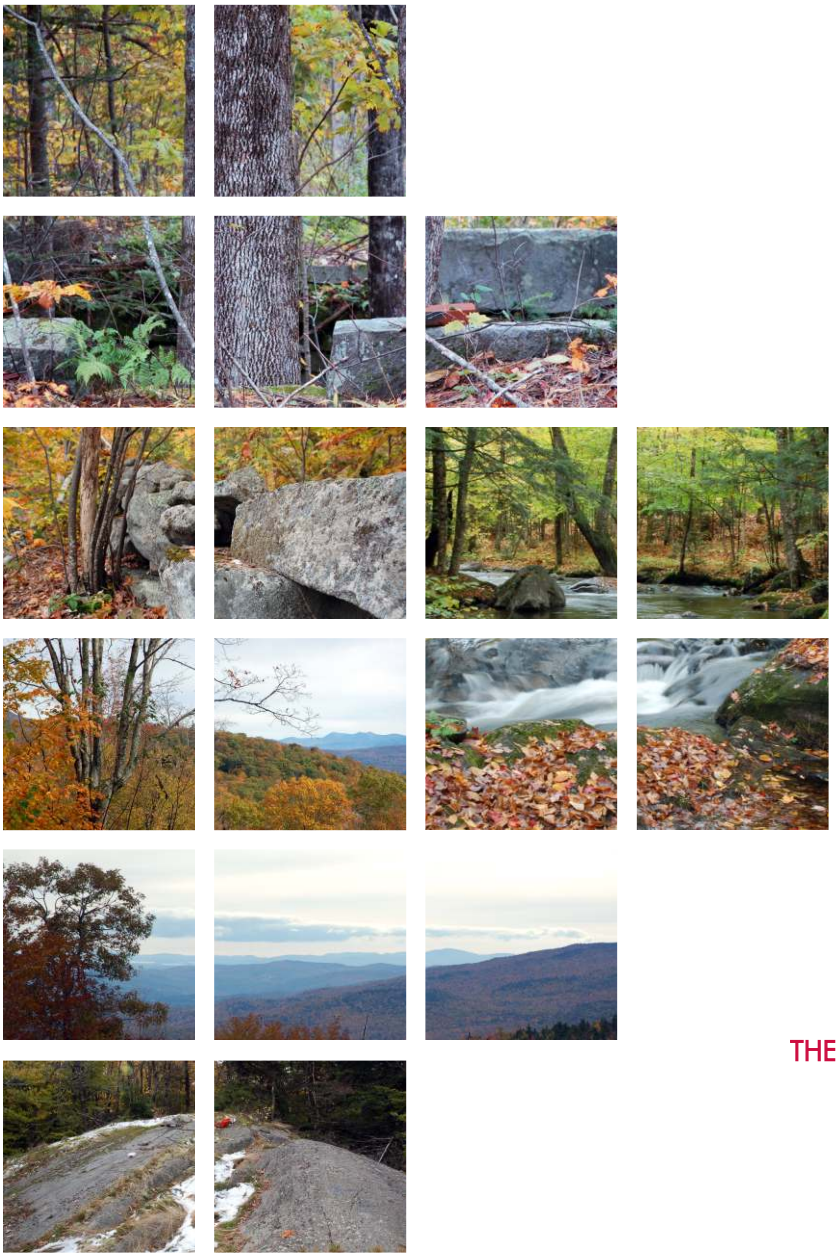
PHASE IA ARCHAEOLOGICAL SURVEY
GROTON WIND PROJECT

TOWN OF GROTON
GRAFTON COUNTY
NEW HAMPSHIRE



Submitted by:

THE Louis Berger Group, INC.
20 Corporate Woods Blvd.
Albany, New York 12211

Prepared for:

GROTON WIND, LLC
P.O. Box 326
Concord, New Hampshire 03302

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Abstract

The Louis Berger Group, Inc. (Berger), Albany, New York, has completed a Phase IA archaeological survey for the proposed Groton Wind Project in the Town of Groton, Grafton County, New Hampshire, on behalf of Groton Wind, LLC, a subsidiary of Iberdrola Renewables, of Portland, Oregon. The purpose of the survey was to identify and assess areas of archaeological sensitivity (or potential) and identify any archaeological sites in the area of potential effect (APE), which for this survey includes the project footprint, i.e., all parts of the proposed wind farm that will be subject to ground disturbance, including turbine construction, access road improvements and construction, substation and switchyard construction, and collection line installation, in addition to the existing Groton Hollow Road. This investigation was designed in accordance with guidelines issued by the New Hampshire Division of Historical Resources.

The proposed wind farm is located in the Town of Groton in a current private forestry and recreation area (hunting, mountain biking, and snowmobiling). Wind turbines will be placed along three ridgelines, and access roads will extend from the existing Groton Hollow Road 115 acres (46.54 hectares). Project components consist of 25 modern wind turbines and associated infrastructure, including gravel access roads, an Operations & Management Building, a permanent meteorological tower, a switching station, and overhead and underground collection lines. The wind farm is accessed via Groton Hollow Road off New Hampshire Route 25 (Moosilauke Road), with wind turbines situated along the north-south oriented ridges on Fletcher and Tenney mountains. Wind turbine locations extend to the upper reaches of the mountains, ranging in elevation from about 1,850 to 2,137 feet (565 to 652 meters). The wind farm lies in a rural, unpopulated setting and consists of variable terrain. Along the ridgelines where the proposed turbines are to be erected, the terrain is rugged with primarily moderate to steep slopes and thin, typically very stony, poorly drained soils, as well as outcrops of exposed bedrock.

The Phase IA archaeological survey consisted of background research and fieldwork, to gain an understanding of previous disturbances and cultural resource management projects in the area, identify and assess areas of archaeological sensitivity (or potential), and identify any extant archaeological sites in the APE. None were identified, but a single precontact period Native American archaeological site and 55 historical archaeological sites were identified within a 3-mile (4.8-kilometer) radius of the APE. Overall, the APE is considered to possess a low probability to contain precontact archaeological resources; however, some areas are considered worth investigating for precontact resources in order to test the predictive model against the possibility of locating small upland sites. Particular areas of the APE were identified as possessing a moderate to high potential to contain historical archaeological resources based on the presence of map-documented structures and extant cut-stone foundations adjacent to the APE, as well as known historic archaeological sites in the vicinity of the APE. Based on the results of this survey, it is Berger's opinion that a Phase IB archaeological survey is warranted for the Groton Wind Project.

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I. Introduction

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Project components consist of 25 wind turbines and associated infrastructure. It is estimated that the project footprint measures 115 acres (46.54 hectares). The Groton Wind Project will be accessed from the existing Groton Hollow Road, off Route 25 (Moosilauke Road) in Rumney. Approximately the first 2 miles (3.2 kilometers) of Groton Hollow Road, also referred to as the primary access road, is an existing roadway and will not be improved upon. Where the road continues as a narrow, gravel "logging" road, for the purposes of this report it is considered to be a new road because improvements will be made to that section. The new/improved portion of the primary access road will be approximately 11 miles (17.7 kilometers) long; the entire primary access road will measure between 16 and 22 feet (4.9 and 6.7 meters) wide for construction and operations. In contrast, the ridgeline access roads will be new construction with a 38-foot (11.6-meter) wide area allocated for construction disturbance and an operational width of 18 feet (5.5 meters). The crane pads for the proposed turbine sites will each be allocated an area measuring 60x90 feet (18x27 meters), or 5,400 square feet (483 square meters). Close to where the primary access road changes from existing to new is the location of the proposed Operations and Management Building (O&M Building), Switchyard, and Parking and Laydown Area. The O&M Building measures 4,000 square feet (371.6 square meters), the switchyard measures 0.5 acres (0.2 hectares), and the fenced in parking and laydown area measures 1.0 acre (0.5 hectares). A laydown/staging area has also been proposed near the end of the primary access road (see Figures 1-3). The collection line system will operate as an underground system on the ridgelines and an overhead system from the ridges down to the primary access road.

A. Project Area Location

The Groton Wind Project is proposed for installation in the south-central portion of Grafton County. The wind farm is accessed via Groton Hollow Road off New Hampshire Route 25 (Moosilauke Road), with wind turbines situated along three north-south oriented ridges on Fletcher and Tenney mountains and access roads extending to the existing Groton Hollow Road in the valley below the ridge features. The northern and western turbine strings will each contain six turbines (N1-N6, W1-W6) across two separate ridgelines on Fletcher Mountain, and the eastern turbine string will contain 13 turbines (E1-E13) across a ridgeline on Tenney Mountain (see Figures 1-3).

Wind turbine locations extend to the upper reaches of the mountains and range in elevation from about 1,850 to 2,137 feet (565 to 652 meters). The wind farm lies in a rural, unpopulated setting and consists of variable terrain. Along the ridgelines where the proposed turbines are to be erected, the terrain is rugged with primarily moderate to steep slopes and thin, typically very stony, poorly drained soils, as well as outcrops of exposed bedrock. The wind farm is located in a current private forestry and recreation area (hunting, mountain biking and snowmobiling). The mountain's lower slopes are intensively harvested.

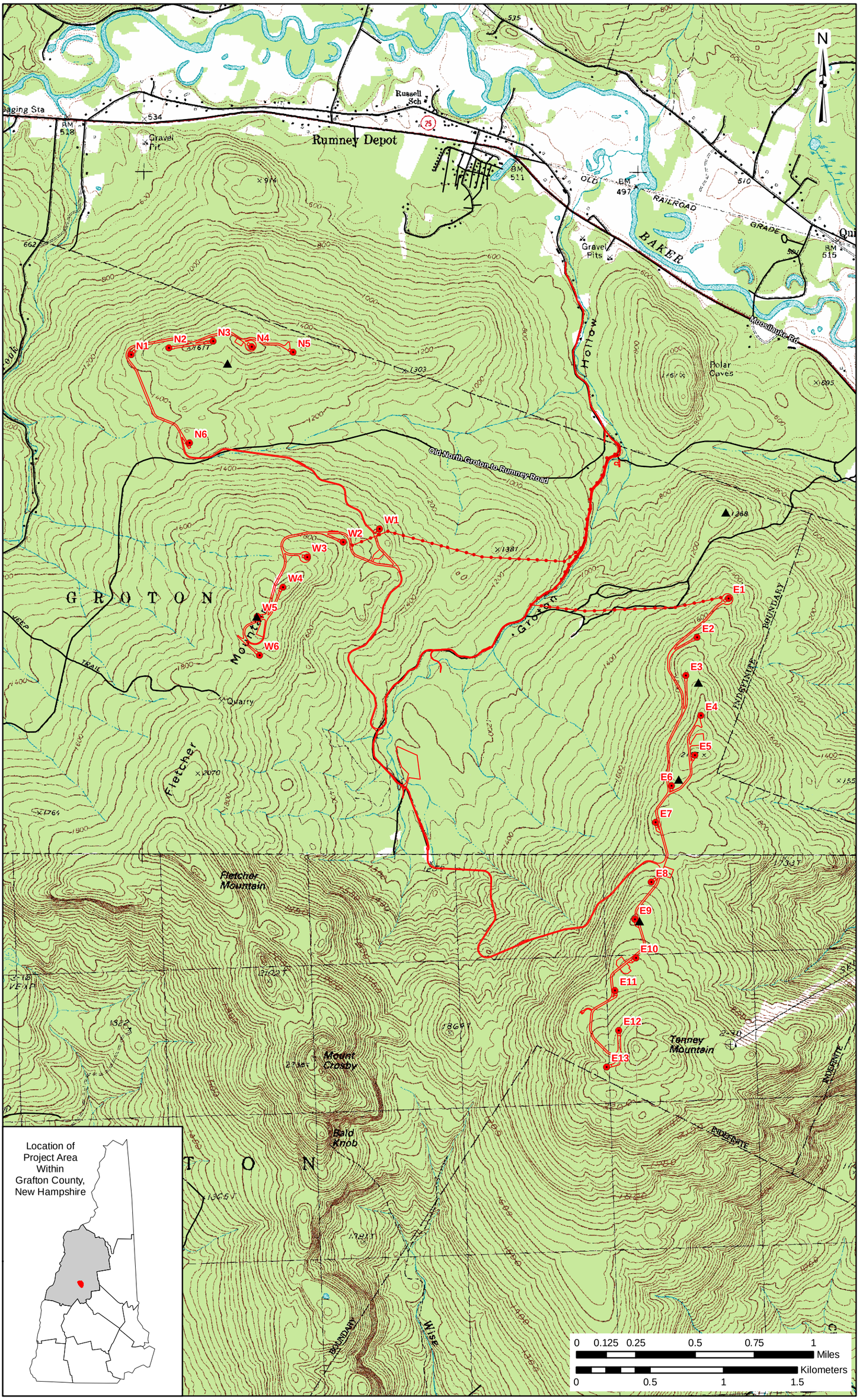

FIGURE 1: Location of Project Area

SOURCE: Iberdrola 2009; USGS 1973, 1987

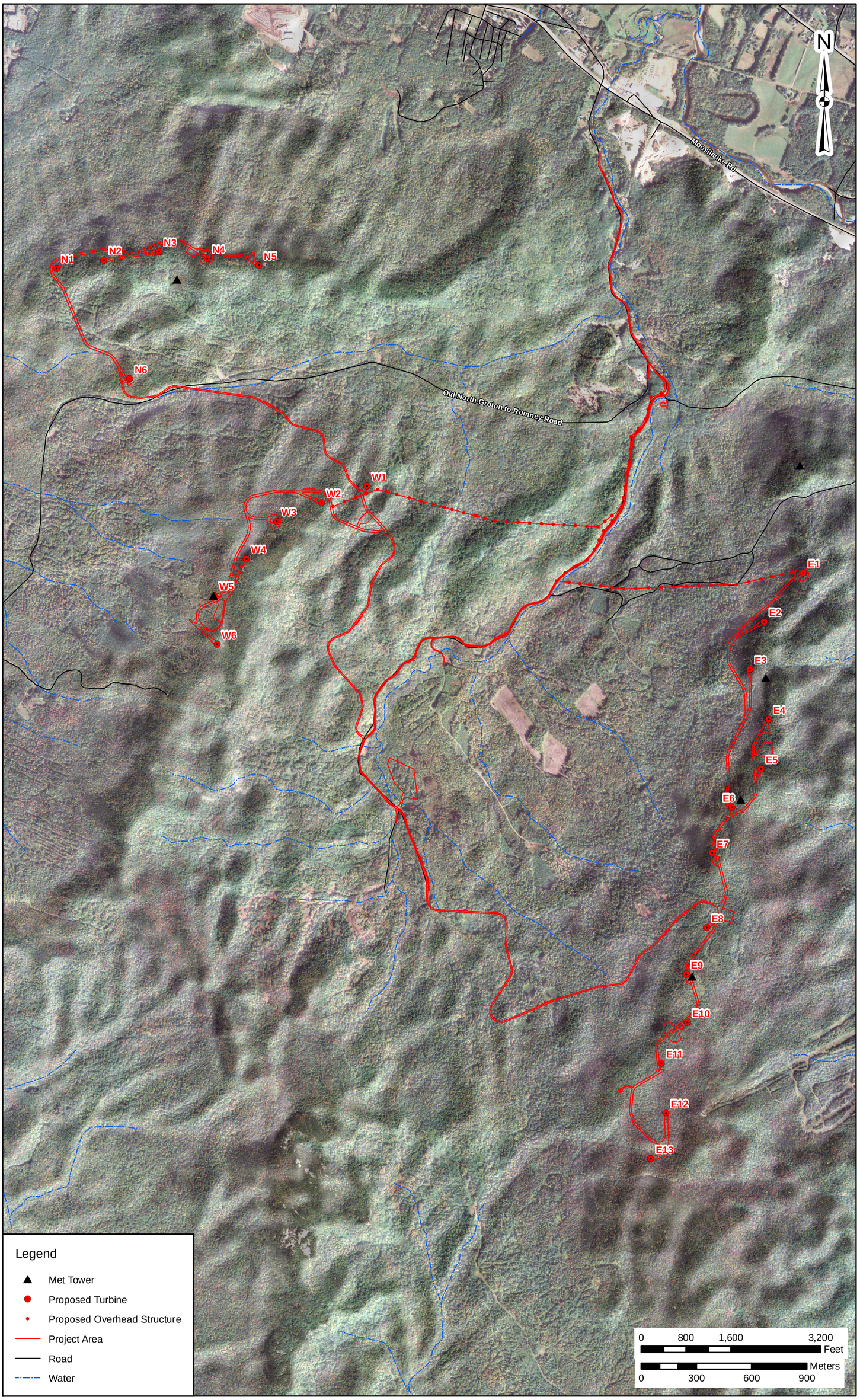

FIGURE 2: Aerial View of Project Area

SOURCE: ESRI 2008; Geospatial Data Gateway 2006; GRANIT 2009; Iberdrola 2009; WebGIS 2009

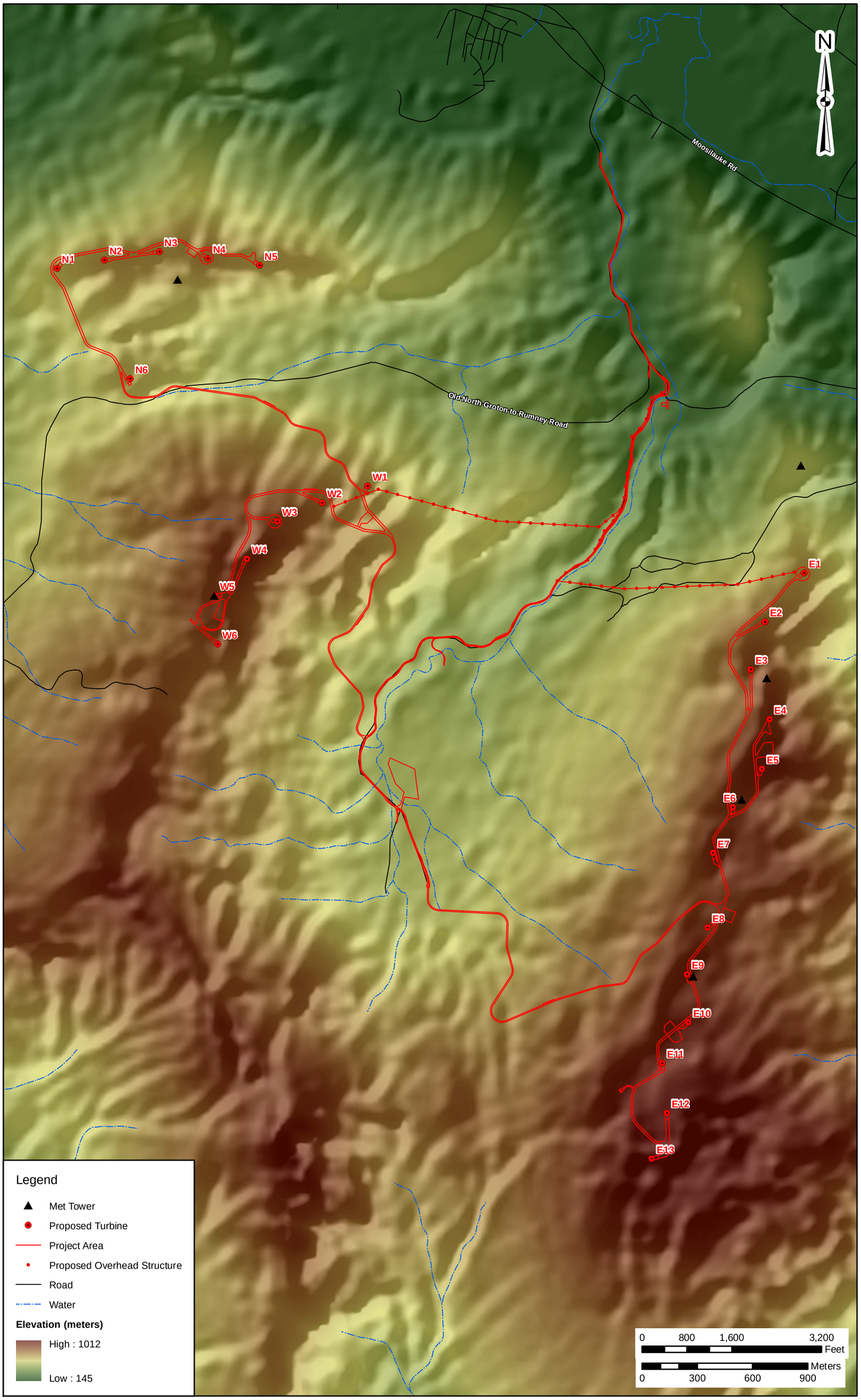

FIGURE 3: Topographic Relief View of Project Area

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; WebGIS 2009

The Tenney Mountain Ski Area is located less than 0.5 miles (0.8 kilometers) southeast of the wind farm area on Tenney Mountain.

B. Scope of Services

The objective of the survey was to identify and assess areas of archaeological sensitivity (or potential) and identify any extant archaeological sites in the APE. The survey included background research and fieldwork.

Berger conducted the Phase IA investigation research in October and November 2009. The goal of the first part of the research was to assess the potential for cultural resources in the APE. This research included a review of archaeological site files at the NH DHR in Concord and of previous cultural resource management projects conducted in this region of Grafton County. Additional research was conducted on the environmental and cultural context of the region, in particular as it relates to the APE.

The Phase IA investigation included two project area visits, with the goal of completing a pedestrian and windshield survey of the entire APE. Berger conducted a windshield survey of the primary access road on October 9, 2009, including a reconnaissance of the existing Groton Hollow Road and continuing along the existing gravel road to just north of where it will connect to the proposed eastern ridgeline access road (see Figures 1-3). Berger conducted a walkover of the APE between October 14 and 16, including the proposed ridgeline roads, all proposed turbine locations, laydown areas, and the O&M Building and switchyard. Field inspections were also conducted along parts of the primary access road that had appeared archaeologically sensitive based on the presence of map-documented structures (MDS), stone walls, and environmental variables such as stream crossings and level terrain. The alignment of the collection system was not known at the time of the fieldwork; however, an archaeological sensitivity assessment of those areas is provided based on the background research, and pedestrian survey of the collection lines is therefore recommended as a first stage in the Phase IB investigation.

All cultural resource services were performed using the professional guidelines and standards set forth in the Procedures for the Protection of Historic and Cultural Properties (36 CFR 800) and the Procedures for Determining Site Eligibility for the National Register of Historic Places (36 CFR 60 and 63). This investigation also conformed to the Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 *Federal Register* 44716) (U.S. Department of the Interior 1983) and *Archaeological Standards and Guidelines* (New Hampshire Division of Historic Resources [NH DHR] 2007). The cultural resource specialists who performed this work satisfy the Secretary of the Interior's Professional Qualifications standards as specified in 36 CFR 66.3(6) (2).

This report has been organized into five chapters. After the introduction, Chapter II summarizes the results of the background research conducted for this project. Chapter III describes the methods and results of the archaeological investigations. Chapter IV provides a summary and recommendations. Chapter V contains a list of the references cited.

Berger Assistant Director for Cultural Resources and Senior Archaeologist Hope E. Luhman, Ph.D., directed this survey. Berger Archaeologist Mark Penney conducted background research at the NH DHR and was assisted by Berger Architectural Historian Dr. Steve Bedford in completing additional background research. Mr. Penney conducted the field survey of the project area, assisted by Berger Field Archaeologist Shawn Dennis. Mr. Penney was the Principal Investigator and authored the report with contributions from Dr. Luhman and Mr. Bedford. Senior Editor Anne Moiseev supervised the editing and production of the report, and Principal Draftsperson Jacqueline L. Horsford completed the graphics.

II. Background Research

A. Introduction

The background research for the Phase IA survey of the Groton Wind Project included general environmental, cultural, and historical research, and examination of archaeological site files at the NH DHR in Concord, cultural resource management reports, and published archaeological articles from the region. The prehistory and history of the region were reviewed in order to understand the project area's historical background and provide a context on which to base the sensitivity assessment. Information on earlier archaeological surveys and types and locations of previously recorded archaeological sites in the project vicinity were used as a guide for determining site sensitivity and expected site types in the wind farm APE.

B. Environmental Context

1. General Project Area Setting

The Groton Wind Project lies within the New England Upland physiographic province of the Appalachian Highlands. The New England Upland physiographic province covers the southern portion of New Hampshire west of the Seaboard Lowland province. Elevations in the New England Upland physiographic province range between 500 and 2,000 feet (152 and 610 meters) above mean sea level, and the province consists of a central spine that runs north-south, separating streams that flow southwest into the Connecticut and east into the Merrimack. The project area lies entirely along the western side of this spine. Numerous isolated hills and mountains dot the province, including Mount Monadnock, and stream valleys deeply dissect the landscape.

The project's proposed turbine strings and ridgeline access roads are situated over a combination of rugged and steeply sloped ridgelines, and the primary access road is located in a valley, or "hollow," set between the ridgelines. The primary access road, which begins as Groton Hollow Road, passes through a sparsely populated community of extant structures before continually rising in elevation as it travels south through the hollow. Some sections of the road are quite sloped and cut into the steep hillside high above Clark Brook. There are also areas of more gradual and level terrain that are adjacent to Clark Brook and some of the other drainages. Clark Brook, a tributary of the Baker River, flows adjacent to the primary access road, weaving at various distances and elevations from the APE throughout its course. Some small, unnamed drainages flow down to Clark Brook from the Tenney Mountain ridgeline. The Baker River, the main tributary of the Pemigewasset River, flows north of the APE through Rumney.

The predominant soil associations in APE consist of steep and stony soils, especially across the ridgelines where there are vast areas of rock outcrops (Table 1). For instance, the hilly northern ridgeline contains steep Becket-Lyman-Rock outcrop complex between 15 and 60 percent slopes. The western ridgeline also contains large areas of Becket-Lyman-Rock outcrop with greater than 25 percent slopes, in addition to hilly and very stony Becket-Turnbridge association soils (U.S. Department of Agriculture-National Resource Conservation Service [USDA-NRCS] 2009).

The remainder of the APE, away from the ridgelines, consists of the primary access road, laydown area, and the switchyard and O&M Building. In these areas the soil characteristics are different. The laydown area at the southern end of the primary access road consists of undulating Monadnock-Hermon stony soils. To the north along the primary access road is a fairly level area where soils are predominantly gently to moderately sloping and very stony Beckett-Skerry soils. Along most of the northern portion of

the primary access road, soils are predominantly very stony, steep Becket-Monadnock soils (USDA-NRCS 2009). The eastern ridgeline exhibits a slightly more complex array of soil associations. Two rock outcrops were recorded, hilly and steep Becket-Lyman-Rock outcrop and Marlow-Lyman Rock outcrop. On the eastern ridgeline the predominant types are steep, very stony Becket-Monadnock association soils, along with steep and very stony Marlow-Turnbridge association soils. The soils throughout the APE are too steep and stony for most farming, community development, and recreation, with the exception of some areas along the primary access road.

TABLE 1

SOILS IN THE PROJECT APE

NAME	RELATIVE DEPTH	SOIL FORMATION	TEXTURE, INCLUSIONS	SLOPE (%)	DRAINAGE
Beckett-Lyman Rock outcrop	N/A	N/A	N/A	15-60	N/A
Beckett-Monadnock	Very deep	Loamy mantle overlying dense, sandy till on glaciated uplands	Very stony	3-25	Moderately well drained
Beckett-Skerry	Very deep	Loamy mantle overlying dense, sandy till on glaciated uplands	Very stony	15-60	Moderately well drained
Beckett-Turnbridge	Very deep	Loamy mantle overlying dense, sandy till on glaciated uplands	Very stony	15-60	Moderately well drained
Marlow-Lyman Rock outcrop	N/A	N/A	N/A	15-60	N/A
Marlow-Turnbridge	Moderately deep	Loamy till on glaciated uplands	Extremely Bouldery	15-60	Well to excessively drained
Monadnock-Hermon	Very deep	Loamy mantle overlying sandy glacial till on uplands and mountain side slopes	Very stony	3-15	Well to excessively drained

Source: USDA-NRCS (2009)

2. Environmental History

Paleoecologists have constructed the environmental history of New Hampshire and New England from a variety of sources, including pollen cores, sedimentation histories, and faunal collections. New Hampshire was largely deglaciated by 13,000 years before present (BP), although the mountain valleys were probably not free of ice for another 1,000 years (Potter 1994). Glacial Lake Hitchcock had drained probably by 13,000 BP, revealing today's Connecticut River valley. As the glaciers retreated north, they continued to affect climate for thousands of years, producing a wet and cold arctic climate, leaving the ground frozen for most of the year. Vegetation in the wake of the glaciers consisted of moss, lichens, and stunted shrubs. Fauna during this period likely included wooly mammoths, mastodons, moose, elk, herds of caribou, musk ox, and smaller arctic animals, such as ptarmigan, arctic shrews, and lemmings.

By 10,000 BP and the beginning of the Holocene, the climate was warming and tree populations of pine, spruce, and birch expanded, changing the landscape from open woodland to closed forest (Potter 1994). Between 9000 and 4000 BP, the climate in general became warmer and dryer, and the modern forest of hemlock, beech, and yellow birch developed, although with much local variation (Potter 1994). These changes led to growth in the populations of many animals that today live in the Northeast, including

moose, beaver, lynx, porcupine, snowshoe rabbit, spruce grouse, mice, voles, and other animals that likely came in from the south.

Different strands of evidence from the Upper Midwest and the wider Northeast reveal that between 7500 and 5300 BP, precipitation was higher than today, and the climate was fairly warm. Along the Missisquoi River to the northwest in Vermont, evidence of rapid sedimentation and increased channel migration between 6500 and 5400 BP indicates a higher level of rainfall. Other evidence of a wetter environment includes high rates of hemlock and beech pollen deposition, as well as beech, cedar, maple, and hemlock logs found along the Missisquoi floodplain that date to this time period (COHMAP Members 1988; Thomas and Dillon 1983).

In general, rivers in New England between 10,000 and 7000 BP meandered widely and did not reach their present channels until after isostatic rebound from the receding glaciers (Potter 1994). Evidence of drier conditions after the sixth millennium BP includes the entrenchment and infrequent flooding of rivers in the upper Midwest (Thompson and Bettis 1982). The climate was probably between two and four degrees centigrade warmer than today (Dincauze 1989). After 5000 BP the quantity of hemlock went into steep decline and the amount of oak and hickory increased (Whitehead and Bentley 1963), also indicating drier conditions.

Temperatures likely became cooler after about 2800 BP, and precipitation probably increased until about AD 270. These changes led to greater quantities of spruce and fir at higher elevations and a general increase in pine in the lowlands (Bernabo and Webb 1977; Whitehead and Bentley 1963). Warmer temperatures then returned during the first millennium AD, with a rise in precipitation after about AD 750 (Swain 1978). Most of the state is now reforested; original timber stands over much of the state were cut in the nineteenth century.

C. Cultural Context

Archaeologists in New Hampshire have identified four major periods covering the more than 10 millennia of Native American occupation and settlement of the region before European settlement (Bunker 1994:20-21): Paleoindian, Archaic, Woodland, and Contact. Further subdivisions exist for each of these periods.

1. Paleoindian Period (11,000 to 9000 BP)

The earliest known human occupations of New Hampshire date to the Paleoindian period. These occupations are marked by the widespread use of narrow, unnotched spearpoints, the faces of which were typically marked by the removal of a single long flake, or flute. Projectile points of this period broadly resemble the Clovis point type, which was a key diagnostic element of the first Paleoindian tradition defined in the western United States. In the past two decades archaeologists in northern New England have begun to recognize that a later manifestation of Paleoindian culture also occurred in the region, characterized by an unfluted lanceolate projectile point. This point is somewhat analogous to those from the Plano tradition of the later Paleoindian period in the western United States. The recognition of fluted point and unfluted lanceolate point assemblages in northern New England has led archaeologists recently to divide the Paleoindian period into early and late subperiods (Curran 1994). In addition to fluted points, the stone technologies of these groups consisted of a flake-based toolkit with general categories of wide- and narrow-bit unifacial tools, unifacial gravers, utilized flakes, bipolar artifacts, and large bifaces.

There are eight recorded Paleoindian sites at five locations in or near the White Mountains, north of the APE in Coos County (Boisvert 1998, 1999). One site in particular, the Mt. Jasper Lithic Source near the

confluence of the Androscoggin and Dead rivers in the city of Berlin, New Hampshire, has been recognized for some time, and Mt. Jasper rhyolite has been documented at Paleoindian sites in nearby Jefferson, New Hampshire.

People during the Paleoindian period in the Northeast probably preferred bedrock lithic sources as opposed to secondary cobble, and this lithic procurement strategy may have been driven, in part, by the design requirements of their highly transportable stone toolkits. Locations of raw material sources for Paleoindian stone toolkits are often many kilometers distant from the sites where these tools are recovered. These distances indicate that people in the Northeast traveled far to collect stone for tool making either during their seasonal movements or as part of trips made specifically to gather new supplies of lithic materials (Seeman 1994).

Disagreement exists over whether people at the end of the Pleistocene in the Northeast were specialists following herds of caribou, or generalists living off a diverse environment, collecting and hunting a wide range of resources (Dincauze and Curran 1983; Pelletier and Robinson 2005). More than likely the reality varied over time and across space, and was a question not of specialist versus generalist but rather of degree and scale. As specialists people likely gathered together in larger, multifamily settlements at key times of the year along strategic intercept points to hunt caribou. These larger aggregations then split up into smaller groups and moved widely across the landscape. As generalists the people of the Paleoindian period may have moved in small family-sized groups, mapping their movements to the availability of resources.

2. Archaic Period (9000 to 3000 BP)

Archaeologists call the period beginning 9,000 years ago following the end of the Pleistocene and the beginning of the Holocene the Archaic period. They further subdivide the Archaic into at least three subperiods, Early (9000 to 7500 BP), Middle (7500 to 6000 BP), and Late (6000 to 3000 BP), largely based on changes in projectile point styles.

In the past archaeologists generalized the environment of the early Holocene (Early and Middle Archaic) in the Northeast as closed woodlands dominated by conifers (Dincauze and Mulholland 1977; Fitting 1968, Ritchie 1980). Since a low carrying capacity characterizes such an environment, they hypothesized there was a low population until about 6,000 years ago, which resulted in low site density. More recently archaeologists have questioned this understanding. George Nicholas (1991a, 1991b, 1998) cites evidence that the landscape in the early Holocene was far more diverse, supporting a broader resource base than that characterized by a closed conifer forest environment. According to Nicholas's "glacial lake basin mosaic model" (1991a, 1991b, 1998), people took advantage of a highly productive ecosystem that contained a complex system of lakes, ponds, and wetlands.

Robinson and Petersen (1993) cite the problems encountered with trying to attach changing demographics to known frequencies of temporally diagnostic projectile points. Since earlier archaeologists did not find many sites with temporally diagnostic points in early Holocene contexts, they assumed that this meant that there were few people and that the region was fairly uninhabited. Robinson and Petersen (1993) further observe that the lithic technology recovered from known early Holocene components was typically very expedient, resulting in the production of few temporally diagnostic formal artifacts, such as projectile points. Assemblages from these sites consist mostly of flakes, and as a result many of the components dating to this time period have likely gone unrecognized. Furthermore, it is possible that many sites from the Early and Middle Archaic now lie deep beneath river floodplains (Vermont Division for Historic Preservation [VT DHP] 1991:5-1).

The combination of environmental and technological changes during the transition to the Early Archaic may indicate an increase in the importance of plant foods and shifts in the exploitation of certain terrestrial fauna, such as the hunting of deer rather than caribou. As opposed to the Paleoindian use of high-quality cherts brought long distances before discard, evidence from early Holocene sites indicates a change to the use of local chert, quartzite, and quartz during the Early Archaic. The change is likely the result of people living in far more restricted areas than their Paleoindian period ancestors, as well as a lack of widespread external contacts (VT DHP 1991:5-6). Archaeologists have long thought that people remained within these more restricted territories, spending significant portions of the year in larger base camps while also using smaller, more task-specific camps in the surrounding area (Snow 1980:171).

The number of known sites, as well as diagnostic artifact types and projectile points, dating to the Late Archaic (6000 to 3000 BP) is far greater throughout the Northeast than for any of the preceding periods. There is also greater evidence of the use of mortuary ceremonialism. Archaeologists have traditionally characterized the Late Archaic in the Northeast into three basic traditions based on these numerous changing artifact types. The first of these, the Laurentian tradition, is thought to date between about 5600 to 4400 BP and is known from sites throughout the Northeast, including New York, southern Ontario, southern Quebec, and northern New England. The Narrow Point tradition follows the Laurentian and dates roughly between 4400 and 3600 BP. Archaeologists have found artifacts associated with this tradition along the East Coast from as far south as North Carolina and as far north as the Upper St. Lawrence River. The Susquehanna tradition dates to about 3800 to 1800 BP. It is thought that traits associated with this tradition were brought north from the Southeastern Piedmont to as far north as Maine and the Upper St. Lawrence.

These traditions differ from each other based largely on changing artifact traits; however, Dean Snow (1980) and others (e.g., Braun and Braun 1994) geographically split the Northeast during the Late Archaic into three very general sections, based on broad generalizations about adaptations to major regional environments. The Maritime Archaic lay in the coastal regions of northern New England and the Canadian Maritimes and is defined as an adaptation based on the resources of the ocean. The Lake Forest Archaic stretched from the Eastern Great Lakes across northern New England. Snow (1980) believes that the people of the Lake Forest Archaic lived around the many lakes and rivers found in the region. The Mast Forest Archaic ran from the coastal plains of southern New England into the oak forests of the interior. Here people are thought to have made use of the abundant nut-bearing deciduous trees in the region. Although these models are useful in a very general sense, they are also problematic because they mask much of the potential for variation across the Northeast.

Our understanding of the lives people led in the Northeast is largely shaped by where the vast majority of archaeologists have worked along the great rivers of the region, including the Connecticut, the Hudson, and the Merrimack. Thousands of years ago, people migrated to these rivers each spring to take advantage of the abundant annual migrations of anadromous fish. Each spring these fish swam far up the rivers and their tributaries to spawn until stopped by falls. They created a plentiful food resource for people at the leanest time of year, when the winter stocks were empty. These large groups of people likely stayed together throughout much of the warm-weather months, splintering off periodically to hunt, gather different food, and collect other needed resources. There is ample archaeological evidence along the floodplains of large rivers in much of the Northeast of these large gatherings at so-called “base camps.” With the onset of the cold weather, people are thought to have splintered into smaller groups, likely extended families, and moved inland away from the river. Ritchie and Funk (1973:340) define this pattern of small groups of hunter-gatherers aggregating during the spring and then splintering in the fall as the “central-based wandering” pattern.

3. Woodland Period (3000 BP to AD 1600)

As with the Archaic period, the Woodland period is also subdivided into three periods, Early (3000 to 2000 BP), Middle (2000 to 1000 BP), and Late (1000 BP to AD 1600), largely based on the presence or absence of different projectile point types. The Woodland period, however, is distinctive from the Archaic because of the introduction of ceramic technology. Changes in ceramic types provide an additional means for separating the Woodland period into subperiods.

Evidence of the use of ceramics in the Northeast dates to the Early Woodland about 3,000 years ago, with the earliest dates in New Hampshire coming from the Beaver Meadow Brook and Eddy sites in the Merrimack Valley (Bunker 1994:23). With ceramic technology people could create highly durable containers that provided waterproof storage and could withstand the rigors of cooking with direct heat. These changes in cooking may have affected the nutrition and population dynamics of Woodland groups. Ceramics also enhanced the capability to store food, which likely helped offset seasonal changes in the availability of different foods and made it possible for people to become more sedentary. Despite the possibilities presented by this new technology, there is little evidence of any profound changes in life across New Hampshire after 3000 BP, and the Archaic period use of riverine environments remained the overall focus of the Early Woodland period (Bunker 1994).

Victoria Kenyon (1982) interprets the variability in ceramic decoration within sites and the similarities in decorative patterns between sites as evidence of increased regionalism during the Middle Woodland in the Amoskeag area of New Hampshire. Many sites dating to this period are large sites on large waterways; fewer Middle Woodland sites are known on smaller streams. These changes may indicate less of the "central-based wandering" patterns that were common for millennia in the past, perhaps further indicating increased regionalism. Middle Woodland sites in the Merrimack River valley of New Hampshire include the Neville, Smyth, Garvins Falls, Beaver Meadow Brook, and Smolt (Kenyon 1983) sites.

Throughout the Northeast the Late Woodland period is associated with the introduction of horticulture, particularly the importation of domesticated maize, but it is more than likely that maize did not appear in New England until after about AD 1300 (Chilton 2006), several centuries after the Iroquois to the west had adopted it and made it a key component in their development of large permanent villages. Although maize was eventually adopted in New Hampshire and elsewhere in New England, there is little evidence of development of large sedentary villages based on maize horticulture as in New York (c.f., Petersen and Cowie 2002). Rather, archaeological evidence indicates that people remained mobile hunter-gatherers, using maize only as a dietary supplement, therefore becoming what Elizabeth Chilton (2002) has called mobile farmers because although they planted, they did not become sedentary farmers like the Iroquois.

4. Contact Period (AD 1600 to 1750)

The Contact period began with the colonization of New England by Europeans. Native American sites associated with this period are characterized by the presence of materials that are European in origin, often reworked to fit traditional Native American needs. Increasing pressure from European settlers, wars, and diseases forced Native Americans to move into more isolated but less advantageous locations, such as hilltops. Those Native American settlements of the Late Woodland and early Contact periods in the choicest locations along the rivers, such as falls, became prime sites for European settlement.

The lack of documented Contact period sites is primarily the result of expanding European settlement in the area. Beginning in the early 1600s, European exploration and immigration in New England resulted in the spread of disease and war throughout the region. Population estimates suggest that, prior to an epidemic spread of European diseases in the 1670s, approximately 25,000 to 30,000 Native Americans

may have been living in the major drainage areas of New Hampshire (Stewart-Smith 1994). While large numbers of Native Americans died during these epidemics, European immigrants continued moving into the valley and establishing settlements.

In the late seventeenth and early eighteenth centuries, hostilities and armed conflicts between natives and European settlers continued in northern New England. After repeated attacks on native communities in the region during the 1720s by militia groups from southern New England, these settlements tended to become small and dispersed into more remote areas of the White Mountains and upper Connecticut Valley regions (Bunker et al. 1995:9).

Because intact Contact period sites are rare in the White Mountains region, the discovery of such sites would provide valuable information on settlement patterns of Native American peoples in the region and on the movement of Native American peoples out of the region. Background research for this project included review of the map, *Historic Indian Trails of New Hampshire* (Price 1967); although no trails cross the APE, they do follow major waterways nearby. For instance, the confluence of the Baker and Pemigewasset rivers is strategically situated in relation to four significant Native American trails: the *Asuamchumaukee, Wobankedenok, Kankamangus,* and *Pemmigewasset* (Figure 4) (Price 1967). There is, however, a low probability that intact Contact period sites are located within the proposed wind farm.

D. Historic Context

Grafton County, originally known as "The Fifth," was established by the colonial legislature on March 19, 1771, and named after Augustus Henry Fitzroy, Duke of Grafton. Grafton was originally an immense tract of land, extending 150 miles south from what is now the province of Quebec, Canada. Over time the county was divided. In November 1800 Burton [later known as Albany] was ceded to Strafford County. In December 1803 the northern half of Grafton County was made into Coos County. On June 18, 1805, the country was reduced once again by the cession of "Nash and Sawyer's Location" to Coos. The legislature finally fixed the boundaries of the county at their present locations on January 2, 1829 (Child 1886:112).

Grafton County was divided into 39 towns, 29 of which were granted under King George II (11 in 1761) and 10 under the state government. In the northern section are the mountains making up part of the White Mountain range; to the southwest, in Benton, is Mount Moosilauke, reaching an altitude of 4,811 feet (1,466 meters). In the eastern and southeastern sections of the county are parts of the Whiteface and Campton mountains. The southern section of the county is more hilly than mountainous. Key waterways are the Connecticut River and its tributaries in the western section, the largest of which are the Lower and Wild Ammonoosuc rivers, and the Mascoma in the southern section. The Pemigewasset and Baker run through the central portion of the county. Squam Lake and Newfound Lake in the southern and southeastern section are the major lakes (Child 1886:112).

1. Groton

The Town of Groton was originally known as Cockermouth, and was granted to George Abbott and others in July 1761. This grant was forfeited because of non-conformance with the settlement and improvement conditions of the charter, and the territory was re-granted to John Hale and others in November 1766. These proprietors also failed to comply with the charter conditions, though parts of the town were settled and improved by 1770. In January 1772 Governor Wentworth granted them an extension of three years in which to make correct their deficiencies (Child 1886:288-289).

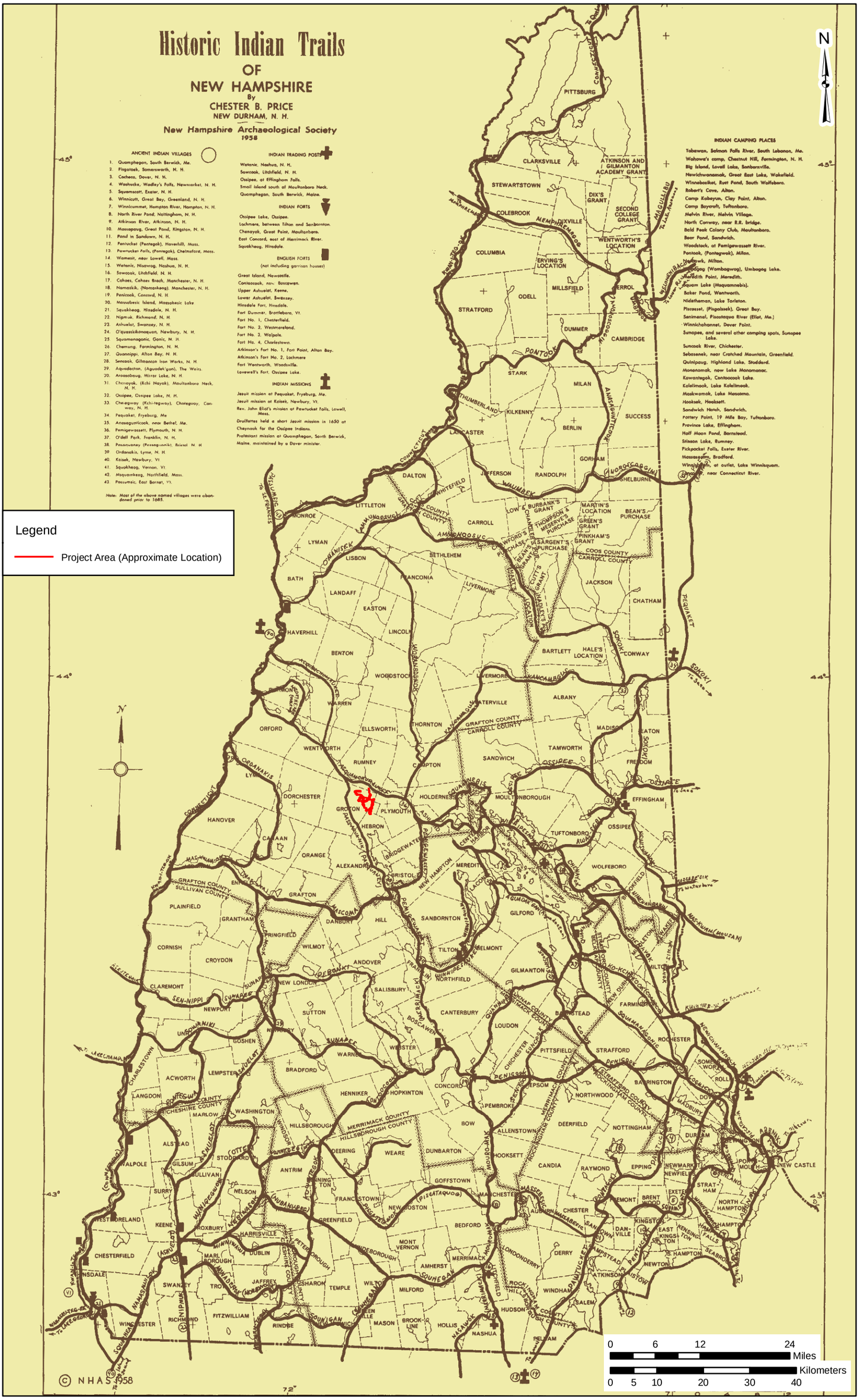

FIGURE 4: Location of Project Area on Historic Indian Trails of New Hampshire Map

SOURCE: Iberdrola 2009; Price 1967

After 1770 the population increased, growing from 107 residents in 1773 to 178 in 1775. The first sawmill was built in 1771, followed by one in North Groton and the first gristmill on Cockermouth brook. An iron foundry and a distillery were also in operation in the late eighteenth century (Child 1886:288-289). In 1792 a portion of the town was set off to form Hebron. The name Cockermouth was changed to Groton in December 1796, and in 1845 a tract of land known as the "Gore" was separated from Hebron and annexed to Groton.

By 1840 about 870 people lived in the town and the predominant occupation of the head of households was farming, with a few tradesmen and a scattering those involved in manufacturing (sawmills). The 1850 census indicates that 776 residents were almost exclusively involved in farming, with a few tradesmen (four carpenters, three shoemakers, a miller and blacksmith, a harness maker and cabinet maker, and a stone mason). There were also two sawmills and a gristmill (United States Bureau of the Census [U.S. Census] 1840a, 1850a).

In 1880 Groton had a population of 556 with eight school districts and seven common schools. There were two villages. The post village of Groton was located in the southeastern part of the town on Cockermouth Brook, with three saw- and shingle-mills, a blacksmith shop, a doctor's office, and about 20 dwellings. North Groton, another post village in the northern part of the town on Hall's Brook, had a church, a store, a machine shop, a saw- and shingle-mill, a blacksmith shop, and about 20 dwellings. During this period two mils operated along Clark Brook in Groton Hollow. B.P. Hard's mill, built in 1865, was manufacturing ice hooks, hoe handles, and framing pins, while Charles Spaulding operated a lumber mill that produced one million square feet of lumber per year (Child 1886).

Groton was an agricultural town with land used primarily for grazing. The principal crops produced in 1885 were corn, oats, potatoes, and buckwheat. A large portion of the territory was managed as woodlots, principally beech, birch, maple, ash, spruce, and hemlock, making lumber production an important industry through the nineteenth century (Child 1886:288-289).

Groton was also the greatest mica-producing district in the county (Child 1886:289-290). By 1900, as with many hill towns, the population had dropped to around 500 (U.S. Census 1900a). By 1930 the population had declined to just over 200 people living in 41 dwellings, but farming and mica mining continued (U.S. Census 1930a).

2. Rumney

The Town of Rumney was originally granted to Samuel Olmstead and others in 1761, but the grantees, like their Groton counterparts, did not comply with the terms of the charter, and the land was re-granted to Daniel Brainard in 1767, with the same boundaries as the first grant. The Baker River, or *Asquamchumauke* ("crooked water from high places"), is a 36.4-mile river that provided the Native Americans with a passage to the Connecticut River. The Baker River is named after Lt. Thomas Baker (1682-1753), whose band from Northampton, Massachusetts, reached the river valley in 1712, destroying a Pemigewasset Indian village there. In this area in 1752 John Stark and Amos Eastman were captured by Abenaki warriors and taken to what is now Saint-François-du-Lac, Quebec, near Montreal. John Stark's brother William Stark escaped, and David Stinson was killed during the ambush. Stinson Brook, named after Stinson, flows from Stinson Pond in the north into the Baker River (Child 1886:112, 601).

Located along a major transportation routes, Rumney was a town of relative prosperity throughout the nineteenth century, supported by agriculture, manufacturing, and mining. In 1765 the Province authorized the creation of a road from Durham to Haverhill that would run along the Baker River (Batchellor 1915:351). By 1851 the Boston, Concord and Montreal Railroad (later known as the White Mountain branch of the Boston & Lowell, or B & L RR, and then the Boston & Maine) had reached Rumney,

passing through the southern part of the town, following the course of the Baker River (Lindsell 2000:85-90).

The river bottomland, the large hardwood forest, mica deposits, and the availability of waterpower from the tributaries of the Baker River made Rumney an ideal location for industry in the early nineteenth century. By 1830 the number of households in town was 210, with 993 residents (U.S Census 1830b). By 1850 the population had begun to plateau around 1,100 inhabitants (U.S. Census 1850b). Farming and forestry remained the overwhelmingly predominant occupation, followed by an influx Irish railroad laborers. Manufacturing began with a ladder factory in the town (U.S. Census 1870b).

In 1880 Rumney had a population of 1,050. In 1885 the town had nine school districts with 11 schools. Settlement was divided into the villages of Rumney, Rumney Depot, West Rumney, and Quincy. With the beginning of the era of the summer tourist trade, Rumney had a large hotel, three churches, a skating rink, two stores, a gristmill, a sawmill, three blacksmith shops, two granite works, a harness shop, an extensive ladder manufactory, and a crutch and truss factory. The casualties of the Civil War had created a huge demand for crutches, and the hardwood of the northern New Hampshire forest proved to be perfect species for these medical devices. Rumney Depot was a station on the B & L RR with a general store, a box factory, and a factory for refining camphor. West Rumney had about 20 dwellings. Quincy was also a small village and railroad station in the southeastern part of the town, named after the famous criminal lawyer, Josiah Quincy (Child 1886:P.602).

The population of the Town of Rumney remained at about 1,100 at least through 1930 (U.S. Census 1930b), with lumbering, mill work, and farming remaining the predominant industries.

E. Archival Research

1. Previous Archaeological Surveys and Recorded Sites Close to the Project Area

Background research at the NH DHR indicated that within a 3-mile (4.8-kilometer) radius of the Groton Wind Project, three archaeological surveys have been conducted and 56 archaeological sites have been recorded. Just one of those 56 recorded sites is a precontact site, and the other 55 are historical archaeological sites. Berger examined site files for the 10 closest precontact period sites to the project area, and an eleventh precontact site, just outside the 3-mile (4.8-kilometer) radius, was discovered through supplementary research (Timelines 2004). The background research showed that the number of previously recorded precontact period archaeological sites in the region is relatively low, and sites are typically associated with major waterways or the confluences of waterways, such as the confluence of the Baker and Pemigewasset rivers.

The first of the three previous archaeological surveys in the vicinity was conducted on Tenney Mountain for the Tenney Mountain Ski Area Cell Phone Tower, on the same ridgeline where the proposed eastern turbine string is located (Timelines 2004). The APE for that survey was practically identical in terms of environmental characteristics (soils, slope) to much of the APE for the current project (i.e., the turbine strings and ridgeline access roads). The cell tower survey concluded that the area was unattractive for historic-era habitation and agricultural activities and had a low potential for Native American archaeological resources (Timelines 2004).

The other two archaeological surveys close to the APE were conducted approximately 1.96 miles (3.15 kilometers) to the west for a large-scale transmission line survey (Center for Archaeological Studies 1986) and subsequent survey of auxiliary facilities associated with the transmission project (Office of Public Archaeology 1990). These surveys provided excellent contextual information for the immediate

area, especially the historical development of the region and the types of sites one could expect to locate in such an environment.

The closest precontact Native American archaeological site lies 3 miles (4.8 kilometers) east of the project area in Plymouth, on an old river terrace of the Baker River. The Lowe Site (27-GR-218) has been interpreted as a Middle/Late Woodland site that may have been a habitation site. Native American pottery and fire-cracked rock were collected, but no lithic artifacts were recovered. In order to gain a better understanding of the Native American archaeological context of the area, Berger viewed site files for the next nine closest sites to the APE. In addition, subsequent background research revealed that there is a recorded "Indian Point" (NH-24-1) site on Newfound Lake in Hebron, south of the APE. Judging from these 11 known sites in the region (Table 2), precontact period sites appear to have been concentrated at the confluence of major rivers, notably the Pemigewasset and Baker rivers, although one site, the Summit of Indian Rock Site (27-GR-0158), is reported as located high on an elevated landform with exposed bedrock. The site report describes the observation of four mortars at what has been interpreted as a ceremonial site.

TABLE 2

PRECONTACT PERIOD SITES IN VICINITY OF PROJECT APE

SITE No.	LANDFORM AND LOCALITY	COMPONENT	SITE TYPE
27-BK-0006	Lucas Site – located on the east side of the Pemigewasset River near the outflow of an unmanned brook. Associated with a large alluvial terrace.	Unknown Prehistoric	Fire cracked rock but no artifacts recovered.
27-BK-0027	Unknown	Unknown Prehistoric	Unknown
27-BK-0076	Squam Point Site	Unknown Prehistoric	Unknown
27-GR-0149	Cummins Pond Outlet – the site is currently underwater. Located on a beach near the outlet of a natural but enlarged pond as a result of a dam.	Unknown Prehistoric	Unknown, but featured lithic debitage (chert and quartzite), a projectile point fragment, heat treated jasper-like chert and bone fragment.
27-GR-0155	Crystal Cove - the site is currently underwater. Located in a sheltered cove of a natural but enlarged pond as a result of a dam.	Unknown Prehistoric	Unknown, but featured lithic debitage (quartz), and 15-20 quartz scrapers.
27-GR-0158	Summit of Indian Rock	Unknown Prehistoric	Unknown, but four mortars observed.
27-GR-0160	Unknown – site file missing	Unknown Prehistoric	Unknown
27-GR-0165	South side of Baker River	Unknown Prehistoric	Unknown, but featured a lithic scraper and fire-cracked rock.
27-GR-0181	The Ouvert Site – on a terrace at 5,000 feet above sea level, which slopes steeply to a lower terrace that runs along the Pemigewasset River, approximately one mile from the confluence with the Squam River.	Late Archaic and Middle/Late Woodland	Habitation/workshop site. Contained lithic debitage, projectile point fragment and biface tool fragments (Late Archaic) and pottery fragments (Woodland).
27-GR-0218	The Lowe Site – on an ancient river terrace approximately 118 meters south of the Baker River, in a previously cultivated field.	Middle/Late Woodland	Possible habitation site, or activity area involving pottery. No lithics recovered.
NH-24-1	Indian Point Site, Hebron	Unknown Prehistoric	Unknown

Of the 55 historic period archaeological sites located within 3 miles (4.8 kilometers) of the APE (Table 3), the vast majority are nineteenth-century homesteads, farms, and mills. Most of these sites are concentrated in the Towns of Groton and Rumney, and well outside the APE, but a few sites are close to the APE. There are two historical archaeological sites in Groton Hollow and nine sites along (or near) the old North Groton to Rumney Road (see Figures 1-3).

TABLE 3

HISTORICAL ARCHAEOLOGICAL SITES IN VICINITY OF PROJECT APE

SITE No.	LANDFORM AND LOCALITY	COMPONENT	SITE NAME/TYPE
27-GR-0030	Located on north side of Halls Brook Road, adjacent to Halls Brook.	Historic - 19th Century	Mill (Mary Baker Eddy Mill), also referenced as Patterson's saw mill.
27-GR-0036	Located on north side of Halls Brook Road, adjacent to Halls Brook, opposite mill.	Historic - 19th Century	Homestead (Dr. D. Patterson Place): house foundation with small outbuilding and large barn. May be related to nearby mill site.
27-GR-0050	Steep, upland setting located between Groton and north Groton near Jewell Hill.	Historic - 19th Century; depicted on 1892 map	Homestead (D. Kidder Place): remains of house foundation.
27-GR-0064	Located on Punch Brook.	Historic - 19th Century	Mill (Moses Hunkins Shingle Mill)
27-GR-0065	Located where North Groton Road crosses Punch Brook.	Historic - 19th Century	Mill (N.O. Phelps Saw Mill)
27-GR-0066	Located a short distance below the confluence of Punch Brook and Spectacle Pond.	Historic - 19th Century	Mill (I.P. Hardy Saw Mill)
27-GR-0067	Off North Groton Road, near the Cockermouth River.	Historic - 19th Century	Homestead (J.K. Pike Place): house foundation with vaulted chimney foundation.
27-GR-0068	Located off North Groton Road on Spectacle Pond Brook.	Historic - Early 20th Century	Mill (W.S.H Remick Saw Mill)
27-GR-0069	Located off North Groton Road	Historic - 19th Century	Store (Volney Rumrill Store)
27-GR-0070	Located off North Groton Road on Spectacle Pond Brook.	Historic - 19th Century	Mill (Volney Rumrill Grist Mill and Dams)
27-GR-0071	Located on east bank of Punch Brook.	Historic - 19th Century	Mill (O.W. Hunkins Saw Mill)
27-GR-0072	Located between bank of Punch Brook and North Groton Road.	Historic - 19th Century	Farmstead (O.W. Hunkins Place)
27-GR-0073	Hilltop location on the east side of North Groton Road.	Historic - 19th Century	Homestead (J.C. Barstow Place)
27-GR-0074	Located in a small gorge near a small brook.	Historic - 19th Century	Mill (Pear Shaped Shingle Mill): the wheel or turbine pit is pear-shaped.
27-GR-0075	Gentle sloping upland area on remote, old road overlooking Punch Brook.	Historic - Early 19th Century	Homestead (B.H. Smith Est.): V-shaped chisel marks in granite sills suggest at least 1830 or earlier date.
27-GR-0076	Gentle sloping upland area on remote, old road overlooking Punch Brook.	Historic - 19th Century	Homestead (G. Keyser Place)
27-GR-0079	North Groton Road near Punch Brook.	Historic - 19th Century	Homestead (N.O. Phelps place): Cape Cod-style house.
27-GR-0080	North of Spectacle Pond.	Historic - 19th Century	Homestead (C.L. Pike Place): converted into a summer hotel.
27-GR-0081	North Groton Road near Punch Brook.	Historic - 19th Century	Homestead (Abbott Place): cottage vernacular.

TABLE 3 (continued)

SITE No.	LANDFORM AND LOCALITY	COMPONENT	SITE NAME/TYPE
27-GR-0082	North Groton Road	Historic - 19th Century	Homestead (A. Buell Place)
27-GR-0083	North Groton Road	Historic - 19th Century	Homestead (E.C. Bartlett Place): house is intact and undisturbed, with barn foundation.
27-GR-0084	Halls Brook	Historic - 19th Century?	Mill (No.1 Mill on Halls Brook): not depicted on the 1860 or 1892 maps.
27-GR-0085	Adjacent to Halls Brook overlooking a small falls.	Historic - 19th Century	(Shop Building): Foundation remains. Depicted on 1892 map as "shop."
27-GR-0086	Halls Brook near a major tributary. Unusual mill location.	Historic - 19th Century	Mill (No.2 Mill on Halls Brook)
27-GR-0087	Halls Brook.	Historic - 19th Century	Mill (No.3 Mill on Halls Brook): turbine pit and dam in good condition.
27-GR-0105	Located between Groton and North Groton in an open area.	Historic - 19th Century	(North Groton meeting House and Rolfe Hill Cemetery): includes small meeting house with cemetery behind it and surrounded by a stone wall.
27-GR-0106	Intersection of Halls Brook and North Groton Road.	Historic - 19th Century	Mill: Downtown-North Groton, mostly destroyed by new bridge construction.
27-GR-0107	Near intersection of Halls brook and North Groton Road.	Historic - 19th Century	Post Office (Farnum Place): Cape Cod style, later became a logging camp.
27-GR-0108	Near intersection of Halls brook and North Groton Road.	Historic - 19th Century	Homestead (Rev. S.G. Kinne Place): Cape Cod-style with outbuilding foundation.
27-GR-0109	Near intersection of Halls brook and North Groton Road.	Historic - 19th Century	School (School House No. 4)
27-GR-0114	Located on old and now abandoned North Groton to Rumney Road.	Historic - Late 18th/ Early 19th Century	Homestead (G.F. Fletcher Place)
27-GR-0115	Located on old and now abandoned North Groton to Rumney Road.	Historic - period unknown. Not depicted on 1860 or 1892 maps	Farmstead (Hillside Farm): includes granite foundations of house, cellar, and barn.
27-GR-0116	Located on old and now abandoned North Groton to Rumney Road, en route to top of Fletcher Hill mica mine.	Historic - 19th Century	Homestead (S.P. Fletcher Place) as indicated on 1860 map. Possible residence, and later office, for a mica mining company as indicated by 1892 map.
27-GR-0121	Stinson Brook	Historic - 19th Century	Mill (The Keniston Mill): Gristmill.
27-GR-0129	Located on old and now abandoned North Groton to Rumney Road.	Historic - 19th Century; depicted on the 1860 and 1892 map	Homestead (D.A Fletcher Place): House foundation with attached barn and outbuilding (rare). Depicted on 1892 map as "G.D. Spaulding."
27-GR-0130	Off the North Groton to Rumney Road on a leveled terrace of land.	Historic - 19th Century; not depicted on 1892 map	Homestead (A.F. Wheeler place): all but destroyed by logging activity.
27-GR-0131	Off the North Groton to Rumney Road on a leveled terrace of land.	Historic - 19th Century	Homestead (R. Robinson Place): remains of a stone foundation.
27-GR-0132	Located in west Plymouth	Historic - 19th Century	Plymouth Bick Yard, partially destroyed.

TABLE 3 (continued)

SITE No.	LANDFORM AND LOCALITY	COMPONENT	SITE NAME/TYPE
27-GR-0133	Located on old and now abandoned North Groton to Rumney Road.	Historic - 19th Century; depicted on 1860 map	Homestead (A.M. & S.F. Norris Place): E-shaped house foundation.
27-GR-0134	Located on old and now abandoned North Groton to Rumney Road.	Historic - 19th Century; not depicted on 1892 map	Homestead (G.N. Norris Place): house foundation partially destroyed by bulldozer. Also contains a cellar hole and cistern. Indicated as P. Glover Place on 1892 map.
27-GR-0135	Located on old and now abandoned North Groton to Rumney Road.	Historic - 19th Century; depicted on the 1860 and 1892 maps	Homestead (G. & S. Chapman): house foundation, cellar hole, outbuilding, and stone wall.
27-GR-0136	Located high on the south slope of Groton Hollow, on opposite side of Groton Hollow Road and Clark Brook, accessed by a spur road.	Historic - 19th Century; is depicted on the 1860 map	Homestead (J. French Place): house foundation and cellar hole with barn foundation. House partially destroyed by bulldozer.
27-GR-0137	Located on the north bank of Clark Brook, between the brook and Groton Hollow Road. Steep slope for a mill site.	Historic - 19th Century; depicted on the 1860 map	Sawmill (J. & C. French Sawmill): includes stone piers of mill superstructure, a possible dam foundation, and possible water diversion upstream from mill.
27-GR-0139	Located on old and now abandoned North Groton to Rumney Road.	Historic - 19th Century	Homestead (G. Hacket Place)
27-GR-0164	Located on a gently hillside near a level wetland.	Historic - 19th Century	Farmstead (Simpson Farm): includes cellar hole, house and barn foundations.
27-GR-0172	Located on a gently sloping upland terrace.	Historic - 19th Century	Farmstead (Moore Farm): includes cellar hole and stone-lined well.
27-GR-0215	Located near Halls Brook on Halls Brook Road.	Historic - 19th Century	Homestead (S. Clark Place)
27-GR-0216	Located on east side of Halls Brook, up a logging road which intersects with the old North Groton to Rumney Road.	Historic - 19th Century	Homestead (D. Bryers Place)
27-GR-0217	Located on east side of Halls Brook, up a logging road which intersects with the old North Groton to Rumney Road.	Historic - 19th Century	Homestead (J. Wilson Place): with stone walls and barn foundation.
27-GR-2128	White Mountain National Forest Site	Historic - 19th Century	Homestead (unidentified)
27-GR-2129	White Mountain National Forest Site	Historic - 19th Century	Homestead (Nathaniel Clifford)
27-GR-2306	White Mountain National Forest Site	Historic - 19th Century	Blacksmith Shop
27-GR-2307	White Mountain National Forest Site	Historic - 20th Century	Sleeping House (Darlington)
27-GR-2308	White Mountain National Forest Site	Historic - 19th Century	Dam for grist-/sawmill
27-GR-2309	White Mountain National Forest Site	Historic - 19th Century	Homestead (T.R. Ford)

The two sites in Groton Hollow are not on Groton Hollow Road and are outside the APE. Each site is associated with the French family: one site is the homestead, the J. French Place (Site 27-GR-0136), and the second is the J. & C. French Sawmill (Site 27-GR-0137). The sawmill site is located on the north bank of Clark Brook, which in this location is situated down a steep slope from Groton Hollow Road. The homestead site is on the opposite side of Clark Brook and up a spur road at some distance from the brook. As will be discussed in greater detail below, both of these sites are illustrated on the *Topographical Map of Grafton County, New Hampshire* (Walling 1860).

The old North Groton to Rumney Road bisects the APE at the proposed ridgeline access road between the northern and western turbine strings (see Figures 1-3). No sites are recorded where the APE and the historical roadway meet, but six sites are recorded to the west and southwest, as well as three recorded sites to the east along the old road, between the APE and Groton Hollow Road.

East of the junction of the proposed access road and the old North Groton to Rumney Road there are three recorded sites in the hollow area, all nineteenth-century homesteads (see Table 3). The A.M. and S.F. Norris Place (Site 27-GR-133), the G.N. Norris Place (Site 27-GR-134), and the G. and S. Chapman Homestead (Site 27-GR-135) were identified by map identification and a non-recovery archaeological survey performed by archaeologist Duncan Wilkie on behalf of the NH DHR (Wilkie 2005). No artifacts were recovered from these sites; however, notes on stone foundation remains, cellar holes, outbuildings, etc. were made on the archaeological site files. Site 27-GR-134 has been partially destroyed by bulldozing along the old roadway.

Six sites are recorded west of the junction of the proposed access road and the old North Groton to Rumney Road (see Table 3), all of which were recorded by the same non-recovery survey described above. Five of the six sites are homesteads and one, Hillside Farm (Site 27-GR-0115), is interpreted as a farmstead, based on the house and barn complex. Of particular interest is the S.P. Fletcher Place (Site 27-GR-0116), a homestead that has been interpreted from map research as transforming from a hilltop residence to an office for a mica mining company, which operated further up on Fletcher Mountain.

2. Historical Map Review

In order to assess the historic sensitivity for the project area, Berger examined historical maps to identify map-documented structures (MDS) adjacent to the project APE. The map review revealed that portions of the APE are located near the frontages of MDS dating to 1860 (Table 4).

The *Topographical Map of Grafton County, New Hampshire* (Walling 1860) was the oldest map reviewed. The Walling map illustrates Groton Hollow Road, which is the primary access road for the wind farm, as well as the old North Groton to Rumney Road, which bisects the APE to the west and eventually connects with Groton Hollow Road (Figure 5). The map displays good detail of the APE in terms of topographical features (Clark Brook and Fletcher Hill), secondary road locations, and property owner names. A total of nine MDS were noted located along (or at least close to) Groton Hollow Road. Other MDS are situated just east of Groton Hollow Road as illustrated by unnamed spur roads and property owner names. Six of the nine MDS are indicated by surnames and three are illustrated by their function. Two mills are noted in operation on Clark Brook, one of which (MDS 5) was discussed earlier as the J. and C. French Sawmill. The J. and C. Place homestead is also illustrated on the 1860 map labeled as MDS 6 (see Figure 5). It is interesting to note that a school (MDS 7) is mapped well into the Groton Hollow area, adjacent to Clark Brook. The southernmost MDS (9) is situated near the present-day end of Groton Hollow Road. No MDS are present along other parts of the APE (turbine strings or ridgeline access roads).

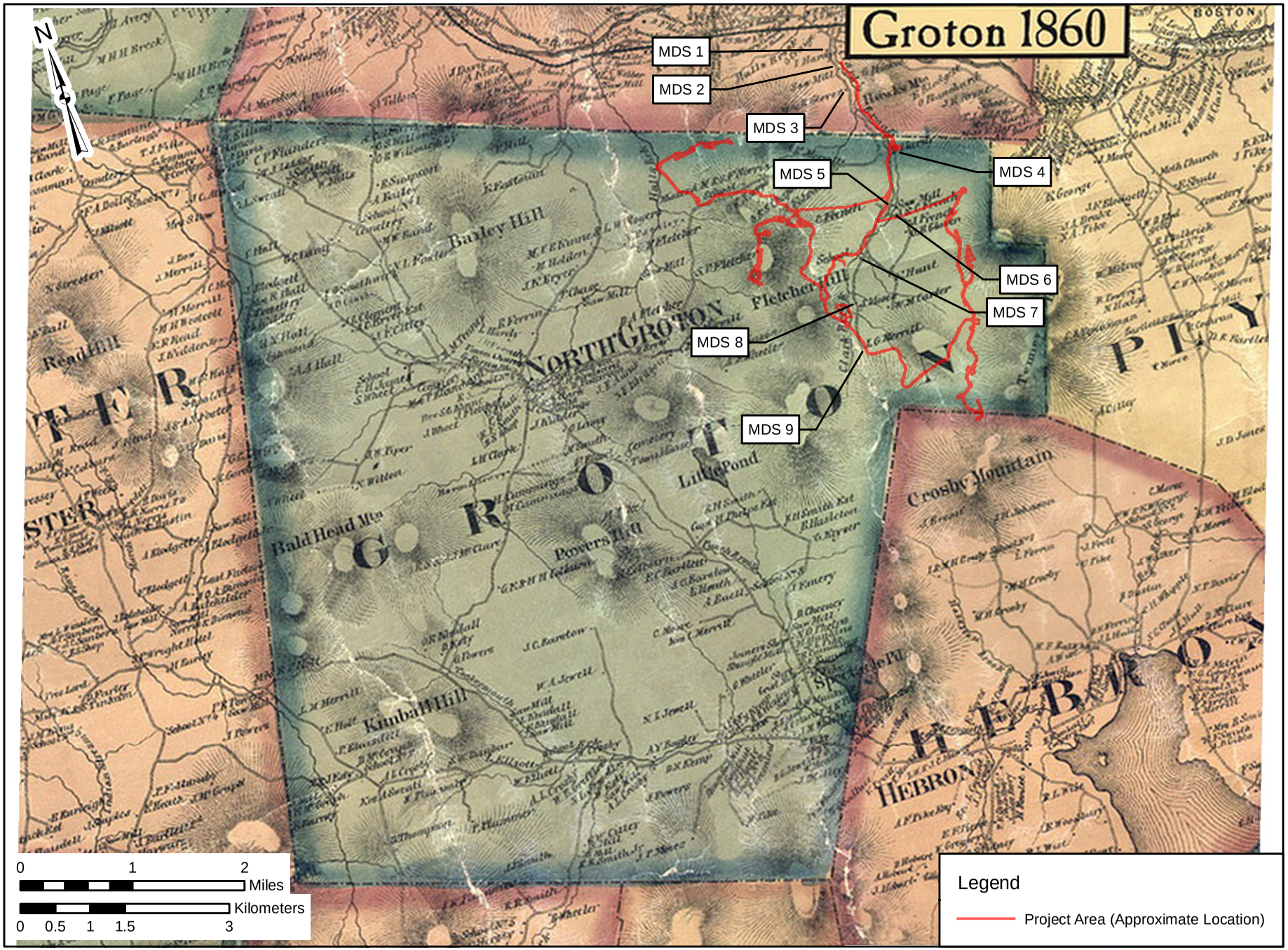

FIGURE 5: Location of Project Area in 1860

SOURCE: Iberdrola 2009; Walling 1860

TABLE 4

MAP-DOCUMENTED STRUCTURES ADJACENT TO PROJECT APE

STANDING STRUCTURE/ MAP-DOCUMENTED STRUCTURE	DATE OF MAPS*			
	1860	1892	1927/1928	1930/1932
1. J Hardy (B.P. Hardy)	Identified	Identified	Unidentified	Unidentified
2. Sawmill I	Identified	Unidentified	Unidentified	Unidentified
3. L.S.R Glover (F.P. Glover)	Identified	Identified	Unidentified	Unidentified
4. D. Hardy	Identified	Unidentified	Unidentified	Unidentified
5. Sawmill II [27-GR-137]	Identified	Unidentified	Unidentified	Unidentified
6. J & C French [27-GR-136]	Identified	Unidentified	Unidentified	Unidentified
7. School	Identified	Identified	Unidentified	Unidentified
8. J. Mose	Identified	Unidentified	Unidentified	Unidentified
9. I. G. Merrill	Identified	Unidentified	Unidentified	Unidentified
10. P.C. ?????bury	Unidentified	Identified	Unidentified	Unidentified
11. M.V. Grunt	Unidentified	Identified	Unidentified	Unidentified
12. Mrs. French	Unidentified	Identified	Unidentified	Unidentified
13. Mrs. French	Unidentified	Identified	Unidentified	Unidentified
14. Mrs. Barkard	Unidentified	Identified	Unidentified	Unidentified
15. C. W. Butchelder	Unidentified	Identified	Unidentified	Unidentified
16. Mrs. Kimball	Unidentified	Identified	Unidentified	Unidentified
17. S. Herbert	Unidentified	Identified	Unidentified	Unidentified
18. Mrs. Blake	Unidentified	Identified	Unidentified	Unidentified
19. C Spaulding	Unidentified	Identified	Unidentified	Unidentified
20. I. Irving	Unidentified	Identified	Unidentified	Unidentified
21. Keniston Heirs	Unidentified	Identified	Unidentified	Unidentified
22. G. C. Spaulding	Unidentified	Identified	Unidentified	Unidentified
23. Steam Mill	Unidentified	Identified	Unidentified	Unidentified
24. Groton Hollow I	Undetermined	Undetermined	Identified	Identified
25. Groton Hollow II	Undetermined	Undetermined	Identified	Identified
26. Groton Hollow III	Undetermined	Undetermined	Identified	Identified
27. Groton Hollow IV	Undetermined	Undetermined	Identified	Identified
28. Groton Hollow V	Undetermined	Undetermined	Identified	Identified
29. Groton Hollow VI	Undetermined	Undetermined	Identified	Identified
30. Groton Hollow VII	Undetermined	Undetermined	Identified	Identified
31. Groton Hollow VIII	Undetermined	Undetermined	Identified	Identified
32. Groton Hollow VIIII	Undetermined	Undetermined	Identified	Identified

* Hurd and Company 1892; USGS 1927, 1928, 1930, 1932; Walling 1860

The *Atlas of the State of New Hampshire* (Hurd and Company 1892) shows the APE on Rumney and Groton town maps. There appears to be an increase in population along the northern end of Groton Hollow Road in Rumney (Figure 6). Twelve property names are depicted on the map in this short stretch of road adjacent to Clark Brook. Two of the properties appear to be duplicates from the 1860 map (MDS 1 and 3), and there are potentially 10 new MDS (labeled MDS 10-20) in the Rumney section of the map. For the five most northern MDS (1, 10-14) there are no dots, which typically depict a structure; however, to the south small black dots occur along Clark Brook and on the west side of Groton Hollow Road (see Figure 6). The Groton portion of the 1892 map does not illustrate any great development in the Groton Hollow area, and the school is the only one constant with the earlier 1860 map (MDS 7). Four new MDS are illustrated (20-23); based on the scale and rudimentary nature of the map, it is difficult to determine if

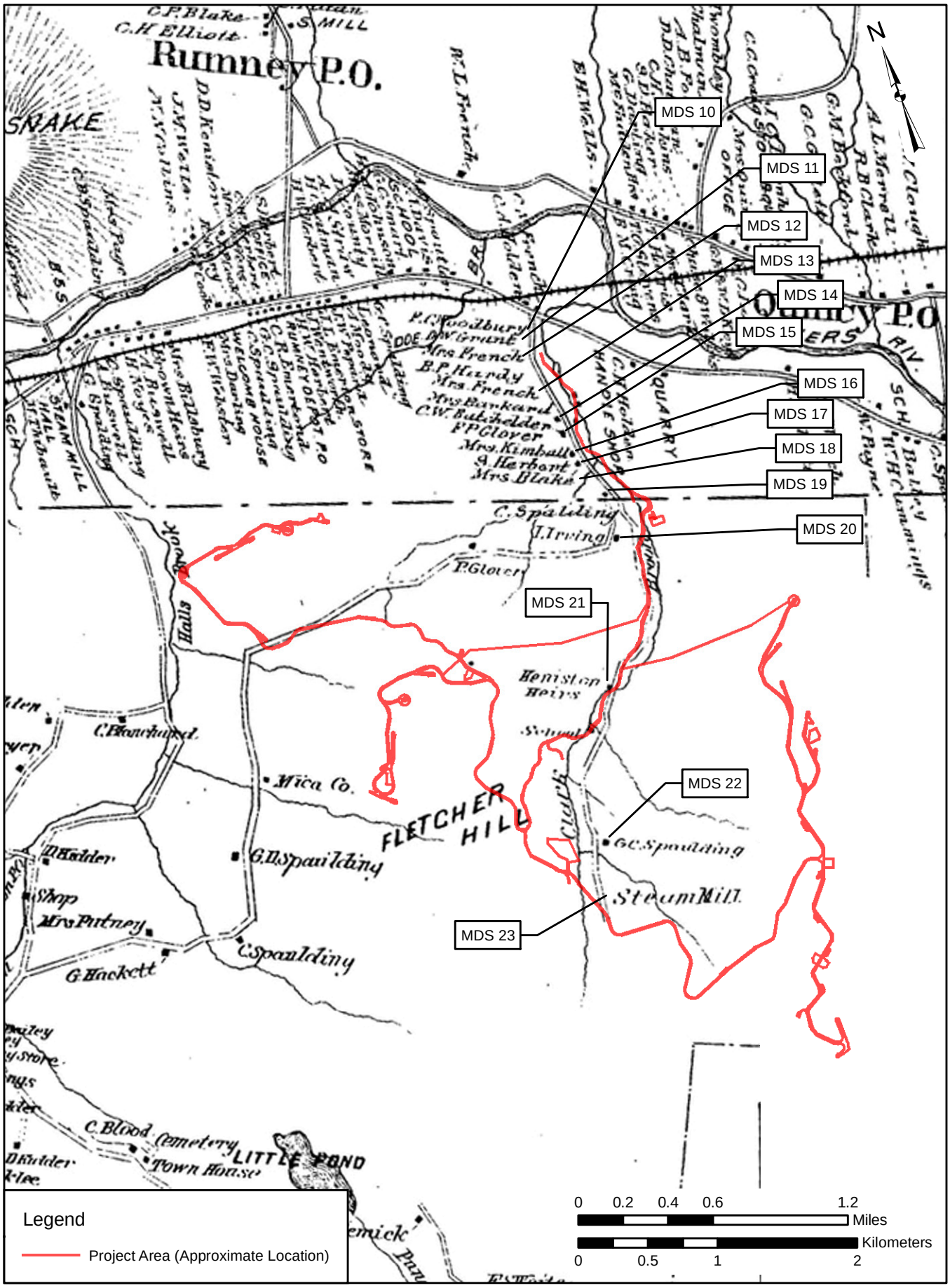

FIGURE 6: Location of Project Area in 1892

SOURCE: Hurd 1862; Iberdrola 2009

any of these are the same properties as on the 1860 map or if they are completely new properties. Groton Hollow Road and Clark Brook are illustrated, but none of the small spur roads off of Groton Hollow are depicted. A "Steam Mill" is labeled on the map, but no exact location marker is provided. The old North Groton to Rumney Road is illustrated, and some of the recorded historical archaeological sites from the area discussed in the previous section are depicted (e.g., Mica Co and P. Glover). No MDS are present along other parts of the APE (turbine strings or ridgeline access roads).

The next maps examined were the historical 1927/1928 and 1930/1932 USGS maps of Cardigan/Rumney (Figures 7 and 8). These maps do not provide names associated with MDS and it can not be determined if the structures on the USGS maps are the same MDS from the earlier maps. Nine structures are documented along the APE in Groton Hollow (see Figures 7 and 8) and they have been labeled MDS 24-32, even though some of these may be duplicates from earlier maps (see Figures 5 and 6). Nevertheless, the USGS maps illustrate that there was a depopulation and probable decrease in industrial enterprises in the Groton Hollow area. Seven of the nine MDS are located within the Rumney town boundary along the northern portion of Groton Hollow Road (one of which may be a mill based on its location near the brook and off the road). In the Groton portion of the map, only two structures remain. One (MDS 31) is very close to or in the same location as the previously identified MDS 20 near the junction of Groton Hollow Road and the old north Groton to Rumney Road. The second and last MDS (MDS 32) is located further south along Groton Hollow Road, near MDS 7. The old North Groton to Rumney Road is still depicted, with a single structure illustrated east of where it intersects with the APE's ridgeline access road.

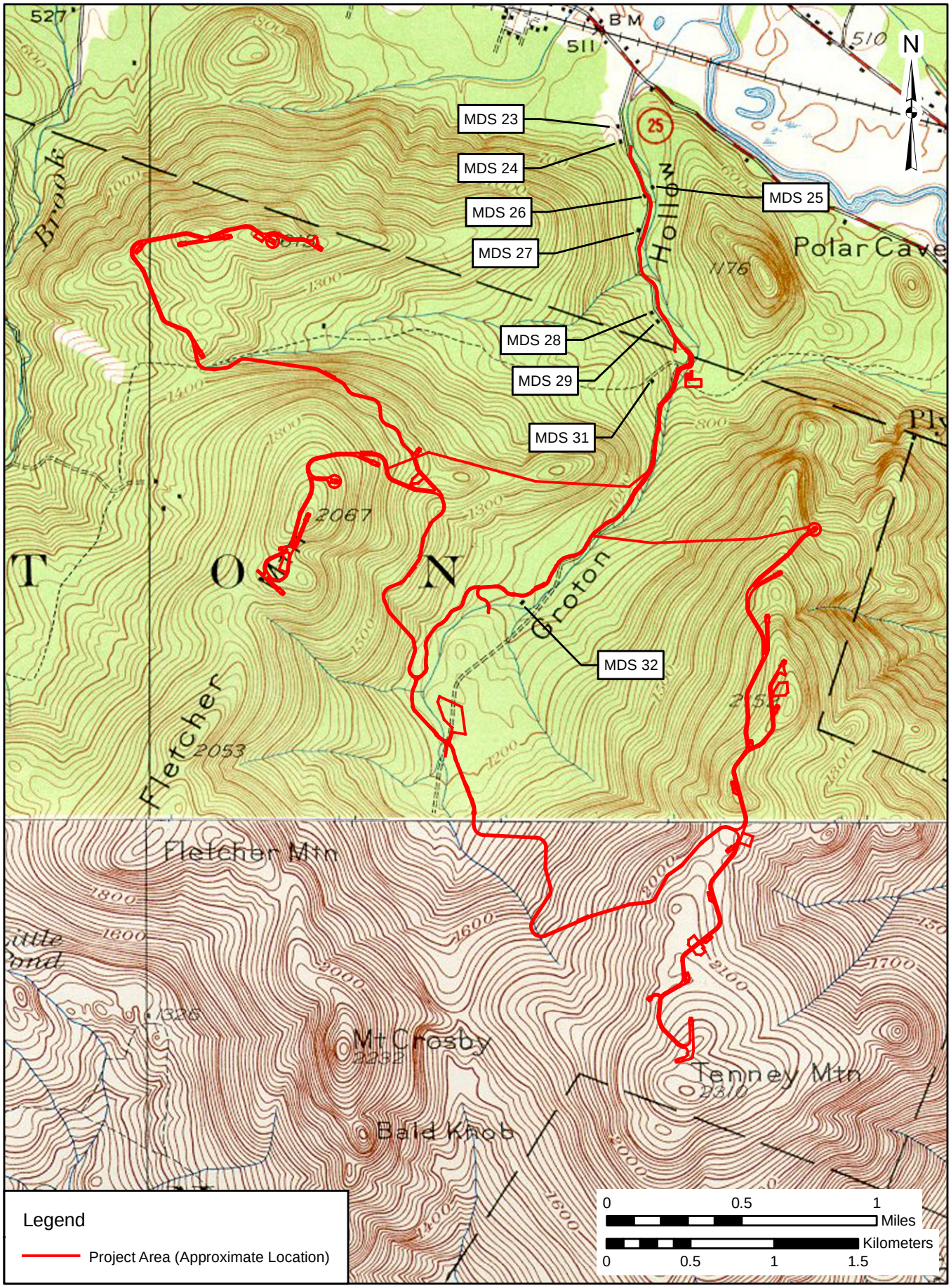

FIGURE 7: Location of Project Area in 1927/1928

SOURCE: Iberdrola 2009; USGS 1927, 1928

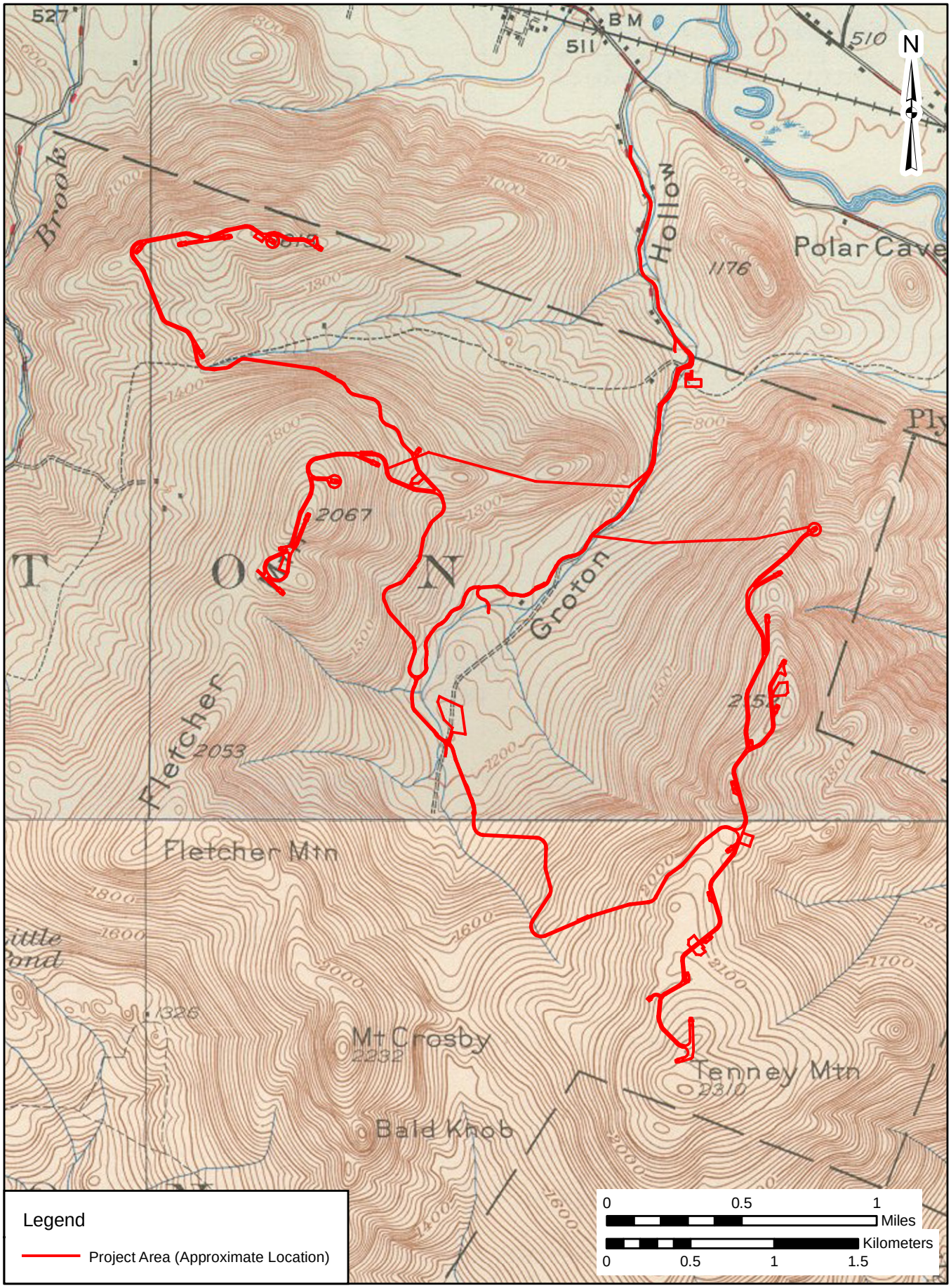

FIGURE 8: Location of Project Area in 1930/1932

SOURCE: Iberdrola 2009; USGS 1930, 1932

III. Fieldwork and Results

A. Phase IA Field Methods

The purpose of the survey was to identify and assess areas of archaeological sensitivity (or potential) and identify any archaeological sites in the APE, which includes the project footprint, i.e., all parts of the proposed wind farm that will be subject to ground disturbance, including turbine construction, access road improvements and construction, collection line installation, and switchyard and substation construction, in addition to the existing roads.

In addition to the background research, a windshield survey and surface reconnaissance of the majority of the APE were conducted to assess the degree of disturbance present and the likelihood of encountering prehistoric or historical archaeological resources. The field visits were made on October 9 and between October 14 and 16, 2009. This information was used in conjunction with topographic USDA Soil Survey maps and soil descriptions to gain an understanding of the terrain and soil conditions throughout the APE.

The background research and field visits generated information to delineate zones of archaeological sensitivity throughout the APE. Berger used information obtained from archaeological surveys of upland locations (Lacy 1994, 1999) and other large-scale archaeological surveys conducted in New Hampshire, and in particular in Grafton County, because few precontact period archaeological sites have been recorded in this region compared to the rest of the state and no models have been generated for predicting site locations in this region (Wheeler 2000:3). Factors that archaeologists have considered to define sensitivity on past large-scale New Hampshire surveys include:

- proximity to water sources, such as springs, streams, rivers, wetlands, ponds, and lakes;
- well-drained soils;
- level terrain, in addition to views across the landscape and easy access along terraces or uplands;
- presence of natural resources for tool manufacture (stone), pottery making (clay), or food (plants and animals);
- locations on terraces overlooking water sources; and
- floodplains with moderately well-drained to well-drained soils.

It is only recently that archaeologists have begun to tackle the archaeology of upland areas in the Northeast. From its inception archaeology in this part of the country has followed modern development, and in particular it has followed agriculture along alluvial landforms near major rivers. Collectors first found precontact artifacts in those locations, and so that was where archaeologists began their investigations. Of equal importance in the selection of early excavation sites were the traditional research interests of archaeologists to create chronologies based on charting changes in point and ceramic typologies through time and across space. This cultural historical approach required the excavation of deeply stratified sites along river floodplains. In these excavations archaeologists could easily see the relationships of different artifact types to each other as they changed in form through time, with one type replacing the types that preceded it. Farming and later urban and industrial development have remained in the valleys, and as a result of these research priorities as well as the patterns of European American settlement, upland and mountainous areas were not thought to warrant archaeological consideration.

Over the last few decades archaeologists have become interested in a wider range of issues beyond chronology and identifying changes in the form of artifact types over time. The current understanding is that people were living across the entire landscape and that their use of the landscape varied across space, resulting in spatial variation in the material culture they left behind. By only looking at sites along

floodplains, only one aspect of the lives people lived thousands of years ago was being observed. It was necessary to look elsewhere to understand the full range of variation in precontact life across space and time.

Ecologically determinist models dominate the models used to identify areas of possible precontact archaeological sensitivity. These models are based on the assumption that where people deposited artifacts is determined by the distribution of resources, i.e., people choose to live where they can most effectively and easily get what they need to live well. David Lacy (1994, 1999) has conducted research in the Green Mountains of Vermont west of Fletcher and Tenney Mountains. He summarizes the standard criteria typically used when archaeologists look for possible sites in upland and mountainous areas, writing that reasonably level locations with well-drained soils and access to fresh water, areas placed along strategic travelways and/or near unique landmarks, and rich or unusual natural resources are good spots to conduct subsurface testing to identify possible archaeological sites. He believes that elevation is not a factor since he has found sites at all elevations in the Green Mountains, as high as 683 meters (2,240 feet) amsl, which is within the range of elevations in the present project APE. He also writes that the size and scale of the landform should not be an issue and that soils are of limited use when constructing predictive models since correlations between site locations and soil types are based on distributions in alluvial contexts. He also adds that one should, as he puts it, "stratify ruthlessly" (Lacy 1994:96) and trust intuition, such that predicting site locations, as he describes it, is more like prospecting than sampling.

Recently the New York State Historical Preservation Office (2007) has produced guidelines for the investigation of wind farms in upland areas in the state of New York. These guidelines instruct archaeologists to divide the project area into environmental zones derived from Robert Funk's (1993) description of environmental zones in the Upper Susquehanna Valley. Funk (1993) divided this region into valley floor, valley walls, and uplands, reviewing 14 environmental factors and subjectively applying scores to each based on the assumed relative probability for site selection. Funk (1993:80) considered six of these factors most important: slope, drainage, proximity to potable water, proximity to aquatic resources, proximity to terrestrial resources, and availability of good soils for growing corn, beans, and squashes. He concluded that the highest scores for landforms in upland areas included upland hilltops, saddles between knolls and ridges, rockshelters, and banks and benches along stream headwaters.

It is important to remember that although known site locations in upland areas throughout the Northeast may meet Lacy's (1994) and Funk's (1993) criteria, it does not necessarily follow that all locations that meet these criteria will be the location of an archaeological site. In addition, people in the past were not restricted to the width of the present APE. As a result, although we may identify areas in the APE that fit the criteria listed above, there may well be other more appealing locations nearby but outside the area of our investigation.

Basing methods on ecological variables as understood today presents archaeologists with numerous problems. To begin with, we see the landscape very differently from how people saw the same landscape hundreds and thousands of years ago. Archaeologists today see the landscape in terms of sites identified by concentrations of artifacts, and separate between uplands and lowlands in ways shaped by our own conception of the landscape in which we view the mountains "as an environment 'apart'" (Lacy and Mooney 2004:9). Lacy's (1994, 1999) and Funk's (1993) models expect that people assessed the landscape by what we today perceive of as physical and material needs. But people in the past, particularly hunter-gatherers practicing a way of life completely foreign to us, saw their landscape, and in particular upland and mountainous areas, in ways that do not fit our understanding of what was most economically convenient from the perspective of resource availability. As a result precontact people may have used upland areas in ways that archaeologists are presently not able to see and understand.

Another problem with using ecological variables is that the environment and the landscape have changed extensively since the late Pleistocene, therefore affecting the choices people made in relation to the landscape. Also, the ecological variables we use may be at a scale that is too large, given the extent of micro-topographical and micro-ecological variation in upland areas. Since much of this ecological variation may involve small areas, the landscape could be quite fragile in the face of both environmental change as well as change brought on by humans both before and after Contact. Micro-topographic features, such as an attractive clearing amongst the trees that may have existed hundreds of years ago, may now be long gone. In addition, George Nicholas (1998) discusses the importance of beavers in understanding ecological changes on a small scale. Beavers construct dams that create ponds and wetlands. Human hunting or lack of hunting affects beaver populations, thereby affecting the creation of ponds and wetlands. It is important to consider Lacy's (1994) suggestion to trust one's intuition and his description of upland archaeology as "prospecting" in addressing issues of micro-topographic variation.

The archaeology of upland and mountainous areas is still in its infancy, and large project areas such as the present APE in Groton present an interesting opportunity to learn more about how people lived in the uplands of the Northeast. While accepting the critiques discussed above, this project used the list of ecological criteria presented by Lacy (1994) and Funk (1993) to identify areas for possible testing. Ultimately, however, the identification of these areas relied on an intuitive read of the landscape. The criteria and landscape features considered while conducting this research include:

- proximity to water;
- good soil drainage;
- level to moderate slope;
- landscape features;
- hilltops;
- saddles between knolls and ridges;
- banks and benches along stream headwaters;
- rockshelters;
- proximity to possible lithic resources; and
- strategic travelways.

Historical cartographic research assists in identifying areas where potential exists for historical archaeological sites, combined with assessment of the degree of subsequent disturbance.

B. Results of Phase IA Research and Archaeological Sensitivity Assessment

This review has determined that the majority of the APE for the proposed wind farm generally has a low potential for the presence of Native American archaeological resources, using the criteria listed above; the potential to discover precontact period Native American sites cannot be entirely dismissed. There are some locations that meet the criteria and where subsurface testing should be conducted in order ground truth the predictive model. For instance, there are some areas along the ridgelines, such as saddles or vista locations near small drainages, that are fairly level and dry. In addition, there are sections along the primary access road that are on fairly level, well-drained soils close to Clark Brook. These areas are considered to have a low to moderate sensitivity for Native American archaeological resources.

Judging from the review of historical maps and other background research, it was thought likely that the APE had potential to contain historical archaeological resources. The earliest known settlements in the Groton Hollow area were dated to the nineteenth century (see Figures 5-8), and there is no evidence of any large-scale filling or grading in the vicinity of the project APE. Historical research identified in

particular the vicinity of Clark Brook where the terrain is more favorable as having a moderate to high potential for mid- to late nineteenth-century and early to mid-twentieth-century historical archaeological sites. The site file check and historical map research demonstrated that there were mill sites along Clark Brook, and there is moderate potential for such sites adjacent to the APE. Besides the presence of recorded historical archaeological sites in proximity to the APE, as well as MDS in and around the APE, two historic-period features (cut granite building foundations) were identified during the walkover inspection of the project area.

The archaeological sensitivity of the APE is discussed in more detail below. In order to assess more precisely the archaeological sensitivity for the wind farm, the APE was subdivided into sections: the proposed primary access road; the ridgeline access roads and turbine strings; the O&M Building, switchyard, and laydown area; and the collection system (Figures 9-14).

1. Primary Access Road

The primary access road is approximately 13 miles (20.9 kilometers) long and combines existing and new/improved roadway (see Figures 1-3). Beginning in the north, the primary access road travels south adjacent to Clark Brook as it rises in elevation, both gradually and steeply. The paved and narrow area of the existing portion of the primary access road (Groton Hollow Road) is considered to possess a high potential for archaeological resources (see Figure 9) based on the high density of extant and map-documented structures in this location as well as the level terrain and proximity to Clark Brook (Plates 1 and 2). Subsurface testing should not be required along this portion of the APE, however, as currently no ground- disturbing activities are proposed for the existing section of Groton Hollow Road.

The 11 miles (17.7 kilometers) of new/improved primary access road contains areas with moderate to high potential to contain historical archaeological features (see Figure 10). Sensitive areas are those that are close to MDS, documented stone walls, and where there is favorable terrain (Plates 3 and 4).

Of particular interest is the location of two cut-granite foundations identified adjacent to the southern end of the primary access road (see Figure 10), which were identified during the walkover survey. The foundations are situated just south of a junction of the primary access road and a spur road (Plate 5). On the east side of the road an intact cut-granite foundation, which seemed to be of a house, was identified. The foundation is located approximately 30 feet (9.1 meters) from the edge of the existing logging road (Plates 6 and 7). Directly across, on the western side of the road, a more rudimentary constructed stone foundation is set into the hillside just a couple of feet from the edge of the road. This feature was likely a barn or carriage house as it appears to have been accessible from ground level on the western side via the lower terrain from the spur road (Plate 8). Another small spur road to the north (see Figure 10) is also considered to be sensitive based on terrain and proximity to the brook (Plate 9). Sections of the primary access road that are excessively sloped and cut into the side of the steep hillside are not considered to be archaeologically sensitive (Plate 10).

2. Northern Turbine String and Ridgeline Access Road

The northern turbine string lies on a ridgeline on Fletcher Mountain, north of the old North Groton to Rumney Road (see Figures 1-3). Six turbines are proposed for this area. Turbines N1 to N5 stretch west to east along a single ridgeline, and Turbine N6 is isolated on a separate elevated area closer to the old road. The walkover survey was conducted at each proposed turbine location as well as along the ridgeline access road. The terrain in this area is extremely sloped and rocky (see Figure 11). Turbines N1 through N5 are in areas with exposed bedrock and steep slope (Plates 11 and 12). The location of Turbine N6 contained shallow soils, but the terrain was sloped and extremely hummocky. From Turbine N5, an excellent view could be had of the eastern ridgeline along Tenney Mountain (Plate 13).

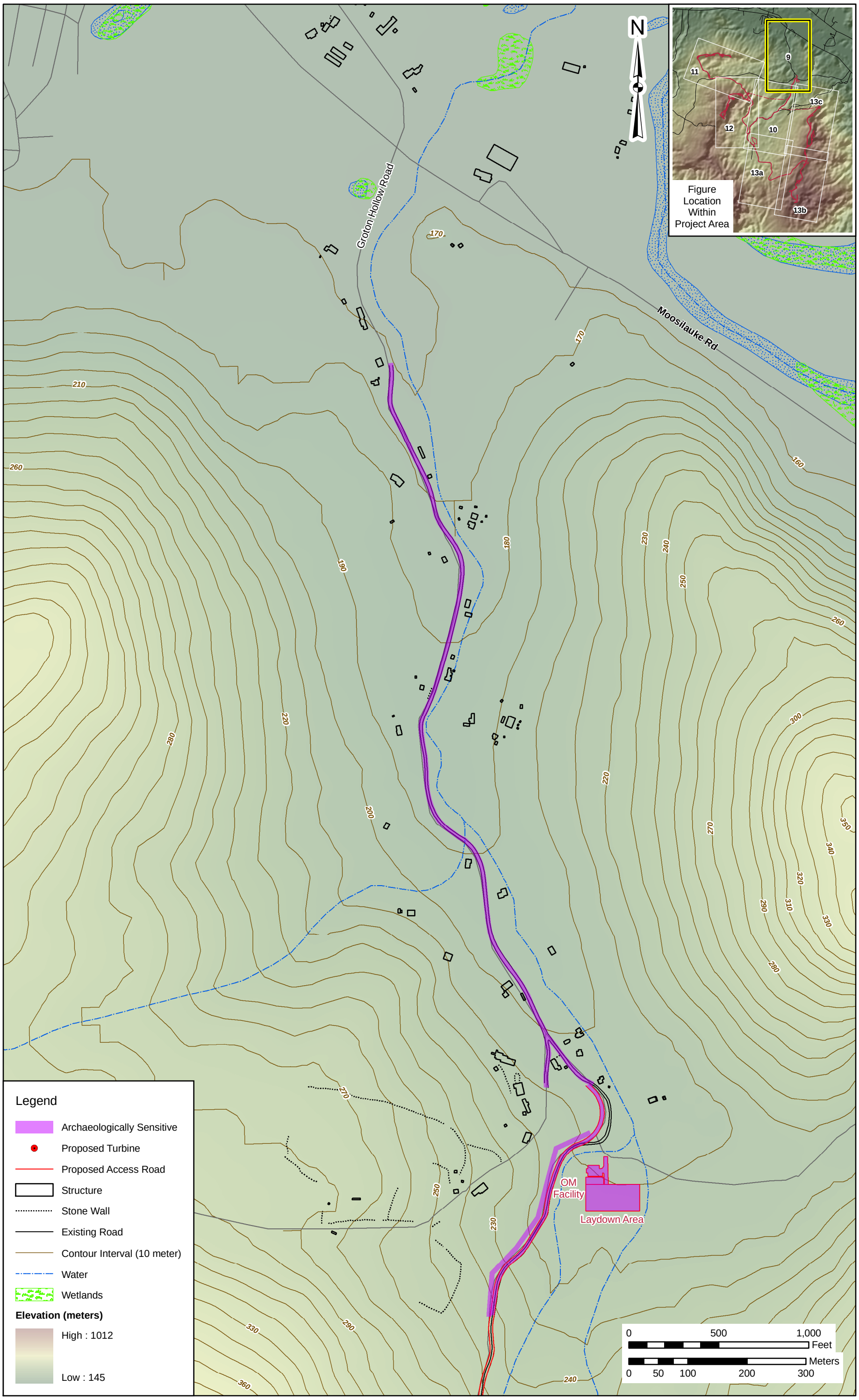

FIGURE 9: Primary Access Road (Existing) and O&M Building/Laydown Area: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

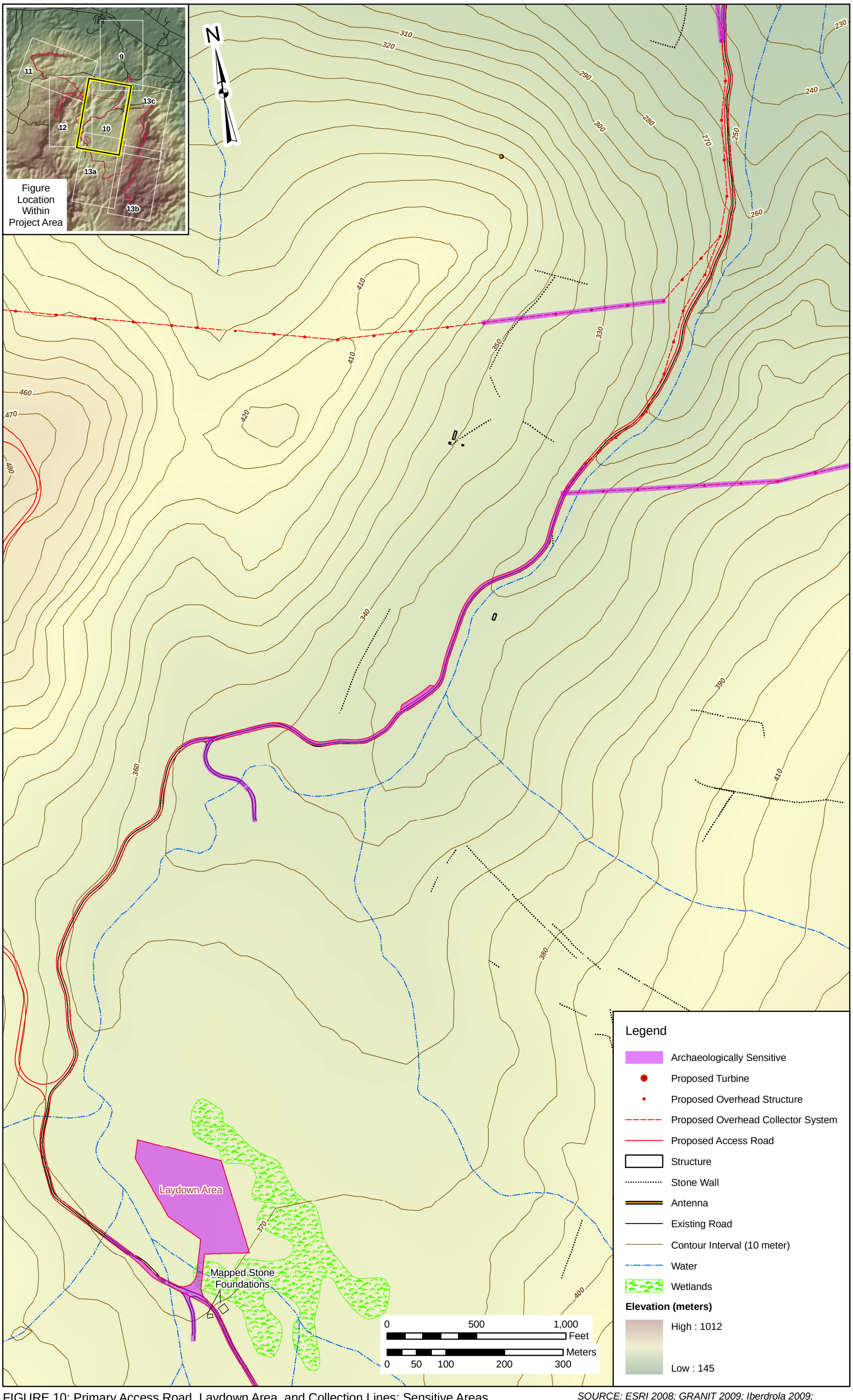

FIGURE 10: Primary Access Road, Laydown Area, and Collection Lines: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

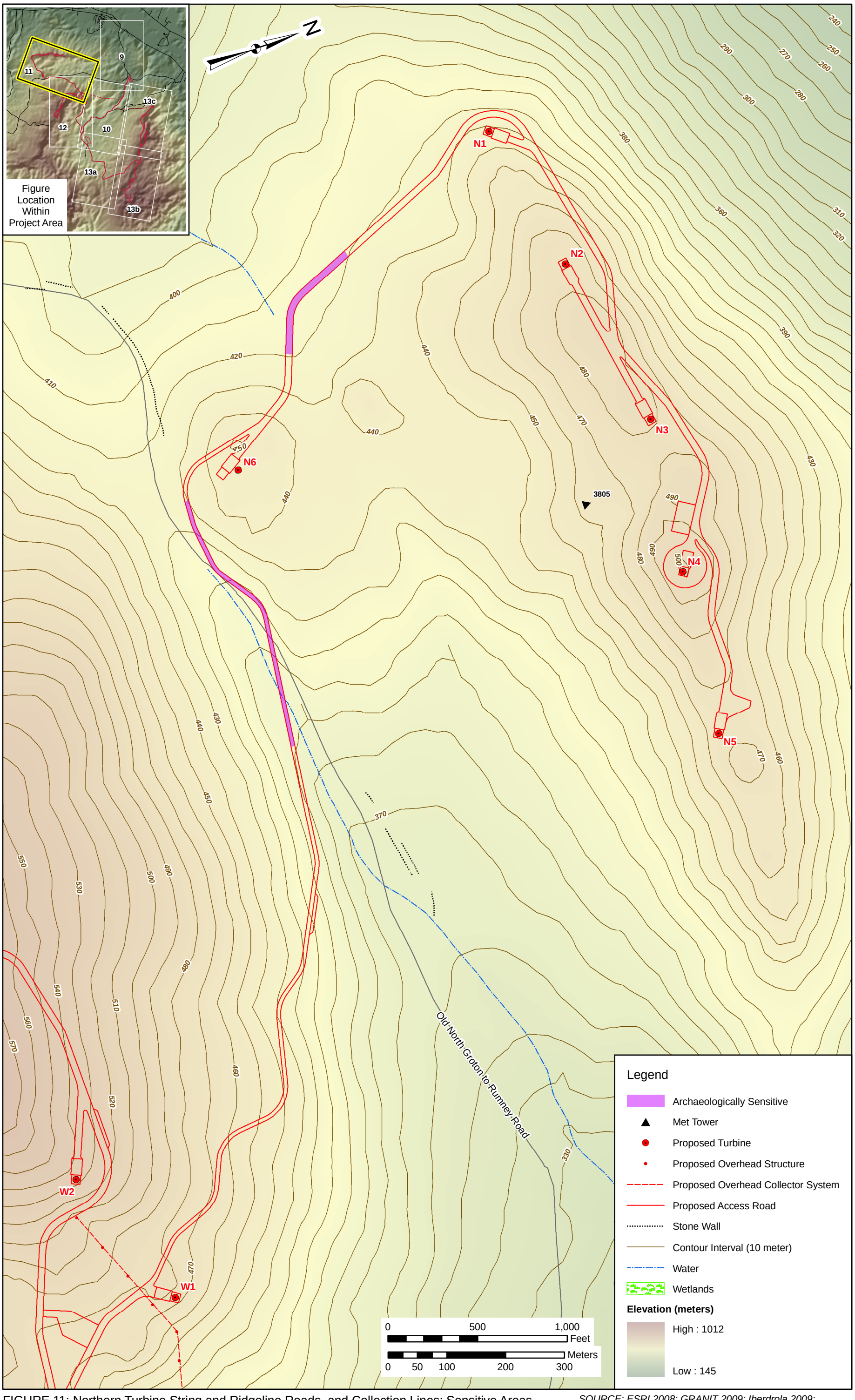

FIGURE 11: Northern Turbine String and Ridgeline Roads, and Collection Lines: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

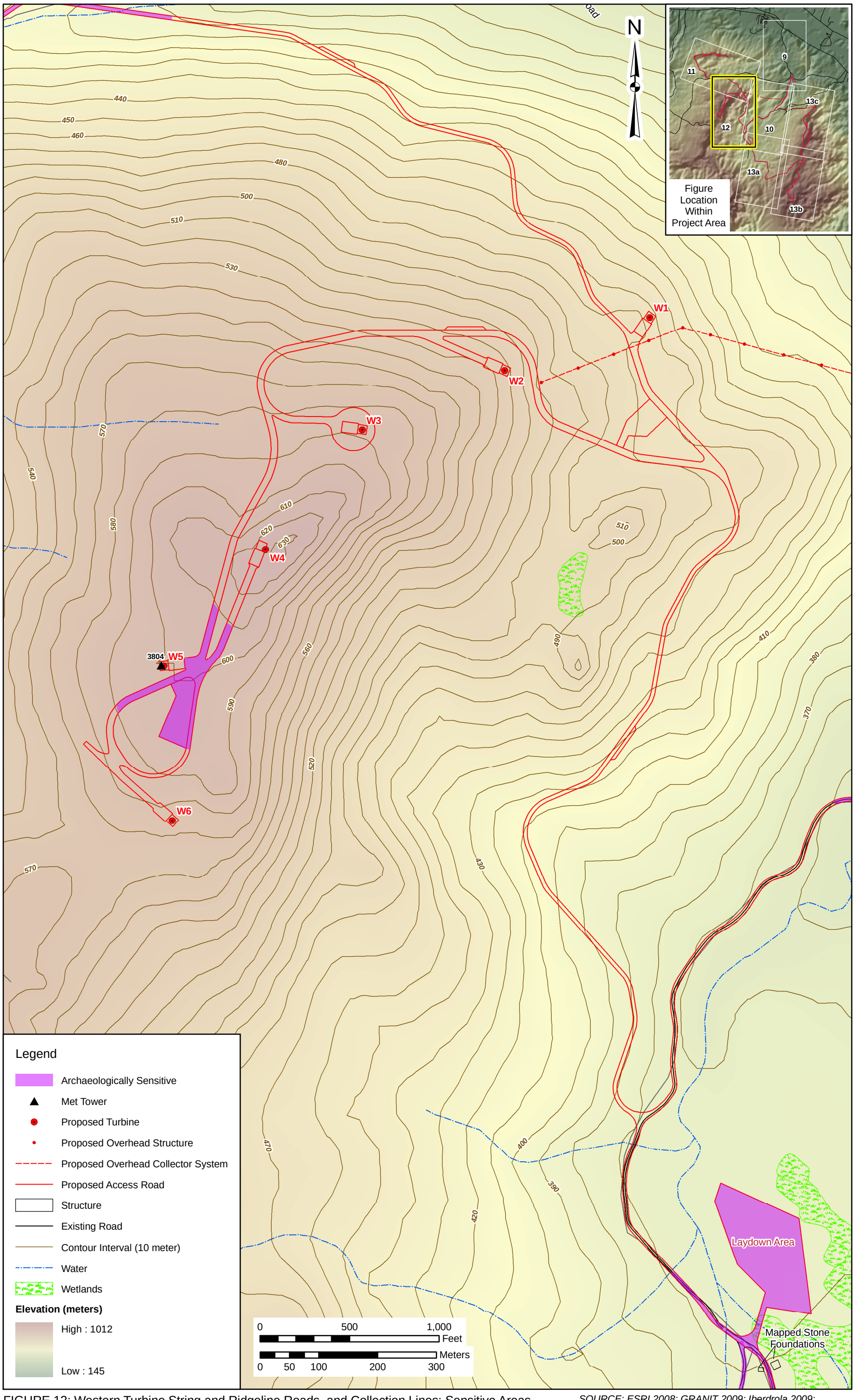

FIGURE 12: Western Turbine String and Ridgeline Roads, and Collection Lines: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

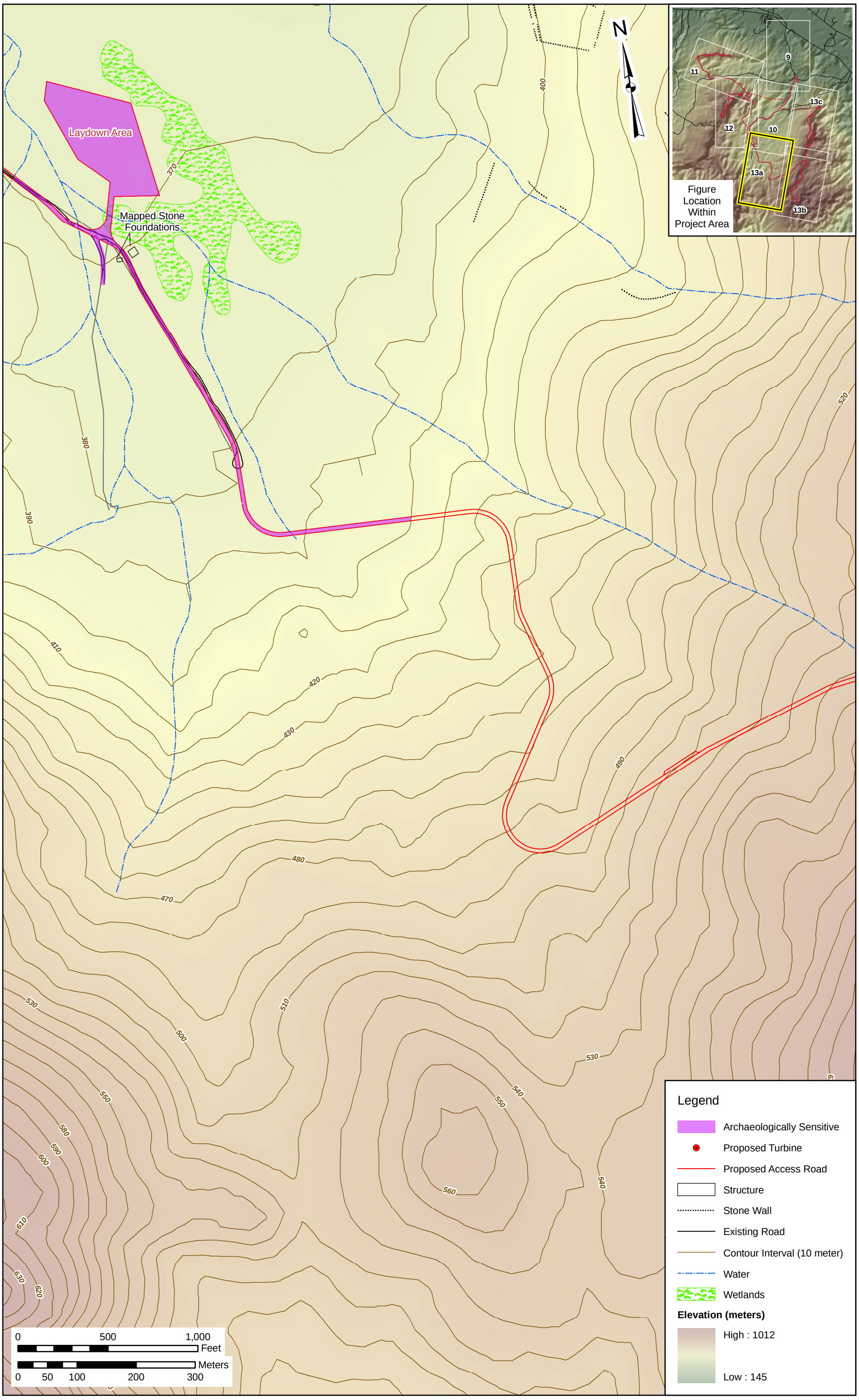

FIGURE 13a: Eastern Ridgeline Access Road: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

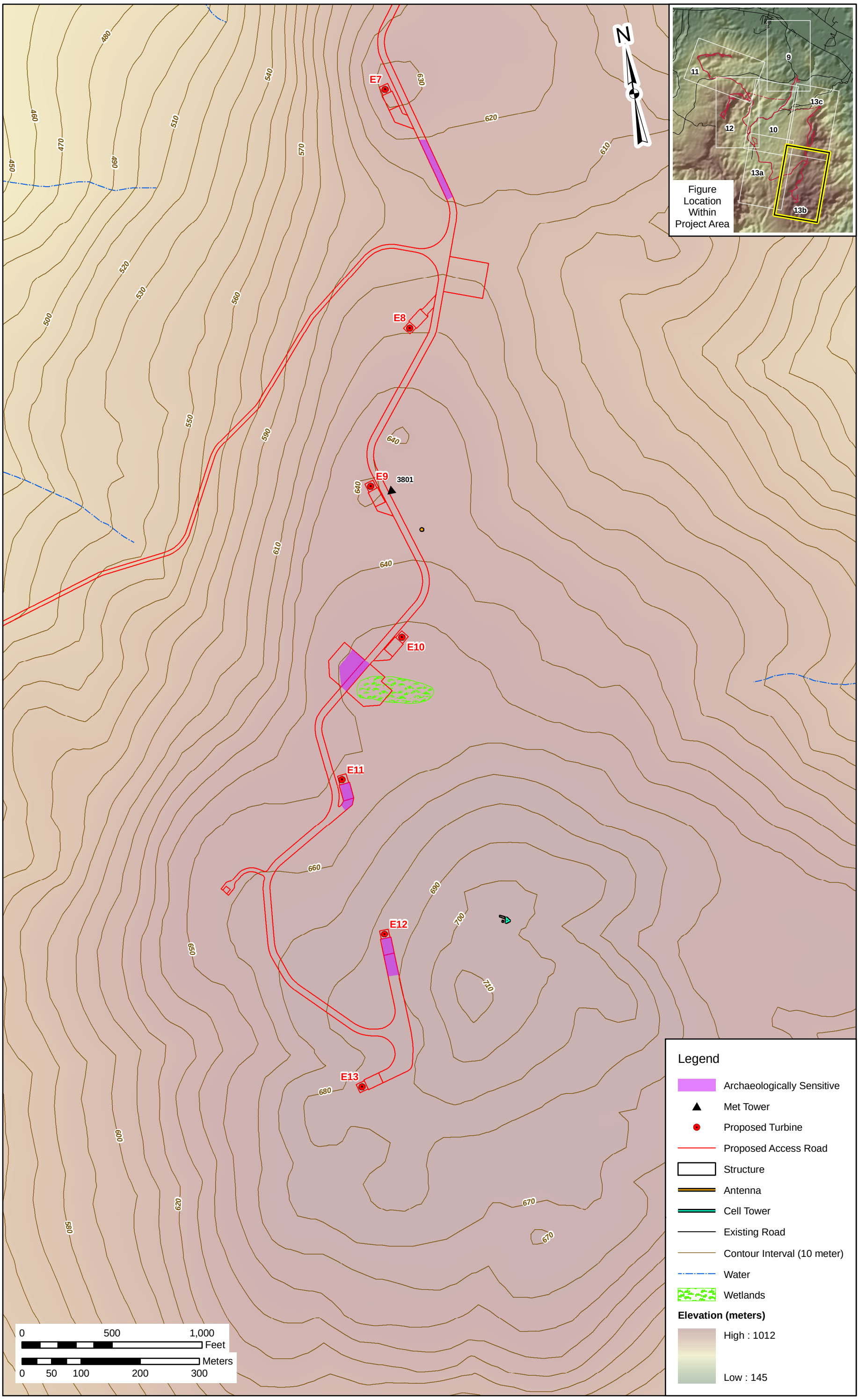

FIGURE 13b: Eastern Turbine String and Ridgeline Roads: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

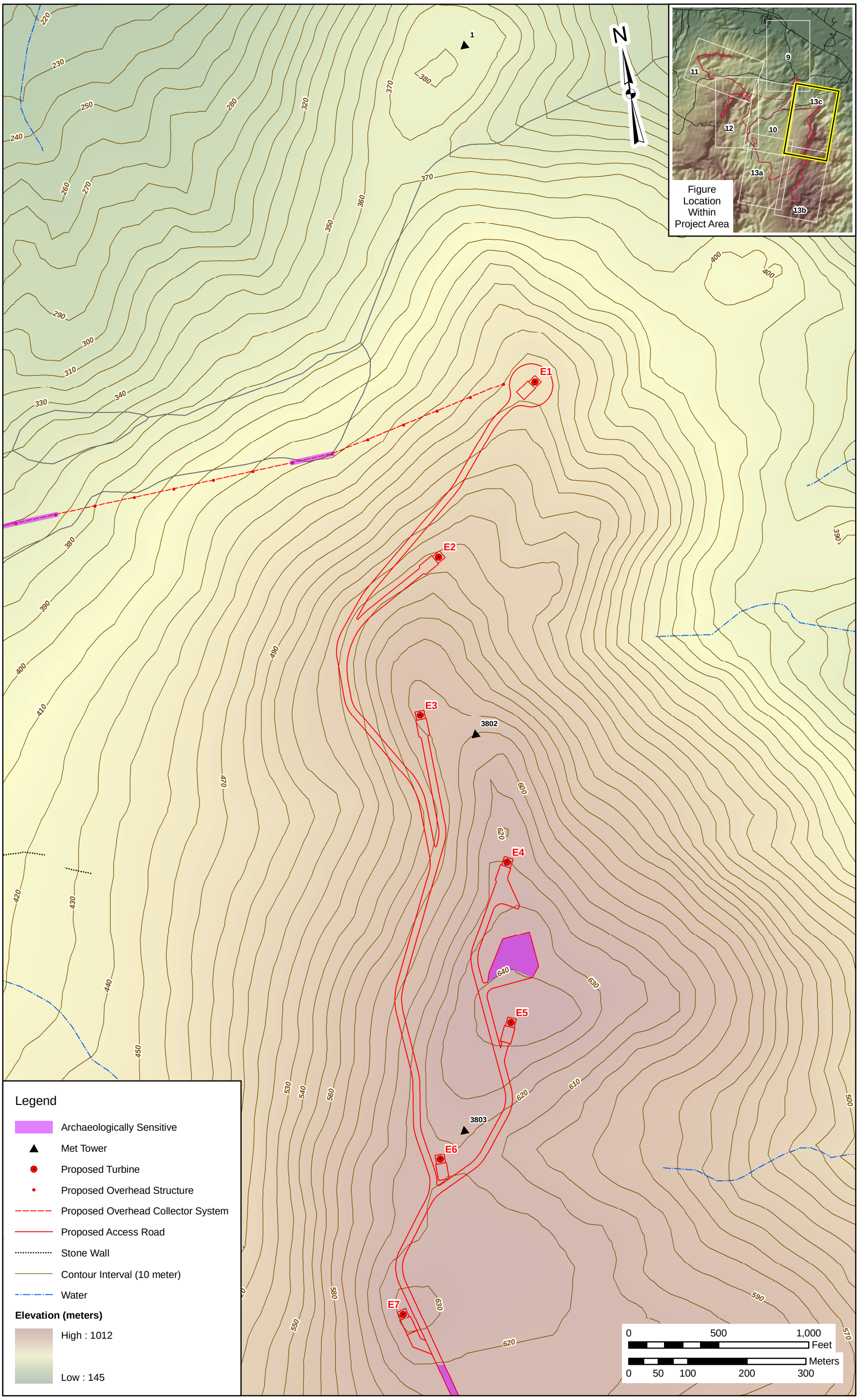

FIGURE 13c: Eastern Turbine String and Ridgeline Roads, and Collection Lines: Sensitive Areas

SOURCE: ESRI 2008; GRANIT 2009; Iberdrola 2009; U. S. Fish and Wildlife Service 2009; WebGIS 2009

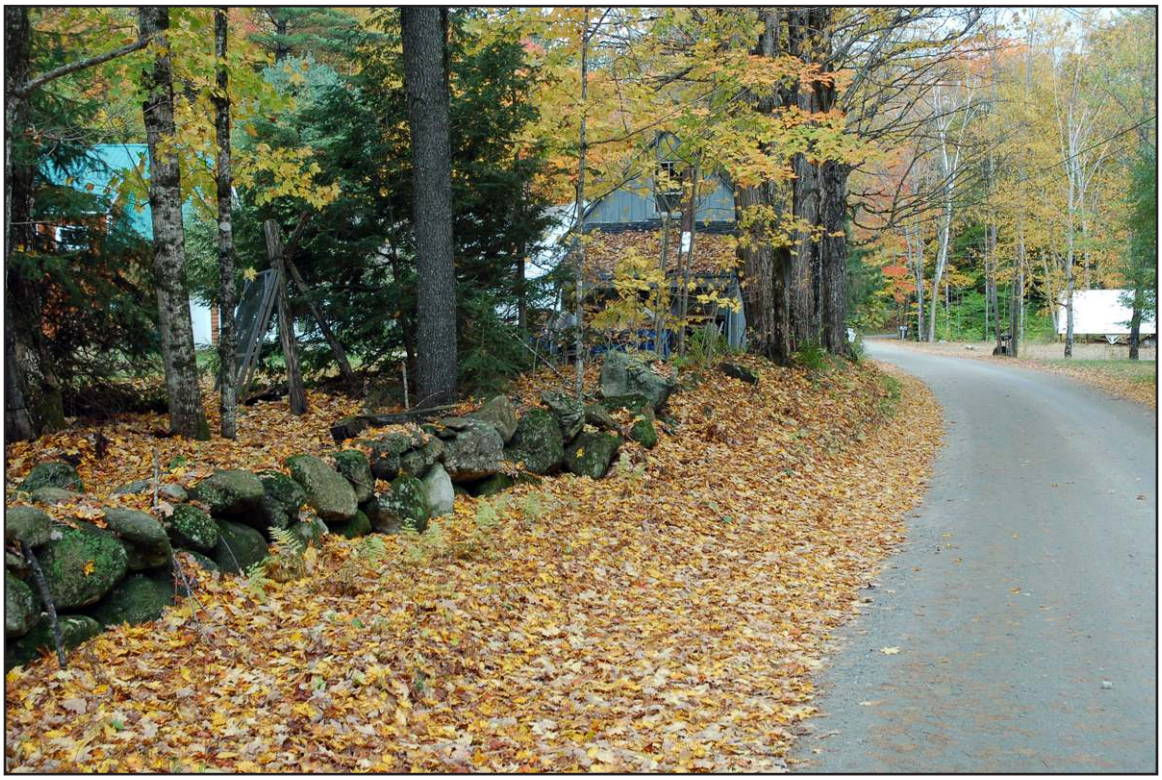

PLATE 1: Groton Hollow Road, View to North

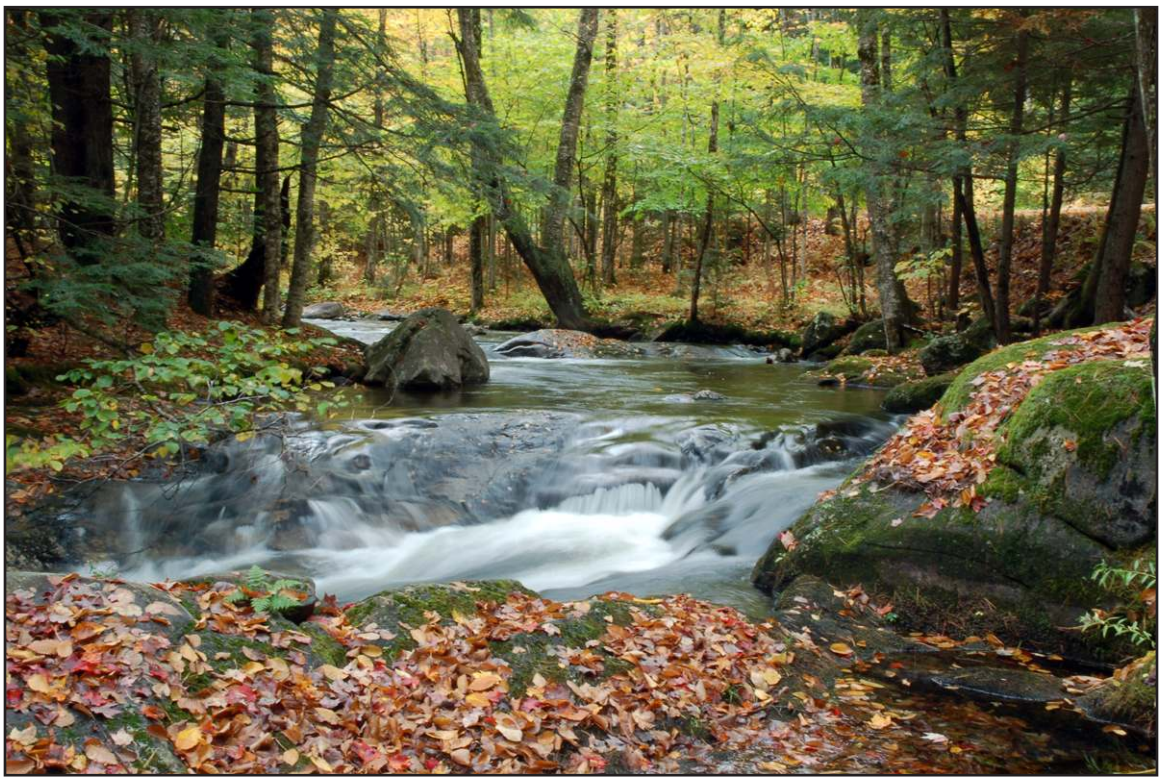

PLATE 2: Clark Brook, View to South

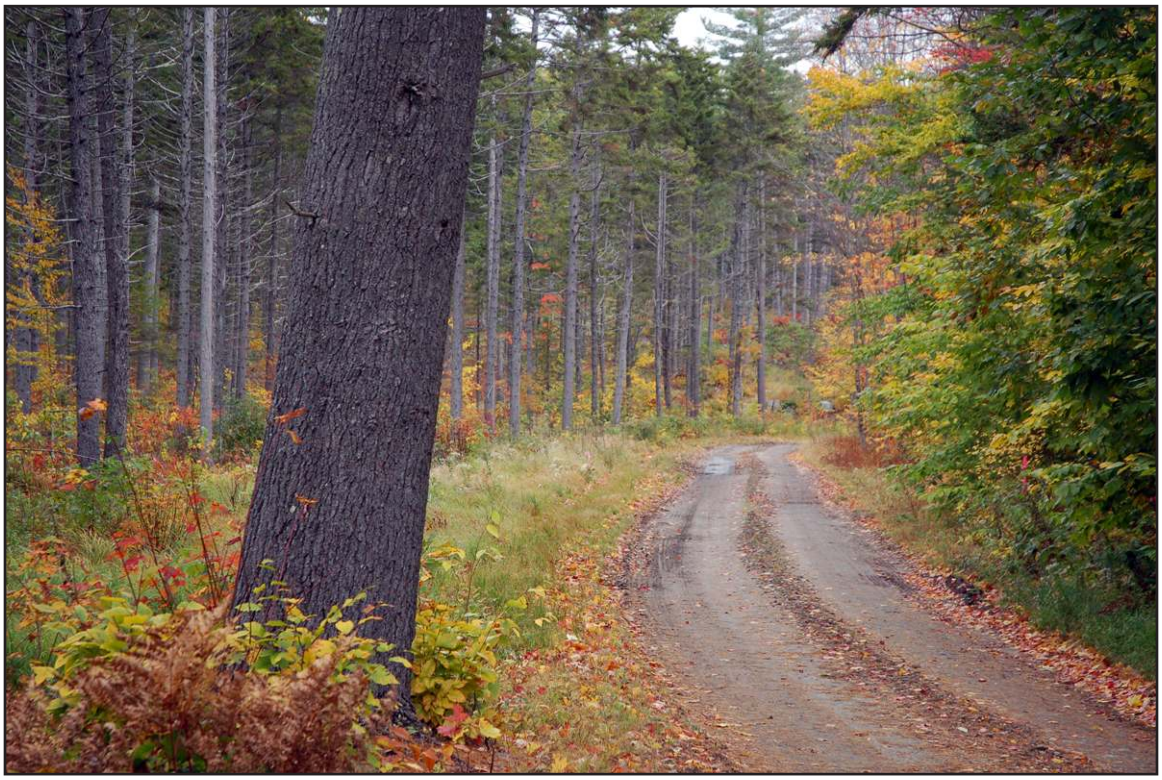

PLATE 3: Sensitive Area Along Primary Access Road, View to East

PLATE 4: Sensitive Area along Primary Access Road, View to West

PLATE 5: Junction of Spur Road and Primary Access Road, View to South

PLATE 6: Cut Granite Foundation (MDS 9), View to East from Primary Access Road

PLATE 7: Cut Stone Foundation (MDS 9), View to South

PLATE 8: Second Stone Foundation, Opposite Side of Access Road from MDS 9; View to Southwest

PLATE 9: Spur Road off Primary Access Road, View to South

PLATE 10: Primary Access Road, Steep Slope on Each Side; View to Southwest

PLATE 11: Steep, Rocky Terrain around Turbine N1

PLATE 12: Exposed Bedrock Outcrop and Slope at Turbine N4

PLATE 13: View Southeast to Eastern Ridgeline from Turbine N5

PLATE 14: Old North Groton to Rumney Road, between Northern and Western Ridgelines; View to East

Two areas have some archaeological potential. The ridgeline access road passes through an area of more moderately sloped to fairly level terrain between Turbine N6 and N1, near a small unnamed tributary drainage and scattered wetlands. This area is considered worth investigating for precontact-period archaeological resources through subsurface survey (see Figure 11). The second area is south of Turbine N6 where the proposed access road crosses the old North Groton to Rumney Road (Plate 14). This area is considered to be sensitive for historical archaeological resources based on the recorded historical archaeological sites and land-use history in this area.

3. Western Turbine String and Ridgeline Access Road

The western turbine string and ridgeline access roads are located south of the northern turbine string on Fletcher Mountain and will be accessed via a newly constructed access road that will run to the north from the primary access road (see Figures 1-3). The western turbine string consists of six proposed turbines (W1 to W6) oriented in a northeast to southwest direction along the ridgeline. Overall, archaeological sensitivity in this part of the wind farm is considered to be low (see Figure 12). Terrain along the proposed ridgeline access roads from both the south and north (see Figure 12) is very steep and rocky. None of the proposed turbine locations are suitable for subsurface testing as each area consists of hummocky to steeply slope, rocky terrain with patches of exposed bedrock (Plates 15-19).

The only area on the western ridgeline where testing is possible as a means to investigate possible upland Native American sites would be a level area between Turbines W4 and W6 (see Figure 12; Plate 20).

4. Eastern Turbine String and Ridgeline Access Road

The eastern turbine string, located along a ridgeline on Tenney Mountain, is accessed from the west via the ridgeline access road that begins at the southern end of the primary access road (see Figures 1-3). With the exception of a fairly level area near the primary access road (see Figure 13a), the eastern ridgeline is not considered to be archaeologically sensitive.

There are a few select locations worth investigating further for possible Native American archaeological resources (see Figures 13a-c). Proposed turbine locations are all generally located on very rocky and/or sloped landforms or are located on exposed bedrock outcrops (Plates 21-23); however, the southern end of the eastern turbine string is not quite as steep or rocky and some areas could be tested for precontact archaeological resources. This includes an area south of Turbine E10 and the proposed locations for Turbine E11 and E12 (see Figure 13b; Plate 24). Lastly, sections of ridgeline access road between Turbines E4 and E5 and between E7 and E8 are level and in a saddle area (see Figures 13b and 13c), and therefore is a good location to test for upland archaeological resources (Plate 25 and 26). Excellent views of the surrounding landscape may be achieved from the eastern ridgeline, notably to the west toward Fletcher Mountain from Turbine E4 and to the north toward the Baker River from E2 (Plates 27 and 28).

5. O&M Building, Switchyard, and Laydown Areas

The proposed location for the O&M Building, switchyard and laydown area is just southeast of where the new/improved portion of the primary access road begins (see Figure 9). This parcel of land is not excessively sloped and is neatly situated between Clark Brook and an unnamed drainage. These environmental variables and the location of recorded historical resources in the area give this section of the APE moderate sensitivity for historical archaeological sites and moderate sensitivity for precontact period Native American sites. Subsurface testing is recommended for this area.

PLATE 15: Excess Slope Around Turbine W1

PLATE 16: Exposed Bedrock Outcrop at Turbine W2

PLATE 17: Exposed Bedrock Outcrop and Excess Slope at Turbine W3

PLATE 18: Exposed Bedrock Outcrop at Turbine W4

PLATE 19: Excessive Slope at Turbine W5

PLATE 20: Proposed Ridgeline Access Road between Turbine W5 and W6

PLATE 21: Steep Slope at Turbine E2

PLATE 22: Exposed Bedrock Outcrop and Slope at Turbine E7

PLATE 23: Slope at Turbine E9

PLATE 24: Level, Wooded Area at Turbine E11

PLATE 25: Laydown Area between Turbine E5 and E4

PLATE 26: Proposed Ridgeline Access Road, between Turbine E7 and E8; View to North

PLATE 27: View North to Baker River from Turbine E2

PLATE 28: View West to Western Ridgeline from Turbine E4

To the south, near the southern end of the primary access road, a second laydown area was assessed for archaeological sensitivity (see Figure 10). This location is relatively flat and sits close to a number of small drainages and a small pond and wetland (Plate 29). This location was previously forested and is considered to be moderately archaeologically sensitive for precontact period archaeological resources based on environmental variables. Based on the historical resources recorded nearby, portions of the laydown area are also considered to be moderately sensitive for historical archaeological resources (Plate 30). The two stone building foundations recorded during the walkover survey and discussed in section 1 are located a short distance away (see Figure 10).

6. Overhead/Underground Collection System

At the time of the walkover survey, the alignment of the collection system was not known. Nevertheless, an assessment of the archaeological sensitivity of the planned area of the system was made based on the background research conducted on the APE. The western portion of the collection system, between Turbine W2 and the primary access road, travels down excessively steep terrain until it reaches the primary access road and passes through a section of more gradual slope. That area is considered sensitive for historical archaeological resources based on the proximity of stone walls, an extant building, and MDS in that area (see Figure 11). Northern portions of the collection system along the primary access road in the vicinity of the O&M Building are also considered sensitive based on these same variables.

East of the primary access road, the collection system goes up steep terrain to Turbine E1. Near the primary access road is an area along the general route of the overhead line that is more gradually sloped and exhibits signs of historical land use in the form of roads, and therefore some subsurface survey is recommended based on a moderate sensitivity for historic archaeological sites (see Figures 10 and 13c).

PLATE 29: Small Pond and Wetland between Laydown Area and Stone Foundation (MDS 9)

PLATE 30: Proposed Laydown Area near Southern End of Primary Access Road, View to Northwest

IV. Summary and Recommendations

The Louis Berger Group, Inc. (Berger), Albany, New York, has completed a Phase IA archaeological survey for the proposed Groton Wind Project in the Town of Groton, Grafton County, New Hampshire, on behalf of Groton Wind, LLC, a subsidiary of Iberdrola Renewables, of Portland, Oregon. The purpose of the survey was to identify and assess areas of archaeological sensitivity (or potential) and identify any archaeological sites in the area of potential effect (APE), which for this survey includes the project footprint, i.e., all parts of the proposed wind farm that will be subject to ground disturbance, including turbine construction, access road improvements and construction, substation and switchyard construction, and collection line installation, in addition to the existing roads. This investigation was designed in accordance with guidelines issued by the New Hampshire Division of Historical Resources.

The proposed wind farm is located in the Town of Groton in a current private forestry and recreation area (hunting, mountain biking, and snowmobiling). Wind turbines will be placed along three ridgelines, and access roads will extend from the existing Groton Hollow Road in the valley below the ridge features. The wind farm has an approximate impact size, or footprint, of 115 acres (46.54 hectares). Project components consist of 25 wind turbines and associated infrastructure, including gravel access roads, an O&M Building, a permanent meteorological tower, a switching station, and overhead and underground collection lines. The wind farm is accessed via Groton Hollow Road off New Hampshire Route 25 (Moosilauke Road), with wind turbines situated along the north-south oriented ridges on Fletcher and Tenney mountains. Wind turbine locations extend to the upper reaches of the mountains, ranging in elevation from about 1,850 to 2,137 feet (565 to 652 meters). The wind farm lies in a rural, unpopulated setting and consists of variable terrain. Along the ridgelines where the proposed turbines are to be erected, the terrain is rugged with primarily moderate to steep slopes and thin, typically very stony, poorly drained soils, as well as outcrops of exposed bedrock.

The Phase IA archaeological survey consisted of background research and fieldwork, to gain an understanding of previous disturbances and cultural resource management projects in the area, identify and assess areas of archaeological sensitivity (or potential), and identify any extant archaeological sites in the APE. None were identified, but a single precontact period Native American archaeological site and 55 historical archaeological sites were identified within a 3-mile (4.8-kilometer) radius of the APE. Overall, the APE is considered to possess a low probability to contain precontact archaeological resources; however, some areas are worth investigating for precontact resources in order to test the predictive model against the possibility of locating small upland sites. Particular areas of the APE were identified as possessing a moderate to high potential to contain historical archaeological resources based on the presence of MDS and extant cut-stone foundations adjacent to the APE, as well as known historic archaeological sites in the vicinity of the APE. Based on the results of this survey, it is Berger's opinion that a Phase IB archaeological survey is warranted for the Groton Wind Project.

Specific areas recommended for archaeological survey include portions along the 11 miles (17.7 kilometers) of new/improved primary access road that are close to MDS, documented stone walls, and favorable terrain, particularly at the location of two cut-granite foundations identified adjacent to the southern end of the primary access road that were identified during the walkover survey south of a junction of the primary access road and a spur road; two areas on the northern ridgeline, an area of more moderately sloped to fairly level terrain between proposed Turbines N6 and N1 near a small unnamed tributary drainage, and south of Turbine N6 where the proposed access road crosses the old North Groton to Rumney Road; an area on the western ridgeline on a level area between Turbines W4 and W6; an area on the eastern ridgeline south of Turbine E10, the proposed locations for Turbine E11 and E12, and sections of the ridgeline access road between Turbines E4 and E5 and between E7 and E8; the proposed

location for the O&M Building, switchyard, and laydown area, just southeast of where the new/improved portion of the primary access road begins; the second laydown area, near the southern end of the primary access road; and, along the location of the collection line installation, areas between Turbine W2 and the primary access road, along the primary access road in the vicinity of the O&M Building, and an area east of the primary access road up to Turbine E1.

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