<u>Saddleback Ridge Wind, LLC</u> // Natural Resource Protection Act (NRPA) and Site Location of Development Act applications

- Licensee Exhibit 12
  Letter from SRW to Mark Margerum
  (April 27, 2011)

PATRIOT RENEWABLES
Saddleback Ridge Wind, LLC

April 27, 2011

Mr. Mark Margerum
Project Manager
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Subject: Saddleback Ridge Wind Project, DEP #L-25137-24-A-N, #L-25137-TG-B-N response to comments from public meeting and April 13, 2011 email from Mark Margerum.

Dear Mark:

I am writing to respond to comments regarding groundwater, fire hazard, and cumulative visual impacts from significant scenic resources that were made at the Maine Department of Environmental Protection's (DEP's) public meeting on the Saddleback Ridge Wind Project (Project) on March 10, 2011, as repeated in a subsequent email from Mark Margerum of Maine DEP on April 13, 2011.

Groundwater: A couple of people expressed concern that blasting might negatively affect the groundwater in their wells. Groundwater protection was addressed in our original Site Law application materials in Section 15 (Groundwater), and we also included a letter (attached again for reference) from industrial seismologist Richard Groll in Section 20 (Blasting) which addressed the effects of blasting on groundwater and specifically on wells in the area near the project. Mr. Groll reviewed a preliminary blasting plan for the project, along with the locations of local residences and the areas where blasting is expected to occur and concluded that "There is no reason to believe that the blasting activity at the Saddleback Ridge Wind Project will disturb the rock structure or composition in a manner that would result in the diminution of the quality or quantity of local drinking water supplies." Mr. Groll also notes that "The proposed blasting operations at this site will not cause damage to the surrounding structures or water wells. The scale of blasting required at this site is commonly employed within 50 feet of occupied dwellings and working water supplies without causing damage." Based on Mr. Groll's assessment, we feel that the Project will have no impact on local drinking water wells; nevertheless, to address these concerns we will offer both pre- and post-construction water well tests to all residences within 3,500 feet of blasting activity. The pre-construction well testing will be incorporated into the pre-blast survey. A detailed spill prevention and control plan will be submitted to the department prior to operation.

Fire hazard: A few commenters raised questions about the fire risk that an operating wind project might pose. According to General Electric (GE), who makes the turbines we are proposing to use for this Project, there have been only 3 confirmed fires among the 16,000 1.5 MW and 2.5 MW wind turbines in GE's operating fleet, and none resulted in significant fires that spread outside the turbine area. All of these fires occurred on older 1.5 MW or earlier turbine designs, and GE made design modifications accordingly. There have been no reported fires on the 2.5-2.75 MW turbine models that are proposed for Saddleback Ridge Wind. GE recommends proper maintenance as the best way to avoid fires. GE representatives will provide maintenance work on the turbines while they are under warranty, and we will continue to follow proper maintenance protocols after the warranty period has expired. Furthermore, the turbines will be remotely

PATRIOT RENEWABLES
Saddleback Ridge Wind, LLC

monitored 24/7, and alarm sensors in the turbine will alert monitoring technicians to operating problems, resulting in a callout to a local technician. We plan to coordinate with the local fire departments in East Dixfield, Dixfield, and Carthage to provide a quick, coordinated response in the highly unlikely event of a turbine caused fire. The fire department would not attempt to extinguish a turbine fire at the height of the tower, since these are as short-lived as they are rare. Rather, the fire department would concentrate on containing any fire that may occur in the immediate area around the base of the turbine.

Cumulative Visual Impact: The question was raised whether there would be visibility of any other pending, permitted or operating wind projects from scenic resources of state or national significance within the 8-mile viewshed of the Saddleback Ridge Wind Project. The only other pending, permitted or operating projects that we are aware of within a 16-mile radius of the Project are the Record Hill project (permitted and partially constructed) and the Spruce Mountain Project (permitted and currently under appeal). There have been press reports about a potential First Wind project in the Rumford/Roxbury area, but we are not aware of any permit application having been filed on that project. Similarly, there is a project under development by Patriot for Colonel Holman Mountain in Dixfield and Canton Mountain in Canton, but both are in earlier development stages and no applications have been filed.

To evaluate the cumulative impact of wind projects on scenic resources of state or national significance, we had our visual expert prepare a viewshed analysis of the Record Hill, Spruce Mountain, and Saddleback Ridge Wind Projects (see attached maps prepared by Terrence J. DeWan & Associates). Map A shows the viewshed analysis based on the more conservative topography data only while Map B shows the viewshed analysis of the Saddleback Ridge and the Spruce Mountain Projects based on vegetative landcover data (the Record Hill vegetative landcover viewshed data is not available) Halfmoon Pond is the only scenic resource of state or national significance that is located within eight miles of the Saddleback Ridge Wind Project and one or more other projects. From Halfmoon Pond, tips of 6 Saddleback turbines may be visible above the treeline, but there will not be any visibility of the Record Hill turbines due to intervening topography.

Please let me know if you have any further questions.

Sincerely,

Andy Novey
Project Manager

549 South Street, Quincy, MA 02169 • Telephone: (617) 890-0600 • Fax: (617) 890-0606 • www.patriotrenewables.com

Richard J. Groll
Industrial Seismologist

September 24, 2010

Mr. Eric Ham
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

re: Blasting effects on ground water and wells, Saddleback Ridge Wind Project, Carthage, Maine

Dear Mr. Ham,

This firm has examined the proposed blasting for the proposed Saddleback Ridge Wind Project in Carthage, Maine. Information regarding the geographic site location and distances to the nearest structures was obtained from the applicant, Saddleback Ridge Wind, LLC.

The proposed blasting activity will occur on access roads within the applicant property and at the foundations for the wind turbines. The depth of rock excavation will range from 5 to 14 feet in both the access road and at the turbine foundations. Blasting is not anticipated at the entrance to the site, as there is an existing road leading into the property. The nearest homes to areas of anticipated excavation for the access road on the site are on Jackson Hole Drive and Bickford/Winter Hill Road. The nearest residences to excavation for the turbines will be off Mason Road, east of Saddleback Ridge. Table 1 is a tabulation of the locations and distances seen in Figure 1. Figure 1 is a map demonstrating the locations of the nearest residences to the anticipated areas of excavation for the project.

TABLE 1 - DISTANCES FROM RESIDENCES TO EXCAVATION (IN FEET)

LOCATION	ENTRANCE	ROAD EXCAVATION	TURBINE EXCAVATION	
			distance	turbine no. on Fig. 1
1.	8350	2050	2050	(7)
2.	1800	775	2350	(1)
3.	4775	2050	3100	(1)
4.	600	1150	3275	(1)
5.	2000	2275	3900	(1)
6.	2375	1500	3250	(1)
7.	1950	1500	3700	(1)
8.	2250	1300	3000	(1)
9.	900	2000	4250	(1)
10.	3875	4225	5100	(1)
11.	5175	4225	4400	(3)
12.	6600	4100	4100	(5)
13.	11,775	3300	3300	(8)

P.O. Box 572 • Tyngsboro, MA 01879 • 978 649-3123

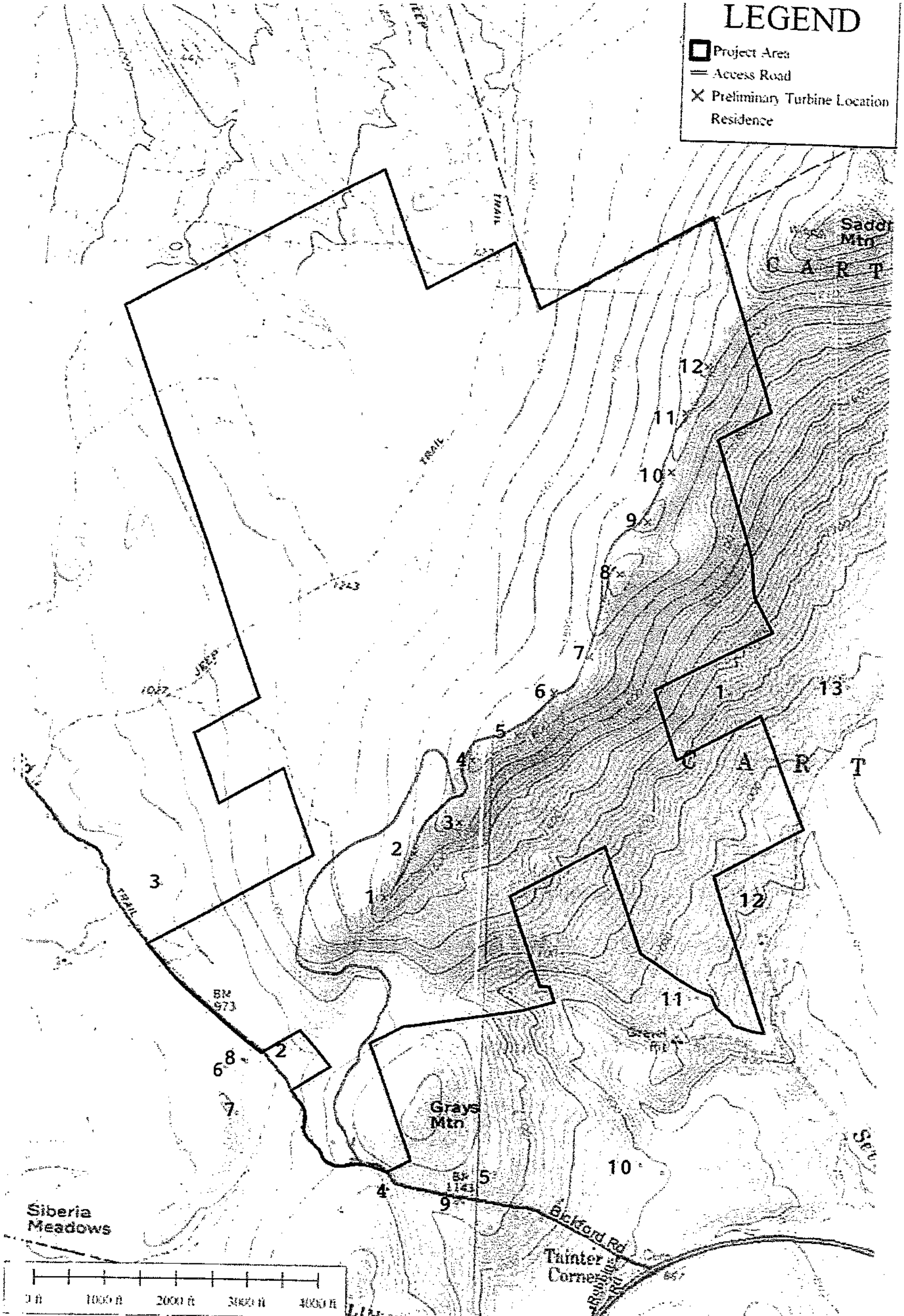

LEGEND
Project Area
Access Road
Preliminary Turbine Location
Residence
Saddl Mtn
TRAIL
JEEP
BM 973
Grays Mtn
Siberia Meadows
Bickford Rd
Tainter Corners
0 ft
1000 ft
2000 ft
3000 ft
4000 ft

FIGURE 1

The proposed blasting operations at this site will not cause damage to the surrounding structures or water wells. The scale of blasting required at this site is commonly employed within 50 feet of occupied dwellings and working water supply wells without causing damage. The blasting process is highly refined and scientific. This firm routinely demonstrates the reliability of the process to homeowners living in close proximity to blasting operations.

PLANNING

A significant body of research has been performed on control and measurement of ground vibration from blasting. Real-time observations of damage progression in common construction materials were made in conjunction with vibration measurements using instrumentation designed to accurately quantify both ground vibration and structure response were performed by the former United States Bureau of Mines and private research interests. Several fundamentals were established through research.

1. The level of ground vibration produced by a blast event is proportionate to the weight of explosives detonated at any instant.

2. Two charged holes within a blast sequence which are timed to detonate at least 8 milliseconds apart from each other produce two distinct pulses of vibration instead of one amplified pulse, as the vibration travels at several thousand feet per second in hard rock.

3. The rate of decay of the ground vibration is approximately three-fold for every doubling of distance from the exploded charge.

4. The best descriptor of damage potential from blast vibration is the speed at which a particle at any point in the earth is agitated as it responds to passing kinetic energy from a blast.
The speed of particle agitation in solid media is referred to as peak particle velocity and is most commonly expressed in units of inches per second (ips).

5. The common construction material most sensitive to ground vibration is plaster on lath.

Modern rock blasting operations are performed by drilling a geometrically spaced pattern of holes within an intended area of rock excavation. The depth, diameter and spacing of the holes in the pattern is determined by the weight of explosives which can be safely detonated within an 8 millisecond period in a charge sequence. Prevention of damage to any of the materials which comprise the nearest structure not under the control of the project is the limiting factor in what constitutes "safe".

The blasting contractor measures the distance between the blasting area and the nearest structure not under control of the project prior to planning which diameter drill bit to employ in drilling the charge holes. The hole diameter limits the weight of explosive per unit length of the rock column. The blasting contractor examines the nature of the rock which he intends to blast for both confinement and cohesion. The distance between charge holes in the pattern drilled into the rock is based upon the anticipated fragmentation radius around the drilled hole. Research in blasting seismology has determined that the degree of fragmentation extending into rock around a charge hole is a function of the rock elasticity. Highly elastic rock like the metasedimentary quartzite and pelite found in Saddleback Mountain will fracture approximately 25 times the radius of the bore hole which accommodates the explosive charge. The most commonly used diameter drill holes in rock blasting are between 2 and 4 inches. Therefore, the rock can be expected to break no more than 50 inches (slightly more than 4 feet) from the drill holes. During the blast event, the fragmentation is greatest between holes in the pattern and the side of the rock mass which is least confined. Conversely, fragmentation is least in the surrounding, remaining rock which has not been weakened with drill holes or relieved by prior excavation activity.

The distribution of the charge timing sequence is then planned according to the relative confinement of the rock within the blast area. Holes drilled into the shortest column of rock are most commonly at the edge of the excavation, are least confined and are timed to initiate first. The holes adjacent to the first hole(s) initiated within the pattern are timed immediately after, and subsequent layers of holes are initiated within the pattern to the deepest holes within the pattern being initiated last.

The timing mechanisms used to initiate the charges in the blast sequence are known as millisecond delay periods and are incorporated into all modern blasting caps. The blasting caps are most commonly manufactured in 25 millisecond delay intervals and the timing of the blasting cap between the time which an initiation signal is sent to the cap and the time which the cap detonates is coded on the leg wires of each cap for the blaster to plainly see. The blaster creates a written map of the delay sequence as part of his permanent blast report prior to placing charges. The caps are inserted into an explosive cartridge generically known as a primer, which is cap-sensitive dynamite, and the primer is lowered into the bottom of the charge hole by the leg wires, which are later tied to the initiation source, known as a blasting machine.

The primer is commonly filled over with a bulk explosive poured into the blast hole from a bag. The bulk explosive is known as a blasting agent and fills the hole to an elevation deep enough below the ground surface that the top of the hole can accommodate crushed stone known as stemming. The combination of the primer and the bulk explosive are collectively known as the explosive charge. The stemming confines the explosive charge in the bore hole so that the work energy of the explosive charge will be focused on fragmentation and heave of the rock surrounding the charge.

STANDARDS

The planning of the charge weights, spatial distribution and initiation sequence are integrated to determine what level of vibration can be expected from a blast. The most widely recognized document in the field of blasting seismology on the subject of damage potential from blast vibrations is the former United States Bureau of Mines Report of Investigations 8507 Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting (1980). This report recommends limits on ground motion which are based on levels of vibration which are insufficient to cause damage to the weakest of common construction materials, plaster on lath. The recommended limits are based on particle velocity (speed of particle oscillation) and the frequency of the oscillation. Frequency is expressed in cycles of oscillation per second (Hz). In the range of 2.7 - 40 Hz., or more, the particle velocity limits range from 0.50 inch per second to 2.00 inches per second. These limits apply to the most significant measurement on any one of three mutually perpendicular components of ground vibration; transverse, vertical or longitudinal (radial).

USBM RI 8507 provides extensive information on the prediction of peak particle velocity from a quantity known as scaled distance (SD). The scaled distance is the square root of the weight of the explosive charge, in pounds, initiated in any 8 millisecond period within a blast sequence divided into the distance, in feet, between the explosive charge and the nearest structure. The weight of explosive which can be contained in a bore hole varies from 1 to 2 pounds per foot of a 2 inch diameter bore hole to 4 to 8 pounds per foot in a 4 inch diameter hole. A four foot deep borehole requires at least 2 feet of stemming and the amount of stemming increases with the amount of overburden (soil) through which the bore hole is drilled, because the explosive charge can only be placed in direct contact with competent rock Therefore, the highest charge weight which could be anticipated in a 4 inch diameter, 14 foot borehole would be 96 pounds.

The blasting contractor calculates the maximum charge weight which can be detonated in any 8 millisecond period in a blast sequence based on the damage threshold for the weakest of common construction materials, plaster on lath, at the closest structure. To demonstrate the above procedure, a maximum charge weight of 96 pounds of explosive detonated in an 8 millisecond period within a blast sequence will yield a scaled distance of 79 at a distance of 775 feet. According to Figure 12 on page 17 of USBM RI 8507, the level of vibration that is associated with a scaled distance of 79 is only 0.15 inch per second. The same charge weight per 8 millisecond period at a distance of 500 feet would yield a scaled distance of 51, which would produce a peak particle velocity of less than 0.30 inch per second. This level would not be sufficient to cause damage to the most sensitive of common construction materials, plaster on lath.

The former United States Bureau of Mines commissioned a study on the effects of blasting on drinking water supply wells titled Survey of Blasting Effects on Ground Water Supplies in Appalachia, authored by Robertson, Gould, Straw and Dayton (1980). This study determined that vibrations as high as 5.44 inches per second did not produce any change in the water quality or quantity in wells which were part of the study. The wells included in the study were in the path of advancing surface mining activity which, in some cases, ultimately removed the earth in which the wells were drilled. The study also found that the levels of vibration were exponentially reduced with distance in the deeper portions of the wells relative to the expected decay of vibration with distance from the blast site at the surface.

In conclusion, there is no reason to believe that the anticipated blasting activities at the Saddleback Ridge Wind Project will cause damage to the mechanical workings or structural components of the surrounding water supply wells or any other structures. Modern blasting techniques are highly sophisticated, reliable and are routinely employed to safely excavate rock in close proximity to dwellings and water wells.

There is no reason to believe that the blasting activity at the Saddleback Ridge Wind Project will disturb the rock structure or composition in a manner that would result in the diminution of the quality or quantity of local drinking water supplies. The rock at Saddleback Mountain is a highly elastic, hard, ridge forming material which will not fracture outside the intended areas of rock excavation.

Respectfully Submitted,

Richard J. Groll

Richard J. Groll
Industrial Seismologist

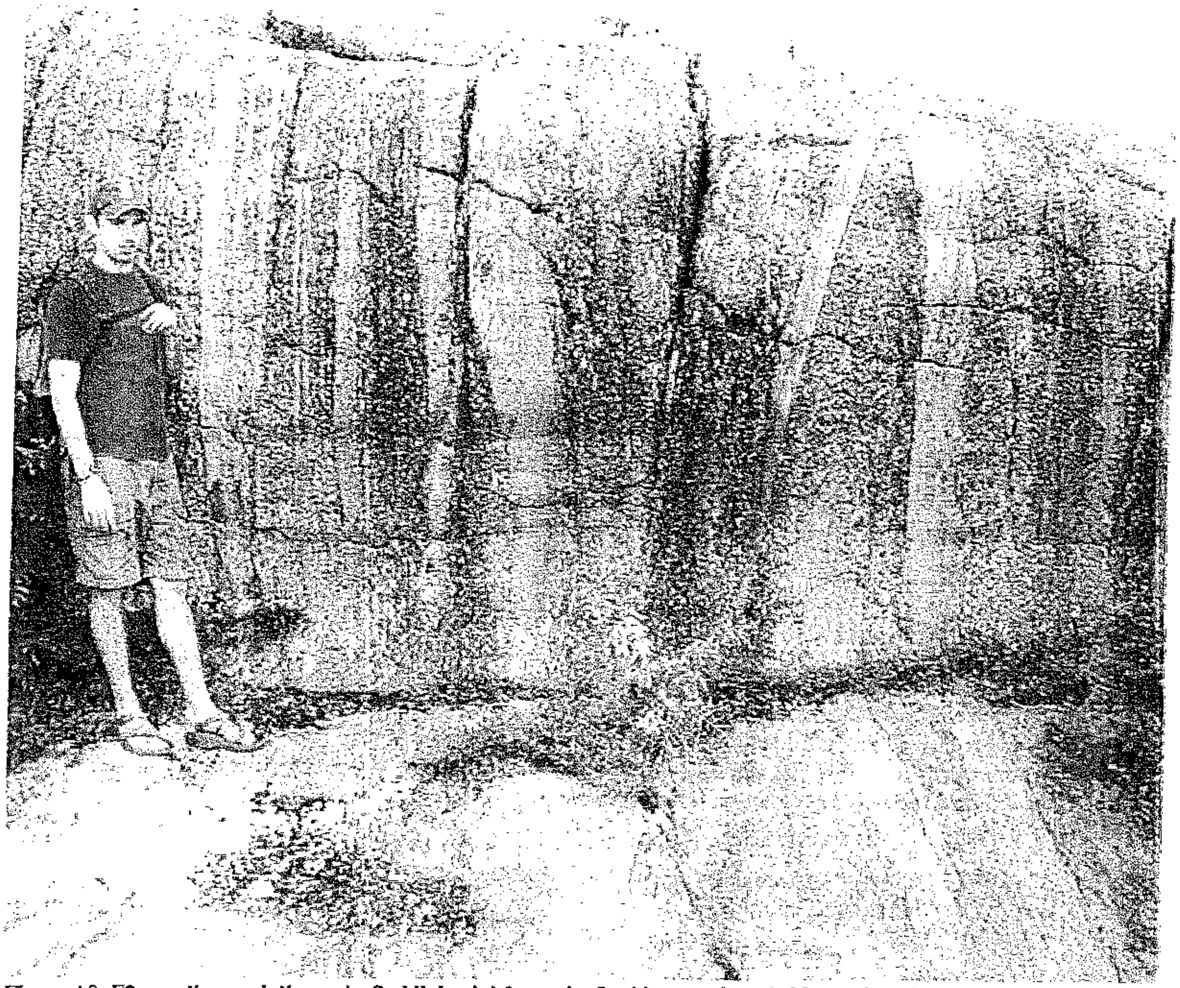


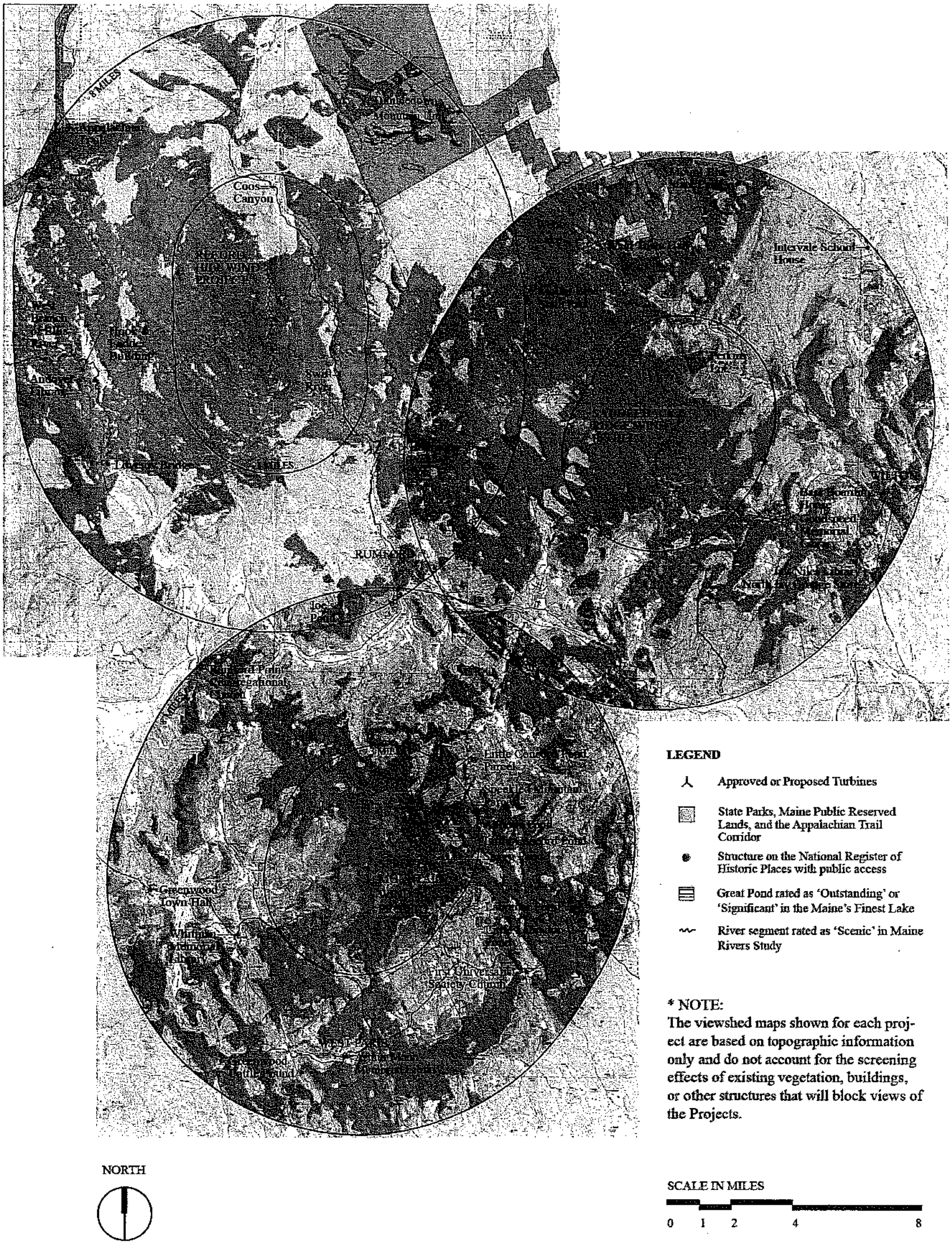
Figure 10. F2 syncline-anticline pair, Saddleback Mountain (looking northeast). Note thinned NW-topping limb.

limbs (Fig. 10). The orientation of the schistocity is quite constant, around 023, 80 NW. In several folds, schistocity is close to parallel to their axial planes (Fig. 9), but in the open folds much closer to the steeply-dipping, southeast-topping limbs. Near the summit, the schistocity is slightly refracted in the pelitic beds.

Several minor, pre-metamorphic faults offset beds on the order of 10-100 cm in a dextral sense (plan view and profile looking southwest [Fig. 11, 3-4 m to the right of shoulders]). The spatial distribution of quartz veins is very complex. Quartz veins are commonly present along subtle vertical faults and/or shear zones that truncate bedding at a low angle. Folded veins suggest that some of the movement pre-dates F2 folds. A swarm of quartz veins near the middle of the map area ("Quartz City") is a strong candidate for a fault or shear zone, however we have not been able to demonstrate truncation of strata. On the east shoulder of Saddleback Mountain (Fig. 13), a meter-wide vertical shear zone strikes northeast. Strata to the northwest are parallel, truncated strata to the southeast strike slightly clockwise, and quartz veins within the shear zone strike 20-30 degrees counterclockwise relative to the boundaries.

MAP A
Topography Only Viewshed Map*

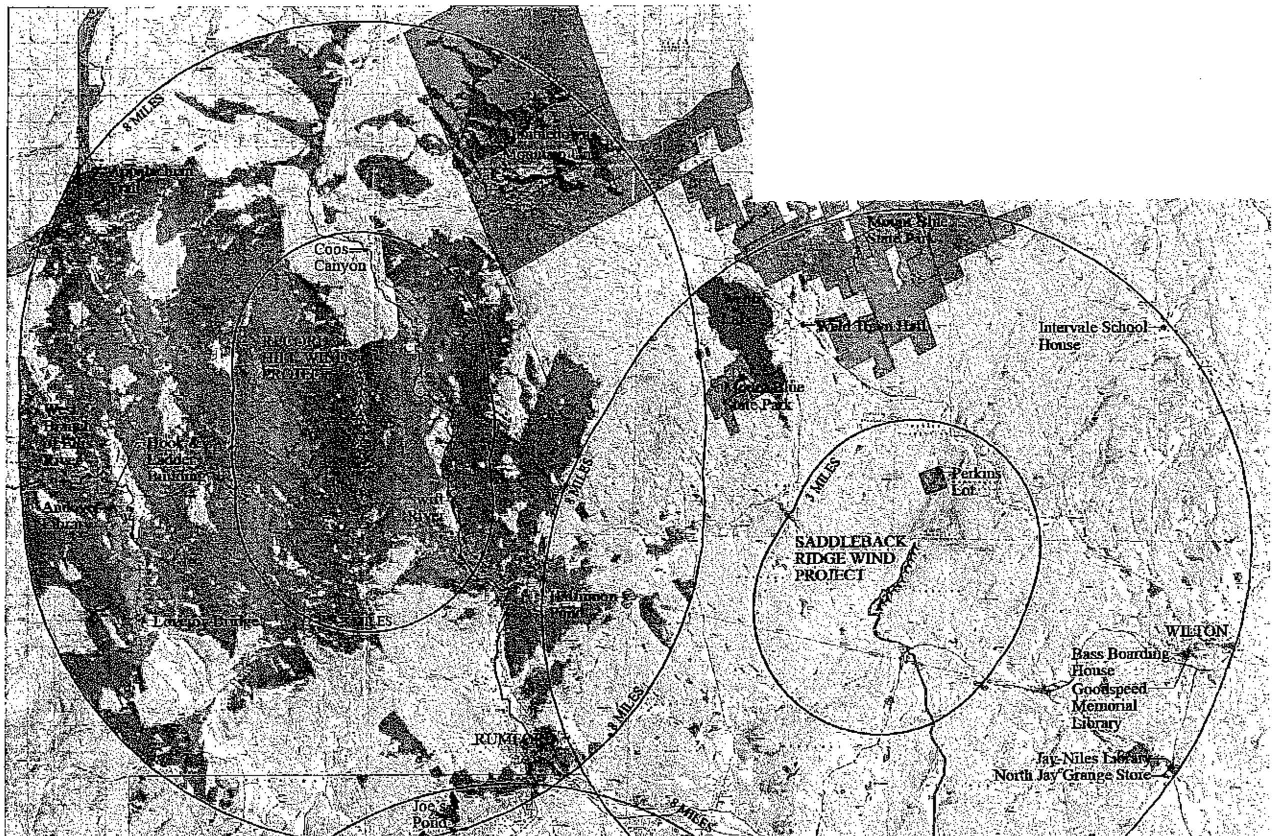
Scenic Resources of State or National Significance within 8 miles of the Saddleback Ridge Wind Project in Carthage, the Record Hill Wind Project in Roxbury, and the Spruce Mountain Wind Project in Woodstock.



* NOTE:
The viewshed maps shown for each project are based on topographic information only and do not account for the screening effects of existing vegetation, buildings, or other structures that will block views of the Projects.

MAP B
Partial Vegetative Landcover Viewshed Map*

Scenic Resources of State or National Significance within 8 miles of the Saddleback Ridge Wind Project in Carthage, the Record Hill Wind Project in Roxbury, and the Spruce Mountain Wind Project in Woodstock.



LEGEND

- Approved or Proposed Turbines
- State Parks, Maine Public Reserved Lands, and the Appalachian Trail Corridor
- Structure on the National Register of Historic Places with public access
- Great Pond rated as 'Outstanding' or 'Significant' in the Maine's Finest Lake
- River segment rated as 'Scenic' in Maine Rivers Study

* NOTE:
The viewshed maps shown for the Spruce Mountain Wind Project and the Saddleback Ridge Wind Project are based on Maine GIS vegetative landcover data. The viewshed for the Record Hill Wind Project is based on topographic information only and does not account for the screening effects of existing vegetation.

NORTH

SCALE IN MILES

0 1 2 4 8