t the “direction data” shown here? I would like to see a copy of this “data” (if it exists). Let’s hope that somebody informs the birds about how

to avoid 22, 415' high structures with a total sweep area of 37 vertical acres. This seems very significant.

### **3.13.3.2. Impacts on Protected Species and Habitat**

I have already discussed the probability of Atlantic salmon in these waterways so I won't re-discuss it again here. In the first paragraph under "Migratory Bird Treaty Act....."; it is mentioned about clearing for the electrical corridors and that "the preferred time of year to conduct these activities is under frozen ground conditions and Record Hill anticipates conducting clearing for the generator lead during the winter months". Their schedule indicates the energizing of the substation to be mid to late summer and there is no evidence of clearing the yet, not approve, transmission corridor to the substation. They talk of doing this optimally during the winter months and it is now spring. It doesn't look like it will be completed prior to the migratory bird breeding season as stated.

18AH

Next paragraph: Again it is written that "although wind turbines pose a threat to migratory birds and bats, based upon surveys conducted on the project ridgeline, this threat would be not expected to be significant". I would also like to see these "nocturnal radar surveys" that conveniently have the birds flying above 415'. Yet again, another "diurnal raptor surveys indicate many of the raptors flying through the project area passed below the maximum height of the turbines. Because the passage rates of raptors in the project area are relatively low to other sites and because diurnal raptors have been documented to avoid modern wind turbines, there would not be a significant impact on these populations." But there would be an impact and it could definitely be significant the way this whole paragraph is written with its assumptions and phantom surveys. Dead birds would be tracked and "the information would be used to help ensure that unreasonable adverse impacts to populations are avoided and minimized to the extent practicable". What does one suppose the "extent practicable" will translate to when birds are entering the no fly zone? This is more than significant, it is a death sentence for these animals.

The next paragraph refers to "an Eagle Risk Management Plan". I think it would be prudent to request this plan be submitted now rather than later as all I could envision is another survey being done. A significant item needed to protect wildlife.

In the following paragraph it states: "Bald eagle mortality from collisions with turbines would not be expected due to the location of the turbines on upland ridgelines, as bald eagles tend to hunt on bodies of water". As explained earlier, these ridgelines are the ones the eagles fly over to get to these other bodies of water. This whole paragraph is "based upon results of the surveys". This area needs an independent significant survey by the Department of Energy.

### **3.18 Cumulative Effects**

End of paragraph #3: "No future development projects are anticipated for the project area". Other wind developers are currently knocking at the door of this project and areas at each end of the project stand to be developed. This is well known and "no future

18AI

↑ projects” is an outright lie. First Wind wants to start directly on the other side of Roxbury Notch and stretch towards Rumford. From the air and ground, it will look like one continuous project. So there is a “cumulative effect analysis” to be done. Very significant.

In conclusion, I believe that the frailties of the developers’ environmental assessment as pointed out by me and other submittals warrant a full environmental analysis by the Department of Energy before any monies are released. Keep in mind your own “core values” (DOE P141.2) and responsibilities to the public and the environment that we are both trying to protect.

I thank you for the opportunity to comment. Please do not hesitate to contact me should you have any questions or need further clarification. I look forward to hearing from you.

Sincerely,  
Ron Dube  
Roxbury

Enclosure

**From:** Steve Thurston [thurston.steve@gmail.com]  
**Sent:** Friday, April 01, 2011 7:24 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Draft EA Comments  
**Attachments:** 11-04-01 Comments Against Support for the Federal Loan Guarantee to Record Hill Wind.pdf

Dear Mr. Marhamati,

19A Attached is a report from E-Acoustic Solutions regarding wind turbine noise issues for the Record Hill Wind project. Please review this report very carefully, for it makes a very clear case for why the Record Hill Wind project has great potential to become a potential health hazard for Roxbury property owners. I can assure you that if that is the case the property owners will do what other citizens in Maine have done in response to adverse turbine noise impacts - which is to seek a remedy in the courts.

Thank you for your consideration.

Sincerely,  
Steve Thurston  
Concerned Citizens to Save Roxbury  
PO Box 121  
Roxbury, ME 04275



**Marhamati, Joseph**

Comment 20 Response in Sections 4, 5, 6, 7, 11, and 13

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**From:** fryewood@roadrunner.com  
**Sent:** Friday, April 01, 2011 6:03 PM  
**To:** Marhamati, Joseph; Mcmillen, Matthew C  
**Subject:** Record Hill Draft EA Comments from Colleen Martineau  
**Attachments:** Record Hill Wind Draft EA Comments from Colleen Martineau.pdf

Mr. Marhamati and Mr. McMillen:

Please find the pdf of a letter commenting on the "Record Hill Wind Draft EA" from Colleen Martineau.

If you are unable to open or view it, please either call me or contact me at the above e-mail address.

Thank you,  
Cathy Mattson

207-364-2616

March 24, 2011

Mr. Joseph Marhamati  
Mr. Matthew McMillen  
Department of Energy  
Washington, DC 20585

"Record Hill Draft EA Comments"

This is to inform you that there is much documentation and studies that are lacking in the processing of the Record Hill Wind, LLC, application. Maine has been permitting various wind projects across the state according to a recently enacted law known as LD 2283 or the "Expedited Wind Energy Law".

20A

I have been involved for over three years with the Record Hill project and have followed a number of other projects throughout the State of Maine. It is my opinion, that the environmental studies and the overall impact of these projects have not been adequately evaluated before permits are issued. This newly adopted law states that permitting agencies must consider only certain aspects of a project and not fully investigate whether an issue is significant to that area or not. The adoption of this law in my opinion was a very politically driven event and one which many citizens have been trying to get either amended, repealed or in some way changed to protect the Natural Resources of Maine. The citizens have spent untold amounts of money appealing cases, hiring experts to file testimony, hosting public informational meetings and yet have been denied a right to a Public Hearing by the DEP, the BEP and just recently the Maine State Supreme Court. This is not fair to the common citizen and possibly not even Constitutional.

20B

The mountain and valley areas that this Record Hill Wind project covers are filled with rich history of our Native American ancestors. The Rumford Falls, the Swift River, the Ellis Falls and River and its many branches; Coos Canyon; the mountains of Partridge Peak, Flathead, Record Hill, and Old Turk; the towns of Roxbury, Andover, Rumford, Mexico, Byron; historically the very ground that Mollyocket and Perepole and their families and ancestors walked upon has been totally ignored. The Rumford library and local historians have much information of the historical significance of this area. Where were the independent parties researching this area before this Native land was totally obliterated?

Woodlot Alternatives, now Stantec, supposedly sent letters to the tribal Chiefs but there is no record of any response or that the appropriate parties even received the requests. Furthermore, there was no time available for proper studies or research. The local population in this River Valley Area is comprised of many families with Native American Ancestry and they are being deprived of the proper respect given to their ancestor's sacred land.

20B

↑ People here trusted that the State Agencies and even the local Town Administration would preserve and protect the heritage in this area. The local residents never expected that a developer would come in like a thief and steal what was rightfully theirs. Also, where are the proper environmental assessments by independent parties? How is it that only the developer and their hired companies are doing the studies and making the recommendations?

20C

As a previous small business owner here in this area, I would have never been able to develop that land on top of these mountains for any type of business, regardless of the number of jobs it would have created or how much it would have boosted the economy in the area. My evaluations and permits would have taken at least five years minimum just for the processing. This Record Hill Wind project got a special exception for wildlife studies, didn't adequately prove financial capacity, was not required to meet the decommissioning standards, and most importantly has chosen to ignore the noise levels that potentially will exist should this project become operational.

20D

By not doing adequate studies for noise emission, shadow flicker, reflection in the water of Roxbury Pond itself and a number of other issues, even the impact upon Human Health is looked at as "insignificant" it would seem. Two of my grandchildren have been diagnosed and live with Autism Spectrum Disorder; they will never be able to enjoy "Gran's" summer home once the RHW project is completed and operational. Summers for them at my home, have been the most heavenly place on earth in their minds and their behavior supports my observations.

20E

Smart lawyers working for the developers "helped" the Town of Roxbury amend their Comprehensive Plan and Land Use Ordinance to allow Mountaintop Industrial Wind Turbines within the town. Prior to these amendments, the town was known for its rural characteristic, its quiet peacefulness, its various animals and birds that lived in harmony with the human inhabitants. Tourists travelled through on Routes 120 and 17 on their way to the many lakes and mountains between Rumford and the New Hampshire border. Route 17 in this area is a State Designated Scenic Byway from Mexico to Rangeley and yet that didn't seem to make any difference. I notice that even the photo simulation of Route 17 in the application was "clouded" that day and is not even close to being accurate. The visual blight will be very obvious and significant once the project is completed.

People coming to this area always have believed that the fishing and hunting were worth the trip; the hiking trails and the views from various summits were exquisite and because of that, the local Maine Guides had businesses here and were happy to provide their services. The air was fresh and had that undisturbed and unique sense of being in the woods and away from civilization. Much income throughout the four seasons is dependent on what this area has to offer. Many lodges have been built, eating establishments are available for the seasonal visitors.....Maine and its natural areas are truly a destination for those loving the outdoors! What will those same people think when they return to 480 foot wind turbines on those same mountain ridges that they marveled at?

20F

The existing Maine DEP and Army Corps permits need to be carefully scrutinized and evaluated for accuracy. The source of the application studies and the time of year as well as the length of such studies also need to be investigated. There are appeals still unresolved regarding the associated permits. The transmission line, while having a permit, is also still in litigation by some of the landowners who feel that their easements with the power company have been misrepresented. The environmental impact of the wetlands and vernal pools along the transmission corridor has not been evaluated to the satisfaction of many of the local residents.

20G

Roxbury Pond, where I currently own a home; has been passed over for not being significantly impacted by a project that covers the tops of three significant mountains in the area. The Maine DEP has used an acoustical professional who is not an acoustical engineer and is not ICNE Board certified. Some of the residents in this area have paid to have an independent noise evaluation done and the results are in great conflict with what the developer is projecting.

20H

This RHW project is going to greatly disturb those residents who live around Roxbury Pond. One only has to talk to people in Mars Hill, Freedom and Vinal Haven as well as in other states to find out what the flicker, noise and blade thump has done to their lives. These three projects also have court cases still pending. The Rollins Wind project in Lincoln is not operational yet, but is currently under construction even with cases filed against the developer as well as the town. Until some of these cases and problems with the existing projects have been addressed and resolved, there should be no additional permits issued or funded for projects of this nature.

If you would like more information or would like me to forward resources to you, please let me know as I would be happy to help in any way possible. Thank you for addressing these issues for me. My family and friends thank you as well.

Sincerely and greatly concerned,

Colleen Martineau  
Roxbury, Maine

207-562-7562

**From:** dan mckay [mckaydan2@gmail.com]  
**Sent:** Thursday, March 31, 2011 5:50 AM  
**To:** Marhamati, Joseph  
**Subject:** "Record Hill Draft EA Comments."

Mr. Marharmati,

21A

This project's location is very troublesome and has people who enjoy the pond very nervous. Atop land of steep terrain, 22 wind machines are proposed to be installed. Machines that are very much like excavation equipment with similar operational devices. Hydraulics, heavy dynamic movements, electrical and electronic components, steel elements subjected to massive forces.

Having worked around construction equipment for most of my life, I am familiar with the extreme wear and tear such machines are subjected to.

Have you ever seen a construction machine that is 20 years old that has been worked year in and year old challenged by the soil and weather conditions in Maine ?

If I had a nickel for every hydraulic system rupture I have seen over the years, I'd be fairly rich now. A wind machine can expect to undergo hydraulic stresses similar to an excavator as the system attempts to position the blades to changing wind conditions. An event that will happen thousands upon thousands of times. Each time building up heat within the system. A system that has a 200 to 300 gallon oil reservoir. A system that can leak profusely and if spilled to a water course originating near it, it won't take long to reach the pond and spread out encompassing a vast area. There's nothing pretty about an oil slick sitting atop a body of water.

I also seen many a construction machine catch fire and almost every time there was no putting it out as the oil burns quickly. Heat build up within the nacelles of wind machines, as related to me by a person who works installing industrial wind machines, is an ongoing problem requiring constant vigilance.

What is needed is a study of past system failures relating to industrial wind machines and environmental impact potential. Atop a mountain with steep slopes and with several runoff avenues isn't a scenario for favorable results if a system failure occurs. It's a real toss of the dice if something like this is assumed not to happen within a 20 year time span.....Dan McKay.....Dixfield, Maine

**From:** Betsy Bell [bgbell@gmail.com]  
**Sent:** Thursday, March 31, 2011 9:36 AM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Draft EA Comments

Mr. Marhamati:

I am writing to you in regard to the decision of whether to issue a loan guarantee to Record Hill to support their wind turbine project in Roxbury, Maine. I do not see the issues that concern me addressed in the document, so I would like to add my comments.

22A

The Socioeconomics section addresses benefits of the project, but none of the adverse effects that I personally would experience. I am a naturalist and an artist, so like many other “invisible” people in this part of the state, my livelihood is dependent upon the unique character and beauty of the mountains in which we live. The collectors of my work expect paintings of the landscape and nature, not wind turbines and industrial parks.

22B

Maine Historic Preservation Commission (MHPC) determined that the wind energy project *would have an adverse effect on the properties officially listed on the National Register*. There are many other historic homes in this area besides just those three who would be negatively affected, including my own (an 1828 cape on the Roxbury/Mexico town line, which is rumored to have been a station on the Underground Railroad in the 1800’s).

These mountain slopes are crisscrossed with old stone walls, mute testimonies to the men and women who tried to farm them and failed. They were trying to turn the mountains into something they are not: arable farmland. The concept of building industrial parks on the peaks here is also an attempt to turn these mountains from the valuable resource they are now into something they are not. What legacy will the wind turbine project leave on our landscape for generations to come, after it has also failed?

I would heartily urge you to listen to the people who live here and not thoughtlessly support this project with a loan guarantee in the face of our opposition.

Thank you very much.

Betsy Gray Bell

--  
Betsy Gray Bell  
Swift River Studio  
Fine art, classes and workshops  
917 Roxbury Road, Mexico, Maine 04257  
(207) 364-7243  
[bgbell@gmail.com](mailto:bgbell@gmail.com)  
<http://betsy-bell.artistwebsites.com>

**Marhamati, Joseph**

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**From:** Maureen Hassett [maureen@customcomposite.com]  
**Sent:** Tuesday, March 15, 2011 4:54 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Draft EA Comments

Dear Mr. Marhamati:

23A

This letter is to oppose funding for this project. As a lifelong member of this area, I have concern that placing a windfarm on this location will cause damage to the body of water known as Roxbury Pond (Ellis Pond) and other bodies of water in the area. I also have concern that an article in Bloomberg has already identified this project has having received the funds for this project from the Dept of Energy. It is simply not right.

I do not live in this area but frequent it for winter and summer recreation.

I sincerely hope that that it is realized that building wind farms in these majestic and pristine areas will destroy the natural land and is not worth the trade off of the limited amount of energy that can be gained from wind in these areas. It is more profitable to put that money toward the research and development of off shore wind if that is possible.

Thank you for the opportunity to share my thoughts.

Best Regards,

Maureen Hassett  
Custom Composite Technologies, Inc.  
15 Wing Farm Parkway  
Bath, ME 04530  
207-442-7007

**Marhamati, Joseph** Response in Sections 1, 4, 7, 9, 10, 11, and 13

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**From:** Coastal Counties Workforce Inc [ccwi.virtual@gmail.com]  
**Sent:** Wednesday, March 30, 2011 5:42 PM  
**To:** Marhamati, Joseph  
**Cc:** Mcmillen, Matthew C  
**Subject:** Record Hill Draft EA Comments  
**Attachments:** SLCOA letter to DoE 3-29-11.pdf

Dear Mr. Marhamati,

Attached please find a copy of the letter from SLCOA regarding the "Record Hill Draft EA Comments". This letter is written on behalf of the SLCOA.

We look forward to your response.

Thank you,

Christine Dube

Secretary, SLCOA



**SILVER LAKE CAMP OWNERS' ASSOCIATION**  
P.O. Box 204  
Roxbury, Maine 04275

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March 29, 2011

Mr. Joe Marhamati  
DOE Loan Programs  
Environmental Compliance Division  
Washington, DC

**RE: "Record Hill Draft EA Comments"**

Dear Mr. Marhamati:

24A

This letter is written on behalf of the Silver Lake Camp Owners' Association (SLCOA) regarding the "Record Hill Draft EA Comments". The Silver Lake Camp Owners' Association is requesting that the Department of Energy's Environmental Assessment is not adequate to allow the project to move forward. We request the Department of Energy to do a full Environmental Impact Study. This request is based on much correspondence with professional experts as well as local residents with specific interest areas.

Some of our concerns are:

- Environment Studies: No independent environmental studies were done; requests were made to Maine DEP to do one; the only environmental studies done were those by the developer as part of their permit application. Did not take into consideration the following:
  - Eagles who have nested on French Island for the past 25+ years; they have already constructed their nests this year. There is much concern about them soaring too close to the wind turbines. These eagles stay year round and fly over the ridge (where the turbines will be erected) to feed at the Swift River. The developer's study stated the eagles only fly within a short radius of the island; however, an avian biologist countered that eagles minimally fly a 5-8 mile radius daily.
  - There are several families of nesting loons and duck species at the pond who depend on the water quality. In the fall, there are as many as 100+ migratory loons that stop for a week or two just before the ice is in. There is concern that they will be severely impacted by the turbines on the ridges. Degrading water quality will also affect the fish which the loons, eagles and ducks feed on. In February, an annual Fishing Derby is held which more than 500 people attend to take part in this activity.
  - Land based wildlife (such as deer, moose) has already been impacted by the work which has been done to date. As a result of the ecological

24B

24C

24D



damage done to the area, hunters have witnessed minimal activity this past season as compared to before construction. It has been proven in New York and other states that animals will not remain in an area where turbines are located due to the noise. We are already experiencing a decrease in wildlife due to the blasting and groundwork that has been done. What will the result be when the turbines are up and running?

24E

- Vernal pools and wetlands are not being protected. Vernal pools are shallow depressions and are often found in forested wetlands. Usually, they fill up with water, but only for part of the year. Peepers and toads call them home. And sometimes, so do animals like spotted turtles, ribbon snakes and different types of inland waterfowl. Pools with endangered, threatened or rare species like these are called "significant vernal pools". Wetlands scientists say protective buffer zones surrounding the pools are keeping certain species from going extinct. Currently Maine law prohibits development within 250 feet of significant vernal pools, unless the builder gets a permit from the state which is the case regarding this project. What attracts many people to Maine is that the state still has a vibrant wildlife community and research shows that if the state conserves vernal pools, it will also conserve wildlife.
- Roxbury Pond is a fragile environment and should not be used as a social experiment.

24F

- Watershed: Because of the location of this project (3 miles along the mountain ridges), the watershed will be compromised on both sides of the mountains; namely, the Swift River, Roxbury Pond and possibly Garland Pond. The amount of blasting and the degradation of the proposed project area is of significant concern to these fragile watersheds. Roxbury Pond has 42 natural run offs and a 30 square mile watershed. There is no public drinking water supply available and residents throughout the area depend on shallow wells, drilled wells and some even the pond itself.

24G

- Health Impacts: Improper evaluations of the health impacts this project will have on people living within 5 miles of the project site as based on previous projects in Maine that are currently in litigation; such as, Mars Hill, Freedom and Vinal Haven. Health impacts as they relate to: noise, shadow flicker and blade thump.

24H

- Quality of Place: Maine is branded for its Quality of Place as referenced by the Brookings Institute Report. This is a peaceful, scenic, tranquil, natural area to be enjoyed during the four seasons. This is why people choose to visit this area and why they continue to return. Currently, pond residents can see mountains as far away as the New Hampshire border to the west. This proposed project would be a dominate feature of the otherwise natural landscape and will greatly detract from its rural character and beauty. Because of their siting and overall dominance of the horizon, they will be a visual blight on the landscape for as far as the eye can see.

24I

- Ecotourism: This area as well as most of Maine relies heavily on the tourism-based industry for its livelihood. Many property owners offer rentals of seasonal cottages. Many own and operate campgrounds, local stores, bed and breakfast facilities, farmers' markets and numerous small businesses. There are many registered guides providing their services for hunting, fishing or hiking. Once

what the visitors find that all of this does not exist in the area, what will be the incentive for them to return for future vacations?

24J

- Property Values: Not only will property values decrease due to this industrial project; it will then have an effect on the tax base for the town. Many owners are very concerned about this impact.

24K

- Record Hill Wind, LLC website: No longer active even though they said they would be managing this project for the long term. All of the DEP Third Party Inspector's reports and photos are unavailable. Reports for meetings that were held are also apparently removed. Why has all the information on their website been removed? Inquiries indicate that Wagner Wind Energy will be managing the project; but research to verify this has not been found. Who owns this company, when was it organized and is there any affiliation with Independence Wind or has the company either merged or perhaps been acquired?

24L

- Roxbury Pond: The majority of owners at Roxbury Pond are not allowed to vote because they are seasonal residents. However, they pay 67% of the taxes for the Town of Roxbury. 99% of the Silver Lake Camp Owners Association (SLCOA) members voted against the development of this wind turbine project by Record Hill. A letter was sent to Maine DEP during the review application process for the Record Hill project stating that the SLCOA voted unanimously not to support this project.

24M

This project needs much more in-depth research from an environmental, ecological and economical aspect. We urge you to please allow the people of this area to provide you with both the documentation and the expert testimony before you approve this application.

Thank you for your attention to this matter and please do not hesitate to contact me should you have any questions.

Sincerely,



Angela Arsenault  
President  
SLCOA  
207-545-2103

Cc: Matthew McMillen, Director, Environmental Compliance

**Marhamati, Joseph**

Comment 25      Response in Sections 2, 3, 4, 10, 11

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**From:** Alice Barnett [gempaint@yahoo.com]  
**Sent:** Wednesday, March 30, 2011 7:33 AM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Drafts EA Comments  
**Attachments:** DOERRecordHill.rtf

Please see attached. Thank You    alice barnett

- 25A | 1.) all wind energy going out of state. Maine cannot afford it.
- 2.) the tax valuation gained in host communities is offset by abatements of land value with-in 2 miles.
- 25B | 3.) nameplate capacity reduced to 25% (when wind blows)
- 4.) "parasitic" (when wind doesn't Blow, turbines require heat) reduces capacity another 5%.
- 5.) loss of electricity in transmission lines reduces capacity again. 10-30%
- 25C | 6.) 30-60 acres required for each turbine. 6-10 acres clear cut.
- 25D | 7.) birds, bats, bugs dead in the wind. wildlife disrupted.
- 25E | 8.) erosion from stormwaters changes the environment
- 25F | 8.) tourism killed

Record Hill Drafts EA Comments."---Joseph Marhamati@hq.doe.gov

US Department of Energy,1000 Independence Avenue. SW (LP-10), Washington, DC 20585

I cite:

Lake and Resourse Management Associates. P.O.Box 65, Turner ME 04282

2008 Roxbury (Ellis) Pond Water Quality Report.

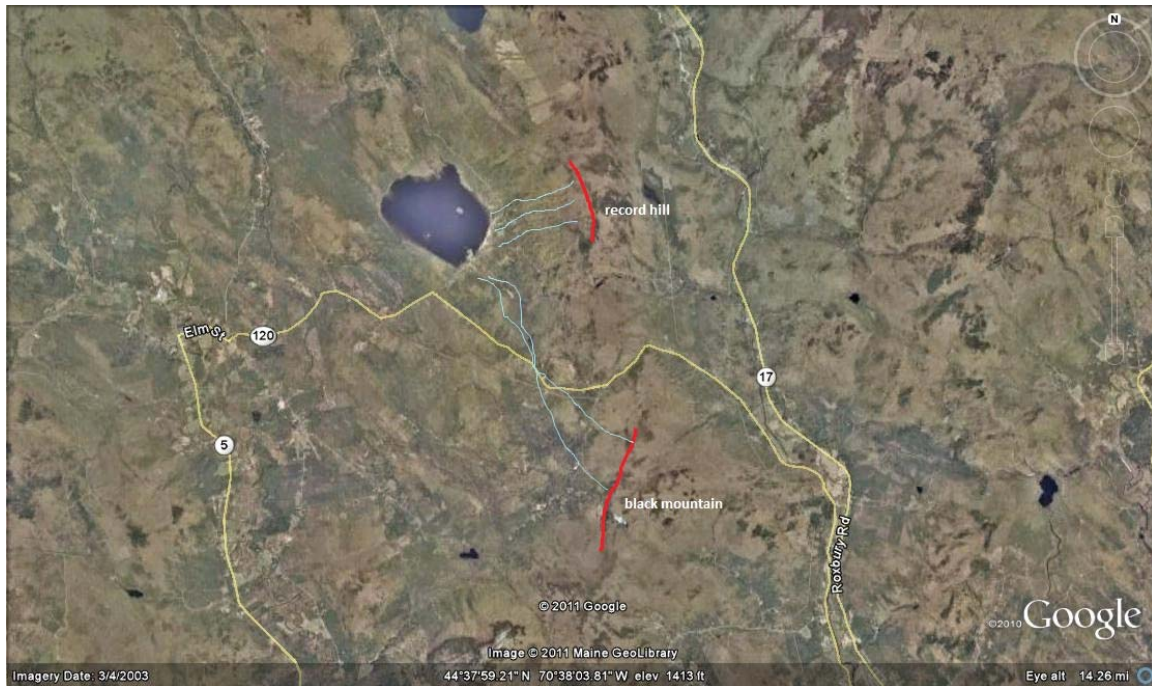
25G | One reason for the low seasonal average in 2008 was that the lowest reading for the season was 2.8 meters, which is tied for the 3rd lowest (poorest) reading on record for the pond. This was most probably linked with unusually heavy precipitation that occurred throughout the months of July and August, which undoubtedly resulted in the runoff of eroded soil into the lake from the watershed, resulting in reduced water clarity from suspended sediment, and from increased algal growth from the phosphorus associated with the sediment. Our field log for the July 23 sampling visit noted severe soil erosion on the Byron Road, which showed evidence of material having washed directly into a tributary to the lake.

If this erosion threatens

lake to bloom...look at the access roads and blasting for wind turbines.

Everything from the top of Record Hill flows down stream to the pond.

In the best BMP (best management plan)s storm waters do come. Look out.



25H

60 megawatt nameplate; reduce to 25% (when wind blows), reduce 5% "parasitic" (suck from grid) , reduce 30% loss in transmission.

about 8 megawatts makes it to the grid. And lost along the way.

25I

Please D.O.E. look at the destruction for no pay back.

Alice Barnett, P.O.Box 588, Carthage, ME 04224 [gempaint@yahoo.com](mailto:gempaint@yahoo.com)

**Marhamati, Joseph**

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**From:** Leola Ballweber [muttermutter@yahoo.com]  
**Sent:** Friday, April 01, 2011 7:32 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill in Maine

Mr. Joseph Marhamati,

26A I am concerned that the Department of Energy's Environmental Assessment is not adequate to allow the project to move forward. We request the Department of Energy to do a full Environmental Impact Study. This request is based on much correspondence with professional experts as well as local residents with specific interest areas.

Some of our concerns are:

- Environmental Studies: No independent environmental studies were done; requests were made to Maine DEP to do one; the only environmental studies done were those by the developer as part of their permit application. Did not take into consideration the following:
  - 26B ○ Eagles who have nested on French Island for the past 25+ years; they have already constructed their nests this year. There is much concern about them soaring too close to the wind turbines. These eagles stay year round and fly over the ridge (where the turbines will be erected) to feed at the Swift River . The developer's study stated the eagles only fly within a short radius of the island; however, an avian biologist countered that eagles minimally fly a 5-8 mile radius daily.
  - 26C ○ There are several families of nesting loons and duck species at the pond who depend on the water quality. In the fall, there are as many as 100+ migratory loons that stop for a week or two just before the ice is in. There is concern that they will be severely impacted by the turbines on the ridges. Degrading water quality will also affect the fish which the loons, eagles and ducks feed upon. In February, an annual Fishing Derby is held which more than 500 people attend to take part in this activity.
  - 26D ○ Land based wildlife (such as deer, moose and bear) have already been impacted by the work which has been done to date. As a result of the ecological damage done to the area, hunters have witnessed minimal activity this past season as compared to before construction. It has been proven in New York and other states that animals will not remain in an area where turbines are located due to the noise. We are already experiencing a decrease in wildlife due to the blasting and groundwork that has been done. What will the result be when the turbines are up and running?
  - 26E ○ Vernal pools and wetlands are not being protected. Vernal pools are shallow depressions and are often found in forested wetlands. Usually, they fill up with water, but only for part of the year. Peepers and toads call them home. And sometimes, so do animals like spotted turtles, ribbon snakes and different types of inland waterfowl. Pools with endangered, threatened or rare species like these are called "significant vernal pools". Wetlands scientists say protective buffer zones surrounding the pools are keeping certain species from going extinct. Currently Maine law prohibits development within 250 feet of significant vernal pools, unless the builder gets a permit from the state which is the case regarding this project. What attracts many people to Maine is that the state still has a vibrant wildlife community and research shows that if the state conserves vernal pools, it will also conserve wildlife.

- Roxbury Pond is a fragile environment and needs to be carefully and responsibly addressed by environmental experts who are not influenced by project preferences.

26F

- Watershed: Because of the location of this project (3 miles along the mountain ridges), the watershed will be compromised on both sides of the mountains; namely, the [Swift River](#) , Roxbury Pond and possibly Garland Pond. The amount of blasting and the degradation of the proposed project area is of significant concern to these fragile watersheds. Roxbury Pond has 42 natural run offs and a 30 square mile watershed. There is no public drinking water supply available and residents throughout the area depend on shallow wells, drilled wells and some even from the pond itself.

26G

- Health Impacts: Improper evaluations of the health impacts this project will have on people living within 5 miles of the project site as based on previous projects in Maine that are currently in litigation; such as, [Mars Hill](#), Freedom and Vinal Haven. Health impacts as they relate to: noise, shadow flicker and blade thump.

26H

- Quality of Place: Maine is branded for its Quality of Place as referenced by the [Brookings Institute Report](#). This is a peaceful, scenic, tranquil, natural area to be enjoyed during the four seasons. This is why people choose to visit this area and why they continue to return. Currently, pond residents can see mountains as far away as the New Hampshire border to the west. This proposed project would be a dominate feature of the otherwise [natural landscape](#) and will greatly detract from its rural character and beauty. Because of their siting and overall dominance of the horizon, they will be a visual blight on the landscape for as far as the eye can see.

26I

- Ecotourism: This area as well as most of Maine relies heavily on the tourism-based industry for its livelihood. Many property owners offer rentals of seasonal cottages. Many own and operate campgrounds, local stores, bed and breakfast facilities, farmers' markets and numerous small businesses. There are many registered guides providing their services for hunting, fishing or hiking. Once what the visitors find that all of this does not exist in the area, what will be the incentive for them to return for future vacations?

26J

- Property Values: Not only will property values decrease due to this industrial project; but it could have an effect on the tax base for the town. Many owners are very concerned about this impact.

26K

- [Record Hill Wind](#), LLC website: No longer active even though they said they would be managing this project for the long term. All of the DEP Third Party Inspector's reports and photos are unavailable. Reports for meetings that were held are also apparently removed. Why has all the information on their website been removed? Inquiries indicate that Wagner [Wind Energy](#) will be managing the project; but research to verify this has not been found. Who owns this company, when was it organized and is there any affiliation with Independence Wind or has the company either merged or perhaps been acquired?

26L

This project needs much more in-depth research from an environmental, ecological and economical aspect. I urge you to please allow the people of this area to provide you with both the documentation and the expert testimony before you approve this application. The people of Maine have not been allowed to speak on these issue and concerns to ears that will listen. Please, be those listening ears and allow the people to be heard. Our DEP is not doing their job and our wilderness is our livelihood.

Sincerely and Respectfully;

Leola R. Ballweber



**From:** Leola Ballweber [muttermutter@yahoo.com]  
**Sent:** Friday, April 01, 2011 9:18 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Maine

Mr. Joseph Marhamati,

It has been brought to my attention that the Record Hill Wind Project is looking for a guaranteed loan from your agency. I encourage you to turn down this guarantee based on the fact that these LLC's continually change their names and it is getting complicated trying to deal with all these different names for the same project.

27A It has been made clear that this project is being backed by the Yale Investment Fund and has the financial capacity to see this project to the end. I encourage you to deny this guaranteed loan based on the fact that it is not necessary or needed for this project.

27B I also request that a third party do an assessment on the environmental factors involved on this project. Bald eagles, golden eagles and other wildlife will be affected by this project and this company has already had dealings in New York State that created the requirement for them to sign an ethics agreement. Since then they have ceased development in that state and moved to Maine. It leads me to believe that ethics are missing in this company standards and it is your job to see that this does not continue.

27A It is important for you to realize that this project should not be given taxpayers money, when they have their own private financial backer. We can not continue to put taxpayers money in the wind and let it blow away. Our money is in short supply and we don't need to keep taking loans from other countries. We have to pay those bills and our economy hasn't gotten better.

Please, check the companies information, have an independent study, check them out thoroughly, and catch them in their wily ways.

Sincerely and Respectfully;

Leola R. Ballweber  
506 Cushman Road  
Bryant Pond, Me 04219

From: Mountain Spring Farm B&B [msfbb@midmaine.com]  
Sent: Thursday, March 31, 2011 7:50 PM  
To: Marhamati, Joseph  
Subject: Record Hill Wind

I am very upset that my tax dollars will be used for such an unworthy project at that which you are reviewing for Record Hill Wind, here in Roxbury, Maine The more I learn about wind energy as an investment, the more disgusted I am that the Federal government is supporting it in circumstances like the ones we have here. here are the reasons why I think that the Federal government should examine this very carefully.

28A

1) In our little town, Roxbury Maine, we have been fighting against the placement of wind turbines in the water shed of our lake where I own a cottage and where I live half the year. The studies about the impact of the turbines on our nesting eagles, loons as well as the other forest animals have been carried out by the company that wants to put the turbines in, so naturally, everything is "just fine" in their eyes. We have been told that assessment of any damage to the environment will be done "post construction" I think this is laughable as well as very transparent. The company doesn't care about the environment or animals and will never to a "post construction" evaluation. And if they do, so what? They will not be able to undo any damage which they have caused. I have not seen personally the road building which they have initiated. The word is out that it is pretty awful and may not be up to regulation.

28B

2) Why is the federal government funding such a project when the principals of the company have given documentation that they have the funds to carry out the project? They are now getting backing from Yale University's endowment fund. This is outrageous that tax payers should be asked to not only pay for the transmission lines which will be built for this project but that we also pay monies toward their business adventure. I think that they should offer their own investors the opportunity to actually invest in their own project.

28C

3) As for the economics of this project, I think that it is time to look around at what is happening else where with approach to renewable. T. Boone Pickens, a big time money manager, investor and promoter of renewable energy sources has pulled all his support away from wind energy because it is such a bad deal economically. His mega-project for many wind turbine farms in middle America from Chicago to Texas is now defunct because of his appreciation of the role that new natural gas as a renewable resource is playing and will continue to play for a long time to come in our country. Why are we funding these projects when we know that they are not worthy.

28D

4) BOONDOGGLE is often used when federal money is used on projects that most common sense people would not invest a dime on. Maine has received federal money in the past for sugar beet production in the 60's, to breach dams on our rivers in the 70's , more stringent fishing rules and regulations for harvesting our ocean in the 80's, in the 90's paper companies were sold or closed and now in 2011 Wind projects are rage. What do all these have in common? Well it's not your savings account, your life long 401, or pension at risk, it's the FEDERAL Money... the free stuff the government gives away to a few select investors, which eventually comes out of our taxes, the money we and our children will have to . When will the government learn from past history, this wind project is another example of boondoggle. No bank, investors with their own private money, no other country will support this on its merits. Would you invest \$ 100 dollars and have only about 25 dollars in return. Wind towers do not run 100% of the time.

28E

5) We have not increased our hydro electric capacity to full potential. We shelved tidal basin dams in the Bay of Fundy with Canada in the 80's and the government keeps keep on torpedoing natural gas terminals in the Eastport area of Maine, WHY? Are the pro wind industries behind this effort? Save Maine and its people, do not fund this DOE grant to Record Hill Project to Angus King and Rob Gardner.

28F

In closing, I feel this grant does not fulfill the requirement of new advanced, leaping ahead technologies, a break through of mindboggling proportions. Wind turbine development is no product of Watson of DNA, or microchip from Intel, or Warp speed from the USS Enterprise. As a matter of fact most universities with mechanical, electrical or civil engineers have studied this and passed over wind power as not economical and practical and certainly not DEPENDABLE. The singular exception here in Maine is a single professor , making his academic career out of off-shore wind turbines. We'll see how the lobster and shrimp fishermen, evaluate the impact of the vibrating wind turbines on the breeding grounds off shore. For us, we are separately trying to bring a realistic view of the terrible impact of placement of hundreds of turbines all over the western Maine mountains. It starts with Record Hill and then like dominoes, all the other communities will become victims as well.

Please make a decision ot have the power of the Federal government to come to the record Hill project and do credible, truthful studies on the environment and animals. We are totally at your mercy. Barry J. Allen

**From:** Steve Thurston [thurston.steve@gmail.com]  
**Sent:** Wednesday, March 30, 2011 11:19 AM  
**To:** Marhamati, Joseph  
**Cc:** darryl.brown@maine.gov  
**Subject:** Record Hill Wind - draft EA comments  
**Attachments:** MX-B401\_20110307\_090639[1].pdf

Dear Mr. Marhamati,

I am a 5th generation occupant of my family's property on Roxbury Pond. The proposal to put 22 turbines, all within line of sight to Roxbury Pond, on the ridge overlooking the pond, has been a source of outrage, anxiety, depression, and fear for many members of my family and many of the families who own property on Roxbury Pond. There was a nearly unanimous vote of the property owners' association to oppose this project in the permitting process. The spectre of wind projects destroying the viewshed, polluting the nighttime soundscape, devaluing our property and forever altering the mountain with blasted cuts and massive fills for access roads is a heavy burden for Roxbury Pond property owners to bear. However, if these are insufficient grounds for the DOE to reject the application, there are more important reasons that reach far beyond the concerns of the affected community.

29A The application of Record Hill Wind LLC for a DOE loan guarantee should be rejected because the applicant has provided evidence to the State of Maine that they do not need the loan guarantee to construct and operate the project since they have \$127 million in the bank and the ability to self finance the project. In a filing with Maine Dept of Environmental Protection, Robert Gardiner, President of Record Hill Wind LLC provided required evidence that Record Hill Wind LLC had the financial capacity to construct the wind project. In the cover letter to James Cassida, Gardiner said, "Record Hill possesses sufficient funds to complete construction without any additional source of capital." As evidence of these funds Record Hill LLC provided documentation showing \$127 million on deposit at Mascoma Bank of Lebanon NH. (See attached copy of DEP submission).

29B As a taxpayer I am appalled that the DOE would consider using my money to provide collateral for this project. Not only does RHW LLC have the money it needs to construct the project, by admission eliminating the need for the loan guarantee, it has partnered with the Yale Endowment Fund. US taxpayers should under no circumstances be asked to assume the investment risk for the Yale Endowment Fund, which reportedly has assets of more than \$8 billion.

29C I also question the "load control" technology that forms the basis for RHW LLC to qualify for a loan guarantee in the first place. What evidence has been provided that allows DOE to conclude that there is anything groundbreaking about the turbine controller in these Siemens turbines? GE also boasts "load control" technology for its turbines. What is the difference between the two? Is it fair to ask the US taxpayer to subsidize the research and development efforts of either of these companies? Shouldn't their shareholders take the risk for the success of their products?

29D There are other technologies which are far more deserving of government support. Projects which involve electric storage technologies, reduce the cost of solar power, develop more efficient heating and cooling processes, improve the environmental impacts of hydrofracking for natural gas, make coal more environmentally friendly, etc should have a higher priority than wind power. Wind projects, without a storage solution, are of little use to the electric grid. The Record Hill Wind project with an installed capacity of 50 MW, will only generate about 12.5 MW on average at a 25% capacity factor. This small amount of electricity may easily be absorbed by the grid without any effect whatsoever on grid operation, since the ISO-NE grid operates with a 125 MW tolerance for supply and demand imbalance. It is well understood that wind generation, because of its

↑ unpredictability and intermittent production, must be "followed" with sufficient spinning reserves to regulate the constantly changing output.

The ISO-NE wind integration study is clear that accurate wind forecasts, grid scale storage, and massive and very expensive transmission construction are all necessary to allow wind generation to be effectively utilized. Since none of these necessary components of wind generation are in place, and likely won't be during the lifetime of any turbines now being constructed, it is premature at best to encourage wind power, especially in Maine and other places with high value landscapes. The cost to the taxpayer, to the residents of rural communities subjected to the impacts of wind turbines, and to future generations who will never have to opportunity to appreciate the unspoiled natural beauty of Maine's mountain landscapes far outweigh the perceived benefits of Maine's rush to wind power.

For these reasons the Record Hill Wind LLC application for a US taxpayer backed federal loan guarantee should be denied.

Sincerely,

Steve Thurston  
PO Box 345  
Oquossoc, ME 04964

**Marhamati, Joseph**

---

**From:** fryewood@roadrunner.com  
**Sent:** Friday, April 01, 2011 4:17 PM  
**To:** Marhamati, Joseph; Mcmillen, Matthew C  
**Subject:** Record Hill Wind Draft EA Comments  
**Attachments:** scan.pdf

Please find the scanned copy of a letter from Mr. Leo F. Kersey, Jr.

If you are unable to open or view it, please call me or contact me at the above e-mail address.

Thank you,  
Cathy Mattson

207-364-2616

To the Department of Energy Representatives:

Regarding the Record Hill Wind, LLC, project in Roxbury, Maine

I am Leo F. Kersey, Jr. and am 88 years young. I have lived in this area and have owned a summer residence at Roxbury Pond for over 60 years. I have seen many changes over the years; but never have I witnessed the potential environmental destruction that this area is about to suffer. Roxbury Pond is located in a beautiful, pristine area where the mountain ridges completely surround one of the most beautiful unspoiled areas the State of Maine has to offer.

30A

This lake, while not officially named on the Maine's Finest Lakes Report, has all of the qualities to be designated as such. When some of the residents questioned it, they were told that it "must have been overlooked". It is high time that someone in authority looked into this matter. The property owners have worked hard to be good stewards of this lake and the land around it so that the many varieties of wildlife that consider this their habitat can exist here and thrive for generations to come. The bald eagles have multiplied over the years here and are already this Spring building their nest again. We watch the adults successfully raise their young and people of all ages watch for the juveniles to take their first flight.

30B

The loons, while not even mentioned in the project application are dependent upon this lake for their food and protection. Remarkably, we have noticed that this lake has been used by migratory flocks of loons in the Fall. They come here to feed and replenish their energy before flying to more Southern locations. It is such a welcome sight to see and be able to count more than 75 visiting loons at that time of year. Yet, there were no studies done to verify such sightings. When someone asked the State Department, they were told that the developer's studies were all that were done for birds and wildlife; that they were the experts. It would seem to me that someone looking out for the welfare of the citizens and the animals that wasn't working for the developer should do their own studies and reports.

30C

The ridges of Partridge Peak, Flathead, and Record Hill have already been cut hard for this wind development. Blasting occurred nearly every day from early October 2009 to mid-January 2010. For as many years as I have lived in this area, I never have sensed such a lack of deer and moose and terrestrial wildlife. Those that are younger than me and that are still able to hunt are so distraught over the destruction. Blasting 20-30 feet off the face of an undisturbed mountain is too much to fathom. I understand that now more blasting will have to be done for the actual bases for these turbines and that what was done so far was only for access roads and crane paths.

30D

Has anyone given any consideration to the fact that the rock composition of these mountains is unique and that the tops of those mountains are within the watershed area of not only this lake but other lakes as well as some major rivers? This is a very rural area; people have shallow wells for their drinking water with most being spring-fed. The water table here is very high and the area is abundant in wetlands and woodland seasonal

↑  
pools. I have seen much in my years here on this earth and I have always hoped that my children, grandchildren, and beyond could enjoy the wild-lands and the forest friends that I have loved.

30E

The joy of a clean lake for swimming and fishing, brings families together and is the reason that many younger families who have to move away for work, spend their entire vacations back here to get away from the business and developed areas they live in the rest of the year. We were devastated about 10-15 years ago when there was a large clearcut done near the Byron end of the lake; the phosphorus load was at a critical level--- I don't know all of the scientific words but the lake was nearly considered "dead". We all vowed that if we were ever fortunate enough to bring it back to a healthy level that we would never let it happen again. Already, people have noticed many of the feeder streams are showing a different type of sand/gravel and as much as we try to get independent studies done, we are told everything is just fine. Well, I have heard that story before.

30F

Please, do your own environmental studies up here before allowing this project to go forward. I tell you, we know what we are talking about. The wildlife, the water, the balance of man and nature is being seriously threatened and it is all about big developers coming in that don't really care about the environment.....our environment!



Leo F. Kersey, Jr.  
March 23, 2011

626 Hancock St.  
Rumford, Maine 04276

1-207-364-2821

**Marhamati, Joseph**

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**From:** denise hall [denisedelighthall@yahoo.com]  
**Sent:** Thursday, March 31, 2011 7:25 AM  
**To:** Marhamati, Joseph; Mcmillen, Matthew C  
**Subject:** Record Hill Wind LLC application should be denied

I live in Western Maine about 30 miles from where this project is proposed. I strongly oppose to the federal government getting involved in wind projects sited for Maine's mountains. These developments are not green power and they are not good for our economy. Power sources need to be placed by the power consumer, not sent up to the wilderness. The Kibby Mt project about 1.5 hours north of me is running at a pathetic 22% of nameplate capacity. It is getting no one off oil. Imagine how much oil it consumes and has consumed.

31A

Humans are leveling mountains in the Western US to ship coal to China. Then short sighted politicians borrow money from the Chinese so useless first generation wind turbines can be bought and shipped across the globe. This is earth killing madness and needs to be stopped!

It is not too late for the DOE to do the right thing and stop supporting an outdated technology that has been proven time and time again to fail. Fails in efficiency, fails in ecology, and fails in economics. There are many other choices for energy dependence. Putting up first generation wind turbine on mountain in the wilderness of New England is not the answer!

Please do the right thing for the planet and the U.S. taxpayers. Deny federal backing for First Wind in Western Maine.

Sincerely,  
Denise Hall  
28 Blackbrook Road  
Bryant Pond, ME 04219



**From:** Denis Bourassa [denisbo@live.com]  
**Sent:** Thursday, February 17, 2011 7:14 PM  
**To:** Marhamati, Joseph  
**Subject:** Record Hill Wind Project in Roxbury, ME

Mr. Marhamati:

32A

I am no way in favor of this wind project on Record Hill in Roxbury Maine. First of all, this is not a hill, but a mountain. The amount of forest that will have to be removed from the mountain for 1: leveling the top of the mountain to support the wind mills, 2: for high tension wire transmitting poles and 3: for roads to access this mountain, would mean an enormous amount of soil run off that would, over time, leach into Little Ellis pond and Ellis Pond, ruining our beautiful ponds for future generations.

Wind generated electric power should be restricted to off shore coastal locations only.

Do not approve this project.

Denis Bourassa  
Livermore Maine  
[DenisBo@live.com](mailto:DenisBo@live.com)

From: Morin-Allen [morinallen@midmaine.com]  
Sent: Thursday, February 24, 2011 9:49 AM  
To: Marhamati, Joseph  
Subject: regard ing Record Hill Loan guarantee

Dear Mr. Marhamati,

First I would like to say that I along with dozens of others have been working on stopping Record Hill Wind turbine project for the last three years. I was viscerally aware of all the wrongness of it and tried for over 18 months of meetings to inform the citizens of Roxbury what the turbines would mean to our little community. How can an under-educated and economically strapped community make such impotent decisions without information? In spite of every effort to have Mr. Angus King and Mr. Rob Gardiner answer the simplest questions, we are still without the answers. What are some of our concerns....

33A

1) This whole project was sold to the people of Roxbury as a means to get jobs....We now can see from the draft of the proposal prepared for you that the number will be from 3 to 5 positions. Our town has given up its soul for 3-5 jobs. What kind of skills will be required and fulfilled by townspeople? I know that people expected more than that.

33B

2) Our town was promised by John Sutton the chair of the town Selectmen, moments before the actual ballot, that we would have a 75% decrease in taxes and free electricity. This is a number which is in your report and which we have on videotape. The town voted by the slimmest of margins to have the turbines. There was difference of about 9 votes. We tried to challenge the vote because of some glaring irregularities during the evening. First, there were over 180 people in a room legally limited to 75. You couldn't move inside, many people could not sit or even get into the room from the minus 15 degree weather outside. We know that some people could not get in to vote. Secondly, more votes were cast than people eligible to vote. Thirdly, requests to examine the ballots in order to challenge the vote was stone-walled by the staff in the town hall, who indicated alternatively that the ballots were "lost" or were sent to the State Capitol in Augusta, both of which were not true. A petition to revote on the issue and signed by more than 90 people was dismissed by Mr. Sutton, who works for a local forest land management company and whose conflict of interest has been raised more than once. I include all of this for your reading pleasure knowing that none of it will stop former Governor Angus King and his business partner, Mr. Rob Gardiner from getting their way. They are too powerful. However, It is OUR tax dollars that are going to secure this loan and we have a right to challenge this expenditure for a project that is NOT wanted by a majority of the people who live in the area. In making your assessment as to the appropriateness of this project, you should know the whole story. While decisions like this are made in Washington, we have to live with it in rural Maine. The proposed project has already split the town in two. Ordinary people living on fixed incomes have donated thousands to fight this fight. We need you to hear us.

33C

3) I read in the draft proposal that one of the benefits was a 75% reduction in taxes. This is a number which has popped up before and which is an unsubstantiated claim. When the State of Maine sent their representative, Mr. Mike Rogers, to discuss this issue, there was no mention of a 75% decrease in taxes and the number he gave was not even close to that. The final reduction was in the area of 34%. it was only after a visit by Mr.Gardiner's lawyers to Mr. Roger's boss that the numbers were changed to show a greater benefit to the townspeople. Where did you get the evaluation of a 75% decrease in taxes and the subsequent impact on Roxbury landowners?

33D

4) Another of the benefits mentioned in your draft was 500 kw of free electricity given by Record Hill Wind to the citizens of the town. This is a bit misleading since the offer has been modified, at least verbally by Mr. Gardiner in two public meetings which I attended. It seems that after the vote was taken, the principals of Record Hill Wind learned that there were 20 "businesses" located in town and these residents who had a business would not be eligible for the free electricity. I do think that would have resulted in 20 less votes for the wind turbines had the citizens with their cottage industry "businesses" known that they would not be included after the fact.

33E

5) In the draft proposal, there is a statement that the turbines will not be seen very much but be hidden by plants and trees etc. I beg to differ with your assessment. The turbines will be seen big as life by everyone who uses Roxbury Pond. We see the met towers very clearly and we will see and hear the turbines. There will be a very big visual impact on the camps at the pond. The assessment seems to indicate that because the camps closest to the turbines are facing the pond that this will negate any impact of the turbines on their views. However, many people spend most of their time outdoors and on the lake. We will be seeing the turbines, everyday and every night, as the blinking strobe lights pollute the formerly dark night time sky.

33F

6) We have been fighting the placement of these turbines next to Ellis Pond, in the court system and are now awaiting the verdict from the Maine Supreme Court regarding the validity of the DEP permit issued to Record Hill Wind. In the application, there was a requirement that Record Hill Wind have sufficient financial backing to carry out the project. They said they did and now because they do not, they are asking the taxpayers to back up their business deal. They have not set aside any money at all from themselves for decommissioning of the turbines, another legal requirement which they have ignored. Lastly we are asking the court to order a public hearing on these issues as well as the paramount issue of noise generation from the turbines. We are asking this because of the inappropriate noise standards which even the DEP admits are not good enough. In our State, there are too many examples already of people whose lives have been dramatically altered by too close turbine placement. We want to avoid that and have collected many hard earned dollars from ordinary citizens to fight Record Hill Wind.

33G

7) The animal studies have always bothered me. I am a neuroscientist by training and am naturally drawn to scientific studies and what they tell us. I find it very disturbing that "post construction evaluation" of animal deaths will somehow be generated. I do not know what purpose such a study will have and in fact, find it ludicrous. Are they somehow going to determine that animals have been killed, moved away from the area or whatever? What exactly does this mean? It is some kind of mumbo-jumbo to placate people who are concerned about the impact of these 400 foot tall towers which are in a major flight path between the lake and the river. Are they going to tell us that the turbines killed the nesting eagles on our lake, eagles who fly in the early spring over Record Hill to get to Swift River on the other side, to feed? Why in the name of all that is sane would the consulting firm a) even bother to evaluate the impact on animals like our loons, since it would be detrimental to their clients and b) how does their telling us about animal deaths, bring back the dead! Those of us who are at Ellis Pond (aka Roxbury Pond) during the Fall and Winter see the loons migrating over the mountain. They will have to make it past the turbines to live. Wind turbines are notorious for bird killing capacity. What will be done when the hunters no longer find game in the related area? Animals who live in the wild depend on sound for their assessment of their surroundings. Have you ever seen the size of the rotating ears of a moose! How will we ever regain the animals in our environment when they move away? How will Stantec ever evaluate that? And why would they?

33H

8) With regards to the actual power produced by the turbines? How do you know that they will be able to produce and SELL that much power? Why would the New England Grid buy the MOST expensive electricity being produced? Isn't that part of the problem right now? There are no interested parties in buying the electricity because the area already has the capacity to produce electricity at a much cheaper rate. The elderly and others on fixed incomes in one of the poorer states, should not be asked to subsidize a Record Hill's business adventure which will raise their electricity bills. Raising the rates to pay for this expensive electricity as well as paying for the new high capacity delivery lines will raise the rates even if the average citizen hasn't realized this as yet.

33I

9) In the opening statement about the purpose of the program, one of the issues is to support new an innovative approaches to energy generation. Wind turbines is not a new approach. It is an approach which is being met with increasingly skeptical evaluation. Why not fund solar power for which there is not sound pollution, destruction of animal and plant habitats and which could be made available to everyone right at their homes? I find this a much more palatable approach to spending federal dollars.

Anne Morin

**From:** Robert Moulton [onsnow@roadrunner.com]  
**Sent:** Friday, April 01, 2011 9:20 AM  
**To:** Marhamati, Joseph; Mcmillen, Matthew C  
**Subject:** wind power

Dear Joseph, and Matthew,

I am writing to express displeasure with federal money being spent on wind power. I have done extensive evidenced based research and investigating on this subject. I own a seasonal residence in a Maine town that has been duped by pseudo science and smooth talking salesmen that have promised pie in the sky benefits from the wind industry. I implore you to listen to the facts and people who have actually experienced the ill effects of wind power, for example, Vinyl Haven Maine residents who live in the shadows. The western mountains of Maine will forever be changed and because of powerful capitalism everyone in authority to do something seems to have had their hands tied.

- 34A
- This power is not green when you evaluate the cost benefit ratio of what has to be destroyed environmentally, nor is it cost beneficial in terms of energy production.
  - The ill health effects cannot be ignored, they are real.
  - Property values as well as tourism losses have not been factored in to the equation.
  - The only benefit is to the wind industry-who will receive non-recourse funding which is basically a multi-multi - million dollar federal grant. A large industry has steam rolled their way into our beautiful state and because we are all so desperate to find alternative power sources we have succumbed to a snake oil type solution.

Please, please do not let this be your mark on the earth-I think you'll be sorry-

Joann Moulton  
PO Box 170  
Hanover, Maine 04237  
(207) 364-3509  
[onsnow@roadrunner.com](mailto:onsnow@roadrunner.com)

**Marhamati, Joseph**

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**From:** Rufus Brown [rbrown@brownburkelaw.com]  
**Sent:** Friday, April 01, 2011 4:25 PM  
**To:** Marhamati, Joseph; Mcmillen, Matthew C  
**Cc:** fryewood@roadrunner.com  
**Subject:** Record Hill Draft EA

Mr. Marhamati and Mr. McMillen:

35A I have been the attorney for property owners near the proposed Record Hill Wind Project for the past 2 years and have represented them before the Maine DEP and the Maine Board of Environmental Protection and before the Maine Law Court. I have substantial information on the risks of excessive noise from the proposed project that is likely to cause not only high annoyance but adverse health effects. I would like the opportunity to bring this information to the attention of the DOE and therefore I support the request of Cathy Mattson for an extension of the comment period.

Rufus E. Brown, Esq.  
Brown & Burke  
85 Exchange Street, Suite 201  
P.O. Box 7530  
Portland, ME 04101  
tele: 207-775-0265  
fax: 207-775-0266  
e-mail: [rbrown@brownburkelaw.com](mailto:rbrown@brownburkelaw.com)

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