

# **ENVIRONMENTAL ASSESSMENT**

## **VERIZON-PINKHAM NOTCH FIBER OPTIC CABLE PROJECT**

**Androscoggin and Saco Ranger Districts  
White Mountain National Forest**

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## CHAPTER 1 – INTRODUCTION

### 1.0 PROPOSAL SUMMARY

Verizon is proposing to install a fiber optic cable from its switching center in Gorham, New Hampshire to its switching center in Jackson, New Hampshire. Verizon has determined that this project is necessary for the integrity of the communications network in the northern portion of the state. Geographical and technical alternatives have been considered, and it has been determined that the best route for the new fiber cable would be along NH Highway #16 through Pinkham Notch, a portion of which would be on National Forest System (NFS) lands in the White Mountain National Forest (WMNF). The proposed fiber optic cable would be installed using a combination of aerial construction on existing poles where existing poles are easily accessible and underground construction where pole lines are inaccessible or non-existent.

### 1.1 PURPOSE OF THE ACTION

Communication facilities have evolved over the past one hundred years into complicated, sophisticated, and sometimes confusing combinations of high and low technology components. In early years, metallic, voice-grade communications paths took the form of “open wire”, or individual, un-insulated conductors, strung from pole to pole. Local networks were designed in a snowflake-like pattern, with the conductors originating at a central point and extending outward through cities and towns to terminate at “subscriber’s” homes and businesses (Appendix A, Figure 1). An operator located at the center of the “snowflake” accomplished switching. The operator made manual connections to complete a path from one subscriber to another. Additionally, the operator could connect subscribers in the local network to networks serving other towns where another operator worked. Over time the local networks were referred to as “exchanges”, digital switches replaced operators, and the connection between exchanges became the telephone company’s interoffice facility (IOF), or toll network. With digital switching and greater volumes of “traffic” came remote switching centers (RSMs) containing one exchange and the large, centrally-located “host” switches that the RSMs depend on for access to the IOF network. The media to carry voice traffic also evolved into the bundled copper conductor intra-exchange cables found in today’s aerial and underground communications systems and the fiber optic inter-exchange IOF cable connecting exchanges together.

Along with the technological evolution of communications came its social evolution. The telephone is no longer a luxury. Instead, it has become the very foundation for everything from keeping families in touch, to providing an essential means of communication for matters of public health and safety, business, and even national security. It is the large and complex geographic footprint of the IOF network that supports our social dependence on communications.

As the societal importance of the network increases, the consequences of its occasional failure are more cataclysmic, both perceived and potentially in fact. Failure can result from mechanical damage inflicted by vehicles, ice storms, fires, tree falls, dig-ups, electronic malfunction, etc. The large communication carriers of modern systems have

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recognized the need to provide alternative IOF and RSM to host routing from exchanges so that the failure of a single IOF route will not have the effect of isolating large areas from the rest of the telephone world. “Ring architecture”, a survivability design strategy, was born of the need to accommodate alternate routing in the event of a failure. Unlike the interoffice designs of the past that incorporated a central IOF switching location with a single spoke-like toll cable to each of the exchanges it served, today’s ring architecture employs the principle of multiple access to every local exchange. In a sense, ring architecture resembles the outside of a spoke wheel and each exchange occupies a place along the rim (Appendix A, Figure 2). In its location on the ring, an exchange can forward traffic in either direction onto the ring, and traffic will still arrive at the host office for switching to other points on the ring. Severing the ring at any one place would not impede the flow of traffic as the ring is designed to carry all or part of the traffic in either direction around its perimeter. Multiple failures of the ring diminish the ability to carry traffic, but limited inter-exchange communication is still possible and intra-exchange communications remains unaffected. Finally, these small rings of a dozen or so RSM exchanges are made part of larger rings by connecting host offices into their own rings.

## 1.2 PROPOSED ACTION

Verizon proposes to construct an IOF fiber cable link between its Gorham RSM switching office and its Jackson RSM switching office through Pinkham Notch adjacent to NH Highway #16. This would provide a southern New Hampshire link through North Conway for “North Country” subscribers, thereby completing a ring whose opposite side is along the Connecticut River Valley. The total project length is about 23 miles, 17.0 miles of which would be within the WMNF proclamation area (Appendix A, Figures 3a-d). Of this distance, 11.3 miles would be on or adjacent to NFS/New Hampshire Department of Transportation (NHDOT) lands while 5.7 miles would be on or adjacent to private/NHDOT lands. The existing special use permit (#401417) which authorizes Verizon to operate and maintain communication lines and poles on the WMNF from Gorham to the height of land in Pinkham Notch would be amended to include the proposed new segments of communication line and associated structures.

Installation of the fiber optic cable would be by two methods: aerial on existing pole lines (7.6 miles, 2.4 miles of which would be on or adjacent to NFS lands) and underground (or occasionally attached to NHDOT bridges) within the cleared right-of-way of NH Highway #16 (9.4 miles, 8.9 miles of which would be on or adjacent to NFS lands). Aerial installation would simply attach fiber optic cable to the existing poles and copper phone cable. Typical underground installations would consist of three lines of 1¼” innerduct conduit, one of which would contain fiber optic cable (two are spares) and one 2-pair locating line. Underground installations would be accomplished by conventional digging (backhoe/excavator) and by directional drilling (highway/driveway/small stream crossings) techniques. Installation by plowing techniques will not likely be possible due to the rocky nature of the roadbed fill and adjacent roadside areas. Underground sections would require standard flush-mounted handholes and aboveground pedestals, colored to blend into their surroundings, for access to the proposed cable. Proposed locations of each are shown on the detailed engineering

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plans available for review at WMNF headquarters in Laconia and at the Saco and Androscoggin Ranger District offices in Conway and Gorham, respectively. In general, access points are typically installed every 1,000 feet or so and aboveground pedestals would typically be placed every mile.

The specific installation plan is contained in detailed engineering plans cited above. General installation plans are as follows:

**Jackson switching center to the WMNF Proclamation Boundary:** The new fiber optic cable would be attached to the existing telephone and electric pole line, on or adjacent to private/NHDOT lands, from the Jackson switching center north along NH Highways 16A and 16 to the WMNF Proclamation Boundary.

**WMNF Proclamation Boundary in Jackson to end of existing pole line just south of the WMNF Boundary in Jackson:** The new fiber optic cable would be attached to the existing telephone and electric pole line for a distance of 3.6 miles, on or adjacent to private/NHDOT lands, north from the WMNF Proclamation Boundary to the end of the existing pole line, just south of the WMNF boundary in Jackson.

**End of existing pole line just south of the WMNF Boundary in Jackson to the Verizon Building just north of the Appalachian Mountain Club (AMC) facilities:** A new, underground conduit system, consisting of three lines of 1¼" innerduct conduit, one of which would contain fiber optic cable (two are spares) and one 2-pair locating cable would be installed within the cleared right-of-way of NH Highway #16, for a distance of 4.3 miles. Approximately 0.1 miles of this distance would be on or adjacent to private/NHDOT lands while the remainder would be on or adjacent to NFS/NHDOT lands. Except in the immediate vicinity of the AMC facilities, there are no existing aerial or underground telephone facilities in this area.

**Verizon Building to the entrance to Wildcat Ski Area:** The new fiber optic cable would continue north to the NHDOT highway maintenance garage near the top of Pinkham Notch for about 0.4 miles on the existing "off-road" pole line that supports both telephone and electric cables. From the NHDOT garage, the proposed cable would cross aerially to the eastern side of NH Highway #16 where it would enter a proposed, underground conduit system, consisting of three lines of 1¼" innerduct conduit, one of which would contain fiber optic cable (two are spares), one 2-pair locating line and one 4" PVC line (also a spare). This underground installation would continue to the north for about 0.4 miles, following the highway right-of-way to the entrance to Wildcat Ski Area. The existing aerial copper cable from the NHDOT garage to various Wildcat Ski Area facilities that passes through the woods and Wildcat parking lots would be retained to permit continued telephone service to Wildcat. All of the proposed and existing telephone cable in this section is on or adjacent to NFS/NHDOT lands.

**Wildcat Ski Area to the Glen House to Nineteen-mile Brook Trail parking lot:** The new, underground conduit system would consist of three lines of 1¼" innerduct conduit, one of which would contain fiber optic cable (two are spares), and one 2-pair locating

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cable would continue underground along the front of Wildcat's parking lot on NH Highway #16 and would extend to the northern end of the Glen House property largely within the cleared right-of-way of Highway #16 to where an existing accessible pole line is situated, a distance of about 1.9 miles. Of this distance, 0.4 miles would be on or adjacent to private/NHDOT lands while the rest would be on or adjacent to NFS/NHDOT lands. At the pole line, the new fiber optic cable would rise onto existing poles, join with a new copper cable to replace the existing cable, and continue aurally in a northerly direction following the highway right-of-way for 0.8 mile to an existing pole situated near the Nineteen-mile Brook Trail parking lot. Of this distance, slightly less than 0.7 miles would be on or adjacent to private/NHDOT lands while the remaining 0.1 miles would be on or adjacent to NFS/NHDOT lands. The existing copper cable from the northern end of the Glen House property to the Glen House buildings must be retained for continued telephone service, but the existing copper cable from Glen House south to Wildcat, located aurally on a remote pole line, would be removed. This remote pole line also carries electric cable; thus, the pole line itself would remain.

**Nineteen-mile Brook Trail parking lot to Camp Dodge:** At the Nineteen-mile Brook Trail parking lot, the new copper and fiber optic cables would leave the pole line and enter a proposed underground conduit system, consisting of three lines of 1¼" innerduct conduit, one of which would contain fiber optic cable (two are spares), one 2-pair locating cable and one direct-buried copper cable, which would continue to the north within NH Highway #16's cleared right-of-way for about 0.2 miles, all on or adjacent to NFS/NHDOT lands, until it reaches an existing Verizon pole line. Here, the new copper and fiber optic cables would exit the underground conduit system and resume progress northerly on the existing pole line within the highway right-of-way until reaching the Camp Dodge driveway, at distance of about 0.2 miles, all of which is on or adjacent to NFS/NHDOT lands. The 0.2 miles of existing aerial copper cable and poles on the west side of NH Highway #16 from just south of Nineteen-mile Brook and adjacent to the Peabody River would be removed.

**Camp Dodge to Dolly Copp Campground to the WMNF Proclamation Boundary in Gorham:** The existing pole line enters the woods at the Camp Dodge access driveway as it progresses northerly to access a relatively remote utility right-of-way. In order to avoid this inaccessible aerial section, the proposed underground conduit consisting of three lines of 1¼" innerduct conduit, one of which would contain fiber optic cable (two are spares), one 2-pair locating cable and one direct-buried copper cable, would be buried from the Camp Dodge driveway, within the cleared right-of-way of NH Highway #16, northerly for a distance of about 1.1 miles, all on or adjacent to NFS/NHDOT lands, to a point where an existing aerial cable crosses NH Highway #16 to serve Dolly Copp Campground. The new copper cable would end here as it rises on a pole to meet the cable to Dolly Copp. The three lines of 1¼" innerduct conduit, one containing fiber optic cable (two are spares) and one 2-pair locating cable, would continue underground northerly for 1.5 miles within the cleared right-of-way of NH Highway #16, all on or adjacent to NFS/NHDOT lands, to a point where the existing pole line emerges from the forest to enter the highway right-of-way. Here, the new fiber cable would take advantage of existing poles to continue to the north aurally until it exits the WMNF Proclamation

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Boundary north of the Androscoggin Ranger Station, a distance of 2.6 miles. Of this distance, 0.9 miles would be on or adjacent to private/NHDOT lands while the remaining 1.7 miles would be on or adjacent to NFS/NHDOT lands. Verizon would remove the existing aerial cable situated on the remote pole line from Camp Dodge northerly for 2.6 miles to the place where it emerges from the woods. However, since this remote pole line also carries electric cable, the pole line itself would remain.

**WMNF Proclamation Boundary in Gorham to the Gorham switching center:** From the WMNF Proclamation Boundary, the fiber optic cable would continue northerly and aerially on the existing pole line until it reaches its termination in Gorham switching center.

## 1.3 NEED FOR THE PROPOSED ACTION

There are two inter-office communication risk issues in northern New Hampshire's communications network today. The first relates to IOF redundancy – the ability of a host office (in this case, Littleton) to communicate with host offices in southern New Hampshire (Laconia) and beyond in the event of failure of a primary IOF route. The second risk issue is inter-office communication between RSMs (remote switching modules serving individual exchanges) and their hosts. Added to these communication risks is a socioeconomic issue caused by New Hampshire's "digital divide", an imaginary line formed by contrasting levels of communication technology available to the public in the northern and southern parts of the state. So great is the economic impact of this digital divide that former Governor Jeanne Shaheen, with the approval of the Executive Council, earmarked \$250,000 from the state's economic development fund to study remedies to the problem of high speed telecommunications product availability.

The recent Verizon fiber optic cable project through Kinsman Notch addressed the IOF redundancy risk by providing alternative routing of traffic between the Littleton and Laconia offices. However, with the exception of the Franconia and North Woodstock RSMs, it did nothing to address the second risk factor, inter-office communication survivability, for most RSMs north and several RSMs south of the White Mountains. The project described in this environmental assessment would address many of the remaining communication and "digital divide" needs.

### **Details and Consequences of the Present Fixed Line Communication Situation in Northern New Hampshire**

From a communications network standpoint, New Hampshire is somewhat divided in half by the mountains and notches traversing the state. The area to the south of the mountains is more populated than that of the north and the communications network in the south has a greater volume of traffic. Most of the south's inter-host IOF and intra-host IOF (RSM to RSM) network has already been safeguarded by ring architecture. However, the topography of the "North Country" has made construction of a similar system difficult. The rugged mountains and notches that stand in the path of IOF facilities have been circumvented with two intrastate interoffice paths. The first is along the Connecticut River Valley on the western border of New Hampshire and the second, and most recent,

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is through Kinsman Notch. Together these two routes provide assurance that a single catastrophic IOF network failure will not interrupt communications traffic between Littleton and Laconia host offices. The same level of assurance is not presently available to all of the RSM switching centers *within* the host offices' operating areas in the North Country.

All traffic out of and between the Pittsburg, West Stewartstown, Colebrook, North Stratford, Groveton, Lancaster, Jefferson, Errol, Milan, Berlin, Gorham, Twin Mountain, Bethlehem, Franconia, Littleton and Whitefield RSM switching centers, and the independent company switches in Bretton Woods and Dixville Notch, must go through the Littleton host office to be connected to interoffice routes in southern New Hampshire. Likewise, traffic out of Jackson, North Conway, Madison, North Woodstock, Campton Waterville Valley, and others south of the mountains must go through the Laconia host switching office to be connected to the wider interoffice network. If the link to their respective host offices is lost, the local (RSM) offices become isolated and their only phone line communication would be within the individual RSM.

“End Offices”, or those RSM exchange switches near the perimeter of the host office's serving area, are the most vulnerable to isolation in the event of intra-host area IOF failure. This is true because the position they occupy within the host operating area implies longer cable lengths to their host. They are also subject to the technically necessary issue of routing their IOF link through other RSMs on its path to the host. Consequently, even under the best of circumstances, they become the most geographically difficult to gather into a ring. North Conway, Conway, Madison, Bartlett and Jackson are such offices within the Laconia host's serving area because they occupy a position near the geographic perimeter of the host's area. Similarly, Gorham, Jefferson, Berlin, Milan, Errol, Lancaster and Whitefield are among those that are physically beyond the reach of any present survivability ring.

Loss of an IOF facility south of Madison would isolate the Madison (1,850 lines), Conway (5,100 lines), North Conway (7,500 lines), Bartlett (1,250 lines) and Jackson (3,100 lines) exchanges from their Laconia host. Loss of an IOF facility between (not necessarily south of) any of these RSMs would have similar but less widespread consequences. In total, as many as 18,800 lines in the Laconia host area could be subject to isolation if the IOF facility was severed at a single location. Indeed, in July of 2003, the entire Mount Washington Valley area was isolated from the telephone communications world, including E-911, for several hours when a truck struck a pole in Conway and caused an IOF facility failure.

The consequences of an IOF failure between Lancaster and Littleton would be similar where most of the RSMs to the north and east of the Littleton host would be lost in the event of an intra-host failure. Included in the list of vulnerable exchanges are Whitefield (2,200 lines), Lancaster (3,050 lines), Jefferson (750 lines), Berlin (7,000 lines), Milan (1,150 lines), Errol (650 lines) and Gorham (2,650 lines). The loss of an IOF cable between these exchanges could result in the interrupted communications, including E-911, to as many as 17,450 lines.

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The purpose of this project, therefore, is to provide survivability to certain vulnerable RSMs totaling more than 36,000 telephone lines, at or near the perimeter of the Laconia and Littleton host serving areas. There would be the added effect of providing alternative routing between the hosts themselves. Figure 4 presents the existing and proposed survivability/redundancy plan for the “north country”

## 1.4 CONSISTENCY WITH 2005 WHITE MOUNTAIN NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The enabling authorities of the USDA-Forest Service are contained in many laws enacted by Congress and the regulations and administrative directives that implement these laws. The major laws include; the Organic Administrative Act of 1897, the Weeks Act of 1911, the Multiple-Use Sustained Yield Act of 1960, the Forest and Rangeland Renewable Resources Planning Act of 1974, and the National Forest Management Act of 1976.

Forest Service policy allows individual Forests to permit utilities on NFS land on a case by case basis through the Special Use Permit process. On the WMNF, the goals of the 2005 Land and Resource Management Plan (LRMP) regarding administration of special uses may be found on pages 1-6 and 1-7:

*Special uses will be administered to provide a consistent, fair, and comprehensive application of regulations and policies to all users.*

*Any new or expired use of public lands will be examined to determine if the use is consistent with goals, objectives, and management area direction.*

Standards and guidelines are the specific, technical direction contained in the 2005 LRMP for managing resources. For special uses (land use authorizations), the 2005 LRMP provides the following standards and guidelines applicable to this proposed action on pages 2-9 through 2-11:

- S-1 *Special Uses must be managed to best serve the public interest, in accordance with the following:*
  - a. *Private uses of National Forest System land must not be authorized when such uses can be reasonably accommodated on other lands.*
  - b. *Special Use requests must be reviewed for their compatibility with Forest-wide and management area direction, as well as consideration of environmental values, economic feasibility, and determination of social and economic benefits.*
  - c. *Upon renewal or transfer of a permit, or as soon as practical, existing uses that are not compatible with the Forest Plan must be brought into compliance.*
- .....
- S-2 *Special use proposals that may affect heritage resources (e.g., ground disturbance or potential for discovery and displacement or removal of artifacts) must include an archeological/paleontological clause.*

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- S-3 *To reduce the proliferation of separate rights-of-way, new transportation, utility, and communication use proposals shall be accommodated within existing corridors to the maximum extent feasible. Mitigation measures shall be determined by project level planning.*  
.....
- S-6 *Contracts, leases, or permits must include appropriate clause(s) requiring invasive species control plans to minimize spread to other areas.*
- G-1 *Special use applications may be denied if the authorizing officer determines that:*
  - a. *The proposed use would not be in the public interest.*
  - b. *The proposed use would otherwise be inconsistent with applicable federal, state and local laws, regulations, and special orders that apply to National Forests.*
  - c. *The proposed use may endanger public health or safety.*
  - d. *The proposed use conflicts or interferes with administrative use by the Forest Service, other authorized existing uses, or uses of adjacent non-federal lands.*
  - e. *The applicant does not or cannot demonstrate technical or financial capability.*
- G-2 *Applicants may conduct environmental analysis and supporting activities (e.g., cultural resource surveys, biological evaluations) and submit them to the responsible official for consideration in Forest Service decisions to the extent allowed by law, regulation, and policy.*  
.....
- G-4 *Electrical utility lines of 33 kilovolts or less, communication lines, or pipelines should be installed by burying unless one or more of the following applies:*
  - a. *Visual quality objectives of the area can be met using an overhead line.*
  - b. *Burial is not feasible due to geological hazards or unfavorable geologic conditions.*
  - c. *Greater long-term site disturbance would result.*
  - d. *It is not technically feasible.*

At present, Verizon maintains and operates an aerial communications line on approximately ½ of the WMNF project area (proclamation boundary in Gorham south to the AMC facilities) under authority of a Special Use Permit #4041417 issued on January 18, 1963 by the WMNF, with amendments. This permit is presently being revised and re-issued by the WMNF. Authorization of the proposed action would require modification of this permit.

## 1.5 DECISION FRAMEWORK

The purpose of this environmental assessment is to provide the Forest Supervisor, the Deciding Official, with sufficient information and analysis to make an informed decision about the Verizon – Pinkham Notch Fiber Optic Cable proposal, given the purpose and need for the proposed action. Specifically, the Deciding Official will make the following decisions:

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- Which of the alternatives would best meet the Purpose and Need for the Proposed Action while still maintaining consistency with the Forest Plan?
- Which of the alternatives would best address relevant issues raised by the public and Forest Service specialists?
- Which of the alternatives provides the least impact to Forest resources while still meeting the Purpose and Need for the Proposed Action?
- Are the environmental impacts associated with the alternatives significant enough to warrant preparation of an Environmental Impact Statement?

## 1.6 PUBLIC INVOLVEMENT

On March 23, 2006, a scoping letter and report was sent to more than 180 interested individuals, organizations and agencies. Legal notice was published in the Manchester Union Leader on March 27, 2006 and the 30-day scoping period ended on April 26, 2006. This project was also listed in the Quarterly Schedule of Proposed Actions for the White Mountain National Forest (WMNF). The Scoping materials were also posted on our WMNF web page ([www.fs.fed.us/r9/white](http://www.fs.fed.us/r9/white)).

Fourteen comments were received during the scoping report. These comments and our responses are provided in Appendix B. Issues raised by the public and by our own specialists helped in defining the level of analysis required, developing alternatives and formulating mitigation measures.

## 1.7 ISSUES USED TO DEVELOP POTENTIAL ALTERNATIVES

Most commentors supported the proposed action, but several suggested that various mitigation measures should be required to minimize potential impact to the environment and recreational activities in Pinkham Notch. Potential mitigation measures are presented in Section 3 within the various resources discussions. If the proposed project is permitted by the Forest Service, required mitigation measures will be detailed in the decision document.

### 1.7.1 Burial of Aerial Utility Lines

Several commentors strongly supported the burial of existing aerial utility lines on the WMNF. Some commentors suggested that more or all of Verizon's overhead cable should be buried and that the Forest Service should more aggressively encourage other utilities to participate in Verizon's cable burial project.

### 1.7.2 Non-Native Invasive Species

The WMNF is implementing a ten-year plan to eradicate non-native invasive species (NNIS) throughout the Forest. Forest Service specialists raised concerns about this project because of its potential to encourage and spread NNIS.

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## **CHAPTER 2 – DESCRIPTION OF ALTERNATIVES**

Chapter 2 describes the alternatives evaluated in this environmental assessment as required by NEPA section 102(2)(E). This chapter also presents alternatives considered but eliminated from detailed analysis. Comparison of alternatives further defines the issues and provides a clear basis for choice for the Deciding Officer. Where applicable, mitigation measures that are designed to lessen or avoid impacts resulting from implementation of proposed activities are also discussed. Other specific mitigation measures may be developed during review of final design prior to construction.

### **2.0 PROCESS USED TO DEVELOP ALTERNATIVES**

NEPA requires evaluation of a range of alternatives where a reasonable range exists. Accordingly, the Forest Service used issues raised during scoping in combination with input from our own specialists to develop a range of potential alternatives to be considered in this EA. Two of these alternatives, the No Action and the Proposed Action, are considered in detail. Two other alternatives were identified and considered, but, for a variety of reasons, were eliminated from further consideration. These “considered but eliminated” alternatives are presented Section 2.1 while the alternatives considered in detail are presented in Section 2.2.

### **2.1 ALTERNATIVE CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

Several alternatives to the Proposed Action were identified during planning and scoping of the project. Two were carried forward as alternatives considered in detail, but two were considered but eliminated from further consideration. One alternative was eliminated because it did not meet the purpose and need of the project, as described in Chapter 1. The second alternative was eliminated because it had significantly greater environmental impacts and additional safety concerns than the proposed action without commensurate benefits.

#### **2.1.1 Potential Alternative Locations that Avoid Pinkham Notch**

The purpose of this project is to provide redundant routing of telecommunication service for residents north of the WMNF. There are few options available for cable crossing the mountains. Most of the communications traffic north of the WMNF is routed to the west along the Connecticut River Valley before it can reach points south. An alternate route has been constructed in the Kinsman Notch region of the WMNF to offer emergency telecommunications survivability in the event of catastrophic facilities failures along the Connecticut River Valley route. While the Kinsman project will protect telecommunications for Franconia, Littleton and surrounding areas, and Lincoln/Woodstock, it cannot (because of geography) offer complete survivability to Gorham, Berlin, Milan, and other communities in the northeastern part of New Hampshire. Because of geographic location, North Conway, Bartlett, and Jackson would also benefit by the alternate route through Pinkham Notch. The only alternative to placing fiber inter-exchange cable in Pinkham Notch is to place the facility in Crawford Notch. However, a facility in Crawford Notch would, like Kinsman Notch, leave some

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of the larger New Hampshire communities (i.e., Berlin and Gorham) without a redundant link to the south. This project is, indeed, the only solution if certain large NH communities are to enjoy the safety of a redundant or survivable telecommunications link. For these reasons, alternative locations for this project were eliminated from further consideration.

## **2.1.2 Potential Alternatives that would bury additional or all of Verizon's Existing and Proposed Aerially Communication Lines**

Verizon proposes to bury all new communication line where no communication line presently exists. In addition, all remotely located, existing line, where access requirements would create significant environmental impacts, would also be relocated to the NH Highway #16 corridor, replaced with the proposed underground conduit system. However, where existing aerial line is readily accessible from the paved roadways, these sections are proposed to remain aerial after upgrade to fiber optic. In addition, some service lines (e.g., service to Dolly Copp Campground and Joe Dodge Camp) will not be upgraded to fiber optic and will remain unchanged and aerial. Existing aerial sections that are proposed to remain aerial after upgrade are as follows:

### **Verizon Building at the top of Pinkham Notch to the entrance to Wildcat Ski Area:**

The new fiber optic cable would travel north aerially from the Verizon Building adjacent to the AMC buildings to the NHDOT highway maintenance garage site near the top of Pinkham Notch, a distance about 0.4 miles on the existing "off-road" pole line. This pole line is largely not visible from NH Highway # 16. From the NHDOT garage site, the proposed cable would cross aerially to the eastern side of NH Highway #16 where it would enter the proposed, underground conduit system. This entire section of pole line presently carries both communication and electrical cable and is located entirely on NFS/NHDOT lands.

**Glen House to Nineteen-mile Brook Trail parking lot:** From the northerly side of the Glen House property, the new fiber optic cable would travel aerially in a northerly direction following the NH Highway #16 right-of-way for 0.8 mile on an existing pole line to an existing pole situated near the Nineteen-mile Brook Trail parking lot. Of this distance, slightly less than 0.7 miles would be on or adjacent to private/NHDOT lands while the remaining 0.1 miles would be on or adjacent to NFS/NHDOT lands. This entire section of pole line presently carries both communication and electrical cable and is visible for its entire length from NH Highway #16.

### **0.2 miles northerly of the Nineteen-mile Brook Trail parking lot to Camp Dodge:**

Approximately 0.2 miles northerly of the Nineteen-mile Brook Trail parking lot, the new fiber optic cable would travel northerly on an existing pole line within the right-of-way of NH Highway #16 until reaching the Camp Dodge driveway, a distance of about 0.2 miles, all of which is on or adjacent to NFS/NHDOT lands. This section of existing pole line carries only Verizon communication cable and is or will be entirely visible from NH Highway #16.

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**WMNF Proclamation Boundary in Gorham southerly for about 2.6 miles:** From the WMNF Proclamation Boundary in Gorham, the proposed fiber optic cable would travel southerly on an existing pole line within the right-of-way of NH Highway #16, past the Androscoggin Ranger Station to a point where the existing pole line leaves the highway right-of-way, a distance of about 2.6 miles. Of this distance, 0.9 miles would be on or adjacent to private/NHDOT lands while the remaining 1.7 miles would be on or adjacent to NFS/NHDOT lands. Most of this section of existing pole line carries both communication and electrical cable, but about 0.3 miles carries just Verizon communication cable. The pole line carrying communication cable would be visible for its entire length from NH Highway #16.

In summary, there are about 4.0 miles of proposed fiber optic cable that would remain aboveground on existing pole lines. Of this total, 2.4 miles would be on NFS lands and 1.4 miles would be on private/NHDOT lands, outside of Forest Service jurisdiction. Of the 2.4 miles on the WMNF, 1.9 miles would be on pole lines that carry both communication and electrical cable and 0.5 miles would be on Verizon's own poles.

If the Forest Service were to require Verizon to bury their remaining aerial cable, that decision would have to be based on the resource benefits to be gained by burial. Most of the proposed aerial cable would be on a pole line that carries both communication and electrical line (1.9 miles). Verizon has formally invited the other utilities to join in their proposed cable burial project, but the electrical carrier, Public Service Company of New Hampshire, has not responded to their invitation, and it is therefore presumed that they are not interested. Consequently, this 1.9 miles of pole line and aerial cable and the associated visual impacts, will remain, irrespective of whether Verizon places their fiber optic cable underground or not. If Verizon were to place their cable underground for this 1.9 miles, there would be numerous associated short-term impacts (ground disturbance, considerable traffic disruption, noise from excavation equipment and trucks hauling trench bedding material, etc.) and minor long-term impacts (aboveground pedestals). Long-term benefits of burial would be negligible since the pole line with electrical cable would remain.

If Verizon were to string their fiber optic cable aerially along this 1.9 miles of pole line, as proposed, short-term and long-term impacts would both be negligible (i.e., no ground disturbance, shorter duration and a lesser degree of traffic disruption, less construction noise since only standard utility trucks would be required, aerial cable would be overlashed with stainless steel wire to existing communication cable, making the new cable virtually indiscernible from the existing cable to most observers). There would be no long-term benefits to aerial installation, but impacts to Forest resources would be less than burial impacts.

The remaining 0.5 mile of proposed aerial cable would be attached to Verizon's own poles. One 0.2-mile section of aerial pole line is located immediately to the south of the Camp Dodge entrance. There are essentially four options for installing new cable in this area. Instead of placement in the NH Highway #16 right-of-way, (0.2 miles underground and 0.2 mile aerial, as proposed), the cable could be strung aerially on the existing,

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remote pole line that currently carries electrical cable alone from near Nineteen-mile Brook to Camp Dodge. From there, the cable would be strung aerially on existing poles (as is currently done with the service line to the Camp) back out to NH Highway #16, where it would then continue underground, as proposed. Aerial installation requires truck access (primarily for splicing cable), and there presently is no truck access to this remote pole line. Creating access to this line would require construction of a road, either along the existing pole line right-of-way or from NH Highway #16 or both in difficult conditions involving steep terrain and at least one perennial stream crossing. Major ground disturbance, tree cutting and potential riparian impacts would be anticipated. For these reasons, installing fiber optic cable on this remote section of pole line is not considered a viable option.

Consequently, the cable must be installed within the right-of-way of NH Highway #16. The first 0.2 miles from Nineteen-mile Brook are proposed to be underground on the east side of the NH Highway #16, because both the existing electrical and communications pole lines are not easily accessible in this area. For the last 0.2 miles, there are three options for installation along the highway: 1) underground along the east side of the highway; 2) underground along the west side of the highway; or, 3) a combination of underground and aerial, as proposed. The highway in this area has minimal shoulder areas and is closely bordered on the east by ledge and steep banks. On the west, it is closely bordered by guard rails and the Peabody River. Underground installation on the west could only be achieved by installation within a portion of the paved travel way because of the lack of shoulder area, the close proximity of guard rails and the Peabody River. NHDOT will not allow installation within the paved travel way, so underground installation on the west side of the highway is not considered feasible.

Underground installation on the east side of the highway would require burial within and under the ditch line, because of the proximity to ledge and steep slope away from the highway. NHDOT requires 48" of coverage if cable is buried within their roadway ditches. Since the ditch itself is 18-24" below the pavement, underground installation would create a 6 foot deep trench immediately adjacent to the paved roadway which could compromise the integrity of the pavement and roadway edge. Furthermore, stormwater management during construction would be difficult or impossible since in most places, there would be no way to divert stormwater out of the construction area. Finally, the highway in this location is steadily downhill to the north, making it difficult for northbound traffic to control speed. The lack of shoulder area here would make it necessary to close the northbound lane and occasionally stop all traffic to allow movement of construction vehicles which would create considerable safety concerns. For these reasons, it is concluded that underground installation of cable on the east side of NH Highway #16 in this area is not desirable. It is further concluded that aerial installation of cable in this short 0.2 mile section provides the most environmentally acceptable method of installation without creating any additional resource impacts.

The second section of proposed aerial cable that would be adjacent to the highway and on Verizon's own pole line is a 0.3 mile section located just north of Clay Brook, a short distance to the south of the Androscoggin Ranger District headquarters. Here the existing

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pole line carrying both electrical and communication cables splits just north of Clay Brook, with the electrical pole line taking a straight but remote route for about 0.3 miles while the communication line remains within the highway right-of-way on its own pole line. As with the short aerial section near Camp Dodge, there are four installation options for this section: 1) aerially on the remote electrical pole line; 2) underground on the west side of the highway within the highway right-of-way; 3) underground on the east side of the highway within the highway right-of-way; or, 4) aerially on the existing communication pole line within the highway right-of-way, as proposed.

Installing cable aerially on the existing, remote electrical pole line encounters similar access difficulties as in the section near Camp Dodge. Truck access must be created both along the pole line right-of-way and from NH Highway #16. Ground disturbance, tree cutting and other vegetation impacts make this alternative undesirable. Underground installation could be accomplished on either side of the highway in this area, and without the environmental and safety difficulties that would be present in the aerial section near Camp Dodge. Even so, underground installation would still create numerous associated short-term impacts (ground disturbance, considerable traffic disruption, noise from excavation equipment and trucks hauling trench bedding material, etc.) and minor long-term impacts (aboveground pedestals). Since aerial installation on the existing communication pole line would eliminate most of these short-term resource impacts without resulting in any further long-term impacts (i.e., visually, there would be no noticeable change from existing conditions) and because aerial pole lines would remain both to the north and south of this section, it is concluded that aerial installation of cable on the existing communication pole line offers the viable option of cable installation with the least amount of resource impact. For these reasons, underground installation of fiber optic cable in this area was eliminated from further consideration.

## 2.2 ALTERNATIVES CONSIDERED IN DETAIL

### 2.2.1 Alternative 1: No Action

As required by NEPA, a No Action Alternative has been included for consideration. Although this alternative does not meet the Purpose and Need for the project, it provides a baseline for assessing the effects of the Action Alternative. Under the No Action Alternative, no fiber optic cable would be placed in Pinkham Notch. The section between the AMC facilities and Jackson would remain without communication lines of any kind, while communication lines on the north side of Pinkham Notch would continue to be entirely aerial and copper. Communication service to North Country and Upper Saco River valley subscribers would continue to be compromised by the existing lack of system redundancy.

There would be no change to existing conditions. Verizon would continue to use existing pole lines, which would require periodic access, maintenance and repair.

### 2.2.2 Alternative 2: Proposed Action

Alternative 2 proposes to construct an IOF fiber cable link between Verizon's Gorham RSM switching office and its Jackson RSM switching office through Pinkham Notch

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adjacent to NH Highway #16. This would provide a southern New Hampshire link through North Conway for “North Country” subscribers, thereby completing a ring whose opposite side is along the Connecticut River Valley. The total project length is about 23 miles, 17.0 miles of which would be within the WMNF proclamation area (Appendix A, Figures 3a-d). Of this distance, 11.3 miles would be on or adjacent to NFS/New Hampshire Department of Transportation (NHDOT) lands while 5.7 miles would be on or adjacent to private/NHDOT lands.

Installation of the fiber optic cable would be by two methods: aerial on existing pole lines (7.6 miles, 2.4 miles of which would be on or adjacent to NFS lands) and underground (or occasionally attached to NHDOT bridges) within the cleared right-of way of NH Highway #16 (9.4 miles, 8.9 miles of which would be on or adjacent to NFS lands). Aerial installation would simply overlash fiber optic cable to the existing copper phone cable attached to existing poles. Underground installations would typically consist of three lines of 1¼” innerduct conduit, one of which would contain fiber optic cable (two are spares) and one 2-pair locating line. Underground installations would be accomplished by conventional digging (backhoe/excavator) and by directional drilling (highway/driveway/small stream crossings) techniques. Installation by plowing techniques will not be possible due to the rocky nature of the roadbed fill and adjacent roadside areas and is not proposed here. Underground sections would require standard flush-mounted handholes and aboveground pedestals, colored to blend into their surroundings, for access to the proposed cable. Proposed locations of each are shown on the detailed engineering plans available for review at WMNF headquarters in Laconia and at the Saco and Androscoggin Ranger District offices in Conway and Gorham, respectively. In general, access points are typically installed every 1,000 feet or so and aboveground pedestals would typically be placed every mile.

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## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.0 INTRODUCTION

This chapter describes the existing conditions in the project area and the expected impacts on each Forest resource that might be affected by implementation of the Action Alternative. Resources that may be affected include: Water; Soils; Vegetation; Wetlands; Fisheries and Aquatics; Air Quality; Wildlife; Federal Threatened, Endangered, and Proposed Species (TEPS); Non-Native Invasive Species (NNIS); Regional Forester Sensitive Species (RFSS); Heritage Resources; Visual Resources; Recreation; and Socio-Economics.

Issues regarding resources that were raised during the scoping process (see Section 1.7 and Appendix B) are addressed in this chapter. Each resource section is organized as follows:

- Description of Affected Environment (Existing Condition).
- Analysis of Direct and Indirect Effects on the Resource (by alternative).
  - Direct Effects are caused by the action and occur at the same place and time.
  - Indirect Effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
- Analysis of Cumulative Effects on the Resource (by alternative).
  - Cumulative Effects result from the incremental impact of the action when added to other past, present and reasonably foreseeable actions, regardless of which government agency, non-governmental group or individual undertakes such other actions.

In accordance with the June 24, 2005 Council of Environmental Quality (CEQ) Memorandum entitled “Guidance on the Consideration of Past Actions in Cumulative Effects Analysis” (CEQ *June 24, 2005*), with 40 CFR 1500-1508, and the January 1997 CEQ publication “Considering Cumulative Effects under the National Environmental Policy Act” (CEQ *January 1997*), the cumulative effects analysis for each resource area considers a geographic area and a time frame of past, present and foreseeable future actions “relevant to reasonably foreseeable significant adverse impacts” on that resources, and “essential to a reasoned choice among alternatives”. This consideration does not extend to actions “outside the geographic boundaries or time frame established for the cumulative effects analysis” (CEQ *January 1997*).

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## 3.1 WATER RESOURCES

### 3.1.1 Affected Environment of Water Resources

The project area is in the headwaters of two Pinkham Notch rivers – the Ellis to the south, and the Peabody to the north. The Ellis River is a tributary of the Saco River and the Peabody is tributary to the Androscoggin River. The analysis area for direct and indirect impacts to Water Resources is that portion of each watershed that is downstream of the project area while the analysis area for cumulative effects is the entire watershed of each river. The analysis area does not include either the Saco or the Androscoggin Rivers since the potential for effects on either is diminishingly small.

NH Highway #16 parallels both rivers in much of the project area, and consequently, so does the proposed fiber optic cable. In addition, there are numerous permanent and intermittent streams that cross the project area as well as dozens of roadway drainage culverts. Figures 3a-d show many of the larger streams and the detailed engineering plans, available at the Androscoggin and Saco District Ranger offices and at headquarters in Laconia, show all of the streams and culverts that cross the project area.

Water quality in both rivers is expected to be generally good to excellent. The New Hampshire Department of Environmental Service's (NHDES) draft 2006 303(d) impaired waters list includes a portion of the Peabody in the project area as being impaired for Benthic Macroinvertebrates and a portion of the Ellis as impaired for pH. Causes of the impairments are listed as unknown.

### 3.1.2 Direct and Indirect Effects on Water Resources

**Alternative 1: No Action** – There would be no new direct or indirect effects on Water Resources under the No Action Alternative. Water quantity would be as presently exists in each watershed, affected to a minor extent by existing activities that modify watershed hydrology, including roads, parking areas, fields, openings, campgrounds, and ski and hiking trails. Water quality would also be expected to remain as presently exists, generally excellent. Existing impairments would be expected to continue, most of which are likely related to land use activities in the two watersheds and to regional atmospheric deposition.

**Alternative 2: Proposed Action** – The proposed action, installing fiber optic communication cable aerially on existing poles lines and underground within the cleared right-of-way of NH Highway #16 is expected to have no long-term direct or indirect effects on water watershed hydrology or water quality. This is because there would be no significant change from existing conditions once the construction areas are stabilized. Nevertheless, in the short-term, temporary impacts on both water quantity and quality are possible. Water quantity impacts could include increased runoff from disturbed, unvegetated roadside ditches and from compacted soils. Water quality impacts could include increased turbidity from erosion and sediment transport of disturbed soils and temporary spoil storage areas and petroleum product contamination from spills and leakage from construction equipment.

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However, all potential Water Resource impacts can be reduced to acceptable levels by use of appropriate construction methods, standard best management practices (BMPs) and Forest-Wide Management Direction. No cable placement would occur in flowing waters. Live streams would be crossed by directional boring under the stream beds, burial above culverts or by attachment to bridges. Various best management practices would be used during construction to control stormwater runoff from construction areas, both during and after construction. Final construction plans, available at the Androscoggin and Saco District Ranger Offices and at Forest headquarters in Laconia, detail the construction methods and locations and types of stormwater management methods to be employed. Pursuant to the 1987 amendments to the Clean Water Act, this project will require EPA notification of construction activity and preparation of a Phase II Stormwater Pollution Prevention Plan that will dictate how stormwater is to be controlled on the construction site. A copy of this plan would be filed with the Forest Service prior to construction. Forest-Wide Management Direction, contained in the 2005 Land and Resource Management Plan (Forest Plan), provides standards and guidelines that contain specific technical direction for managing and protecting Water Resources. In addition, project specific mitigation measures would be required to minimize impacts to Water Resources. These mitigation measures would be listed in the appropriate decision document, should the Forest Service decide to permit this project.

### **3.1.3 Cumulative Effects on Water Resources**

The analysis area for cumulative effects on Water Resources is the entire watersheds of both the Peabody and Ellis Rivers. The analysis timeframe was selected to be 10 years in the past and 10 years in the future. Ten years in the past was selected because overall watershed conditions in the upper Peabody and Ellis Rivers have been largely stable for that timeframe and these stabilized conditions (percent forest, roads, ski area terrain, hiking trail, etc.) continue to influence water quality and quantity in minor but measurable ways. A timeframe of 10 years in the future was selected because 10 years is about as far into the future as can be reasonably foreseen with respect to those activities that might affect Water Resources, especially on non-NFS lands.

Under Alternative 1, there would be no cumulative effects on Water Resources, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within each watershed is in the WMNF, and consequently, recent past, present and future activities on these lands are and will be carefully controlled to ensure that Water Resources impacts are kept at acceptable levels. It is expected that these conditions will remain into the foreseeable future. On private lands, it is probable that some level of growth and development will continue that has the potential to impact Water Resources of both the Peabody and Ellis Rivers in the lower portions of their respective watersheds. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Water Resources from these activities. Existing water quality impairments, as listed in NHDES's draft 2006 303(d) report, are scheduled to be evaluated by NHDES during the next decade which may actually lead to water quality improvements in certain sections of both the Peabody and Ellis Rivers.

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Under Alternative 2, short-term potential direct and indirect impacts to both water quality and quantity could add cumulatively to existing minor Water Resources impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence Water Resources, albeit to a generally minor and acceptable extent, include NHDOT highway construction, maintenance and operation, recreation activities including Wildcat Ski Area operations, AMC Pinkham Notch Visitor Center facilities and operations, and Dolly Copp campground and private land activities including operations of the Glen House and the Mount Washington Auto Road. In addition, portions of both the Peabody and Ellis Rivers watersheds are allocated to Management Area (MA) 2.1. MA 2.1 lands are managed, in part, for timber production and therefore Alternative 2 could cumulatively add to minor Water Resources impacts occurring from logging activities. With appropriate BMPs and application of Forest-Wide Management Direction, Standards and Guidelines, cumulative effects to Water Resources from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at acceptable levels.

Because neither the long-term direct nor indirect impacts to Water Resources are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on Water Resources within the analysis area or analysis timeframe, even when considered in combination with past, present and foreseeable future projects within the Peabody and Ellis Rivers watersheds.

## **3.1.4 Wild and Scenic Rivers**

Both the Peabody and the Ellis Rivers are listed as eligible for potential designation under the Wild and Scenic Rivers Act (USDA Forest Service 2005). Because the proposed actions would take place entirely within the cleared rights-of-way of NH Highway #16 and existing utility corridors, neither Alternatives 1 nor 2 would have any direct, indirect or cumulative effect on the eligibility of either the Peabody or the Ellis River for designation under the Wild and Scenic Rivers Act.

## **3.2 SOILS**

### **3.2.1 Affected Environment for Soils**

All soil-disturbing construction activities will take place within the cleared right-of-way of NH Highway #16 in either non-native soils imported as part of road construction activities or in native soils that have been intensely modified by highway construction actions. Thus, the analysis area for Soils is limited to the immediate project area itself. While these highway shoulder and drainage ditch soils provide important roadside-stabilizing functions and support maintained roadside vegetation, they are not typical of valuable agricultural or forest soils and are not managed as such. These soils are thin, often nutrient poor and periodically impacted by roadside maintenance and construction activities.

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## 3.2.2 Direct and Indirect Effects on Soils

**Alternative 1: No Action** – There would be no direct or indirect effects on Soils under Alternative 1. No soil disturbance would occur beyond that already occurring due to highway and utility line maintenance.

**Alternative 2: Proposed Action** – The action alternative has the potential to directly affect low value, roadside soils, primarily through erosion of disturbed soils during construction and from compaction during and after construction. The Forest Plan and its supporting Final Environmental Impact Statement acknowledge that soil disturbance activities on the Forest have the potential to cause soil erosion. Generally, most erosion is site-specific and affects small or linear areas, which is especially applicable to the Proposed Action. Furthermore, potential impacts are short-term and become negligible after stabilization of the project site. Many years of experience on the Forest has shown that Forest-Wide Management Direction, Standards and Guidance for Soils, contained in the 2005 Forest Plan, when combined with good construction practices and standard BMPs, can minimize or eliminate soil erosion and either minimize soil transport to streams or direct it to safe outlet. Consequently, potential short-term effects on Soils are expected to be minor and not significant. No long-term effects on Soils are expected with the Proposed Action. Project specific mitigation measures would be required to minimize impacts to Soils. These mitigation measures would be listed in the appropriate decision document, should the Forest Service decide to permit this project.

## 3.2.3 Cumulative Effects on Soils

The analysis area for cumulative effects on Soils is the immediate project area. The analysis timeframe is 10 years in the past to 10 years in the future. This timeframe was chosen because experience on the Forest indicates that 10 years is generally more than enough time for a site to be stabilized after soil disturbing activities. Ten years is also a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects on Soils, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within the cumulative effects analysis area is either in the WMNF or NHDOT right-of-way, and consequently, past, present and future activities on these lands are carefully controlled to ensure that soil impacts are kept at acceptable levels. It is expected that these conditions will remain into the foreseeable future. On private lands, it is conceivable that some level of growth and development will continue that would have the potential to impact Soils in the privately-owned portions of the analysis area. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Soils from these activities.

Under Alternative 2, short-term potential direct effects to Soils could add cumulatively to existing, minor soil impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence Soils within the analysis area include NHDOT highway and

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especially roadside ditch construction, maintenance and operation and utility line repair and maintenance. In addition, portions of both the Peabody and Ellis Rivers watersheds are allocated to Management Area (MA) 2.1 lands. MA 2.1 lands are managed, in part, for timber production and therefore Alternative 2 could cumulatively add to short-term Soils impacts occurring where logging activities require access across the analysis area. With appropriate BMPs and application of Forest-Wide Management Direction, Standards and Guidelines, cumulative effects to Soils from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at acceptable levels.

Because neither the long-term direct nor indirect impacts to Soils are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on Soils within the analysis area, even in combination with past, present and foreseeable future projects within the analysis area.

## 3.3 VEGETATION

### 3.3.1 Affected Environment

The general characteristics of the Project Area vegetation resemble those described by Sperduto and Nichols (2004) for Northern and Transition Hardwood-Conifer Forest, a deciduous-evergreen mix over an elevation range between about 1,000 to 2,000 feet, including slopes that vary between the microclimatic extremes of northern and southern exposures. Typical Northern Hardwood dominants, Sugar Maple (*Acer saccharum*) and American Beech (*Fagus grandifolia*) occur throughout this range. At the lower elevations, the hardwood dominants locally include Northern Red Oak (*Quercus rubra*) and White Ash (*Fraxinus americana*) together with the abundant evergreen conifers, White Pine (*Pinus strobus*) and Eastern Hemlock (*Tsuga canadensis*). At the higher elevations, hardwood dominants include Yellow Birch (*Betula alleghaniensis*) and White Birch (*B. papyrifera*) in relatively great abundance, with Red Spruce (*Picea rubens*) and Balsam Fir (*Abies balsamea*) as the evergreen dominants. Project Area bedrock, a metamorphic series of Silurian origin dominated by the siliceous Rangeley Formation with virtually no calcareous admixture or inclusions (Hatch and Moench 1984), conforms with the generalization of Sperduto and Nichols (2004) that most of New Hampshire's Northern and Transition Hardwood-Conifer Forest is nutrient-poor, low in base-cation contributions to the soil. The Project Area's mid-elevation landscape position and commonplace geologic history, therefore, may be expected to produce representative rather than unusual flora as the result of a botanical survey. Moreover, most of the Project Area lies in the NH Highway #16 right-of-way, with its annually mown herbaceous cover dominated by species of pasture and fallow cultivation, many of them aliens. The short aerial segment between the AMC facilities and the NHDOT garage constitutes the major exception, as an off-road alignment cut through a stand of young birch and spruce-fir. The findings of the Biological Evaluation (BE) conducted for the present project support the expectation of commonplace species throughout the Project Area right-of-way. Of the few protected plant species that were thought capable of occurring somewhere in the Project Area, none was found as a result of field searches.

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## 3.3.2 Direct and Indirect Effects on Vegetation

**Alternative 1: No Action** – Under the No Action Alternative, there would be no change in the direct or indirect effects on vegetation as it is currently managed for powerline and roadside ditch maintenance.

**Alternative 2: Proposed Action** – Direct effects on vegetation would include injury from compression by trampling and occasional vehicular movement during installation of aerial cable segments, and additionally some destruction of individual plants during the excavation necessary for trenching in the cable. All effects would be slight, temporary, reversible, and confined to the immediate vicinity of the cleared right-of-way. No plants listed as endangered, threatened, or of special concern, or as possible candidates for such listing, would be affected, nor would any rare plant communities. However, soil disturbance within the highway corridor may provide an opportunity of further dispersal and establishment of the invasive plant species. Section 3.8.2 provides a discussion of invasive plants and mitigation measures that could be implemented to prevent the spread of invasive species.

## 3.3.3 Cumulative Effects on Vegetation

The analysis area for cumulative effects on Vegetation is the immediate project area. The analysis timeframe is 10 years in the past to 10 years in the future. This timeframe was chosen because experience on the Forest indicates that 10 years is generally more than enough time for roadside vegetation to be completely re-established after soil disturbing activities. Ten years is also a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects on Vegetation, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within the cumulative effects analysis area is either in the WMNF or NHDOT right-of-way, and consequently, past, present and future activities on these lands are carefully controlled to ensure that soil impacts are kept at acceptable levels. It is expected that these conditions will remain into the foreseeable future. On private lands, it is conceivable that some level of growth and development will continue that would have the potential to impact Vegetation in the privately-owned portions of the analysis area. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Vegetation from these activities.

Under Alternative 2, short-term potential direct effects to Vegetation could add cumulatively to existing, minor vegetation impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence Vegetation within the analysis area include NHDOT highway and especially roadside ditch construction, maintenance and operation and utility line repair and maintenance. In addition, portions of both the Peabody and Ellis Rivers watersheds are allocated to Management Area (MA) 2.1 lands. MA 2.1 lands are managed, in part, for timber production and therefore Alternative 2 could cumulatively add to short-term Vegetation impacts occurring where logging activities require access across the analysis area. With appropriate BMPs and application

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of Forest-Wide Management Direction, Standards and Guidelines, cumulative effects to Vegetation from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at acceptable levels.

Because neither the long-term direct nor indirect impacts to Vegetation are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on Vegetation within the analysis area, even in combination with past, present and foreseeable future projects within the analysis area.

## 3.4 RIPARIAN AND AQUATIC HABITATS

### 3.4.1 Affected Environment for Riparian and Aquatic Habitats

Riparian and Aquatic Habitats are terms used by the Forest Service to refer to stream channels, lake shorelands, adjacent riparian ecosystems, floodplains and wetlands. This proposed linear project crosses all of the permanent and intermittent streams and rivers and stormwater drainage ways, and their associated riparian areas that NH Highway #16 crosses within the Jackson to Gorham project area. In addition, there are numerous mapped wetlands adjacent to the highway and within the project area. Some wetlands are associated with flowing waters, both permanent and intermittent, and some are isolated and supported largely by groundwater. Some were created by highway construction and its associated roadside ditching. All are jurisdictional under Section 404 of the Clean Water Act, and all are potentially affected by the project.

As noted in Section 3.1, NHDES's draft 2006 303(d) impaired waters lists a portion of the Peabody River in the project area as being impaired for Benthic Macroinvertebrates and a portion of the Ellis River as impaired for pH. Low pH may have negative impacts on aquatic habitats. Causes of the impairments are listed as unknown.

### 3.4.2 Direct and Indirect Effects on Riparian and Aquatic Habitats.

**Alternative 1: No Action** – There would be no direct or indirect effects on Riparian and Aquatic Habitats under the No Action Alternative. No disturbance to Riparian and Aquatic Habitats would occur beyond that already occurring from highway and utility line maintenance.

**Alternative 2: Proposed Action** – There would be no long-term direct or indirect effects on Riparian and Aquatic Habitats under the Proposed Action Alternative. Underground and aerial fiber optic cable would be installed within the presently-cleared NH Highway #16 right-of-way and on existing pole lines, respectively, and after stabilization, Riparian and Aquatic Habitat conditions would be the same as currently exist. In the short-term, there would be no impacts to most Riparian and Aquatic Habitats because no live streams or their stream banks would be disturbed during installation and most wetlands would be avoided during construction and protected from indirect impact by appropriate BMPs. However, there are several wetlands within the maintained right-of-way area that cannot be avoided during installation of the underground cable. These wetlands would be temporarily impacted during construction. During cable installation, wetland plants would actually be lost due to excavation, burial, dewatering and/or dislodgement. After stabilization, it is expected that impacted

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wetlands would be fully restored to previous conditions. The actual number of wetlands and linear feet of impact would be determined by the actual means of installation required to achieve the installation objectives. If all directional drilling is successful, only four wetlands and a total of about 140 linear feet would be affected. If directional drilling is not successful in some or all of the areas proposed for directional drilling, as many as seven additional wetland areas and an additional maximum of about 300 linear feet could be temporarily affected. These wetland areas and the proposed installation methods are shown on the detailed engineering plans available at the Androscoggin and Saco District Ranger Offices and at Forest headquarters in Laconia. All mapped wetlands have been field reviewed by NHDES wetland personnel and an appropriate NHDES/Army Corps of Engineers wetland permit will be obtained prior to project implementation, should the Forest Service approve an action alternative. No other short or long-term impacts to Riparian and Aquatic Habitats are expected.

### **3.4.3 Cumulative Effects on Riparian and Aquatic Habitats**

The analysis area for cumulative effects on Riparian and Aquatic Habitats is the entire watersheds of the Peabody and Ellis Rivers. The analysis timeframe is 10 years in the past to 10 years in the future. This timeframe was chosen because experience on the Forest indicates that 10 years is generally more than enough time for a site to be stabilized after soil disturbing activities and soil disturbing activities are the primary sources of potential impact to Riparian and Aquatic Habitats from this project. Ten years is also a reasonable timeframe for considering foreseeable future activities. Although there have been and may continue to be other impacts to Riparian and Aquatic Habitats in some portions of the analysis area (e.g., wetland loss due to filling), this project would not cumulatively add to these types of impacts, and they are therefore not considered here.

Under Alternative 1, there would be no cumulative effects to Riparian and Aquatic Habitats, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within the cumulative effects analysis area is either in the WMNF or in NHDOT right-of-ways, and consequently, past, present and future activities on these lands are carefully controlled to ensure that potential impacts to Riparian and Aquatic Habitats are eliminated or kept to acceptable levels. It is expected that these conditions would remain into the foreseeable future. On private lands, it is conceivable that some level of growth and development will continue that would have the potential to affect Riparian and Aquatic Habitats in the lower portions of both the Ellis and Peabody River watersheds. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Riparian and Aquatic Habitats from these activities.

Under Alternative 2, short-term potential direct effects to Riparian and Aquatic Habitats could add cumulatively to existing, generally minor Riparian and Aquatic Habitat impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence these habitats within the analysis area include various WMNF, NHDOT and private land activities including highway and especially roadside ditch construction,

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maintenance and operation, utility line repair and maintenance, recreation facilities and operations, logging activities on both public and private lands and private land development. With appropriate BMPs, application of Forest-Wide Management Direction, Standards and Guidelines and adherence to other agency regulations on private lands, cumulative effects to Riparian and Aquatic Habitats from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at acceptable levels.

Because neither the long-term direct nor indirect impacts to Riparian and Aquatic Habitats are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on these habitats within the analysis area, even in combination with past, present and foreseeable future projects within the Peabody and Ellis Rivers watersheds.

## 3.5 FISH AND AQUATIC RESOURCES

### 3.5.1 Affected Environment for Fish and Aquatic Resources

As noted above, the project area contains numerous permanent and intermittent waterbodies, many of which provide important habitat for fish and aquatic resources. These streams and rivers all have generally good to excellent water quality that support coldwater fisheries. Even the small intermittent streams that do not support fish likely provide what is becoming increasingly recognized as vital headwater ecosystem functions. As noted in Section 3.1, NHDES's draft 2006 303(d) impaired waters lists a portion of the Peabody in the project area as being impaired for Benthic Macroinvertebrates and a portion of the Ellis as impaired for pH. Low pH may have negative impacts on both Fish and Aquatic Resources. Causes of the impairments are listed as unknown.

### 3.5.2 Direct and Indirect Effects on Fish and Aquatic Resources.

**Alternative 1: No Action** – There would be no direct or indirect effects on Fish and Aquatic Resources under the No Action Alternative. No disturbance to the project area, either to aquatic or non-aquatic areas, would occur beyond that already occurring from highway and utility line maintenance and from existing recreational activities.

**Alternative 2: Proposed Action** – There would be no long-term direct effects on Fish and Aquatic Resources under the Proposed Action Alternative. Underground and aerial fiber optic cable would be installed within the presently-cleared NH Highway #16 right-of-way and on existing pole lines, respectively, and after stabilization, Fish and Aquatic Resources would be expected to be the same as currently exist. In the short-term, there would be no direct impacts to most Fish and Aquatic Resources because no live streams or stream banks would be disturbed during installation. There could be short-term, indirect effects on fish and aquatic resources due to increased turbidity and siltation that could result from erosion of disturbed soils during the construction process. It is expected that that judicious implementation of Forest Plan Standards and Guidance, when combined with good planning and the appropriate location of soil disturbing activities, would minimize or eliminate soil erosion and either minimize soil transport to

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streams or direct it to safe outlet. Consequently, potential short-term effects to Fish and Aquatic Resources are expected to be minor and not significant. No long-term effects to Fish and Aquatic Resources are expected with the Proposed Action. Project specific mitigation measures would be required to minimize impacts to soils and resulting impacts to Fish and Aquatic Resources. These mitigation measures would be listed in the appropriate decision document, should the Forest Service decide to permit this project.

### 3.5.3 Cumulative Effects on Fish and Aquatic Resources

The analysis area for cumulative effects to Fish and Aquatic Resources is the entire watersheds of the Peabody and Ellis Rivers. The analysis timeframe is 10 years in the past to 10 years in the future. This timeframe was chosen because experience on the Forest indicates that 10 years is generally more than enough time for a site to be stabilized after soil disturbing activities and soil disturbing activities are the primary sources of potential impact to Fish and Aquatic Resources from this project. Ten years is also a reasonable timeframe for considering foreseeable future activities. Although there have been and may continue to be other impacts to Fish and Aquatic Resources in portions of the analysis area (e.g., habitat loss due to road/bridge/culvert construction, fish loss due to overfishing) , this project would not cumulatively add to these types of impacts and they are therefore not considered here.

Under Alternative 1, there would be no cumulative effects to Fish and Aquatic Resources, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within the cumulative effects analysis area is either in the WMNF or in NHDOT right-of-ways, and consequently, past, present and future activities on these lands are carefully controlled to ensure that potential impacts to Fish and Aquatic Resources are eliminated or kept to acceptable levels. It is expected that these conditions will remain into the foreseeable future. On private lands, it is conceivable that some level of growth and development will continue that would have the potential to affect Fish and Aquatic Resources in the lower portions of both the Ellis and Peabody River watersheds, either directly through recreational fishing or indirectly from turbidity/sedimentation due to erosion. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Fish and Aquatic Resources from these activities. Existing water quality impairments are scheduled to be evaluated by NHDES during the next decade. This may eventually lead to water quality improvements in certain sections of both the Peabody and Ellis Rivers which could therefore result in improvements in Fish and Aquatic Resources

Under Alternative 2, short-term potential direct effects to Fish and Aquatic Resources could add cumulatively to existing, generally minor Fish and Aquatic Resources impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence these habitats within the analysis area include various WMNF, NHDOT and private land activities including highway and especially roadside ditch construction, maintenance and operation, utility line repair and maintenance, recreation facilities and operations and logging activities on both public and private lands and private land development. With appropriate BMPs, application of Forest-Wide Management Direction, Standards and

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Guidelines and adherence to other regulations on private lands, cumulative effects to Fish and Aquatic Resources from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at acceptable levels.

Because neither the long-term direct nor indirect impacts to Fish and Aquatic Resources are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on these habitats within the analysis area, even in combination with past, present and foreseeable future projects within the Peabody and Ellis Rivers watersheds.

## 3.6 AIR RESOURCES

### 3.6.1 Affected Environment for Air Resources

The WMNF is located in an area that has some of the best air quality in the eastern U.S. (USDA-Forest Service, FEIS LRMP 2005). While air quality can be affected by regional air masses from the south and west, the concentrations of most air quality parameters regulated by the National Ambient Air Quality Standards (NAAQS) are declining due to reduced emissions as a result of the Clean Air Act. In Pinkham Notch, air quality can also be affected by local activities and uses, including motor vehicles traveling on paved and unpaved surfaces, occasional construction and building activities, wildfire and campfires.

### 3.6.2 Direct and Indirect Effects on Air Resources

**Alternative 1: No Action** - There would be no direct or indirect effects on Air Resources under the No Action Alternative. No additional activities that affect air quality would occur, beyond those already associated with NH Highway #16 and the existing uses of both NFS and private lands.

**Alternative 2: Proposed Action** – Under the Proposed Action Alternative, it is expected that construction activities associated with the installation of fiber optic cable could directly impact Air Resources within the project area. These impacts would be primarily associated with construction vehicles and could include dust and diesel and gasoline engine emissions including carbon monoxide, volatile organics, particulates, unburned hydrocarbons and carbon dioxide. However, because emissions related to construction are short lived and can be at least in part mitigated (e.g., dust control at the construction site), impacts are expected to be short-term, highly localized and unlikely to contribute to violations of air quality standards. Although there could be minor improvements to local air quality due to reduced maintenance requirements for buried versus aerial cable, these effects are expected to be negligible. Consequently, potential short-term effects to Air Resources are expected to be minor and not significant. No long-term effects to Air Resources are expected from the Proposed Action. Project specific mitigation measures would be required to minimize impacts to Air Resources. These mitigation measures would be listed in the appropriate decision document, should the Forest Service decide to permit this project.

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## 3.6.3 Cumulative Effects on Air Resources

The analysis area for cumulative effects to Air Resources is the entire watersheds of the Peabody and Ellis Rivers. The analysis area was selected because potential Air Resources impacts from this project are expected to be limited to these watersheds and associated airshed. Impacts to outside areas are expected to be negligible because of dilution with larger air masses. The analysis timeframe is 1 year in the past to 10 years in the future. This timeframe was chosen because it is unlikely that activities that occurred greater than one year ago are still influencing Air Resources. Ten years in the future is a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects to Air Resources, since there would be no short or long-term direct or indirect effects of the project. Air quality would remain as it presently is, largely determined by activities and air masses from outside the analysis area. Consequently, significant changes in future conditions would be largely determined by national policy and regulation

Under Alternative 2, short-term potential direct effects to Air Resources could add cumulatively to existing, generally minor Air Resources impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Although air quality is largely determined by activities outside of the analysis area, some Forest uses affect local air quality. Of these uses, smoke from campfires probably has the greatest potential to negatively affect Air Resources on a short-term basis. In addition, motor vehicle use, primarily from visitors, also influences local Air Resources. The magnitude and trend of these potential effects are directly related to the numbers of overnight campers and vehicles operating in and around the Forest. Consistent with recent trends, it is expected that modest increases in both activities will occur within the analysis timeframe, with resulting largely minor impacts to Air Resources. Alternative 2 would add cumulatively, but not significantly, to expected impacts to Air Resources, but only during construction.

In the long-term, no significant direct or indirect impacts to Air Resources are expected for either Alternatives 1 or 2. Consequently, neither Alternative would have significant cumulative effects on Air Resources within the analysis area, even in combination with past, present and foreseeable future projects.

## 3.7 WILDLIFE

### 3.7.1 Affected Environment

This EA draws on information compiled recently (USFS 2005b, 2005c) for the BE and Biological Assessment (BA) of the WMNF Land and Resource Management Plan revision (USFS 2005a), with updates as necessary incorporated in the BE that supports this EA (Normandeau Associates 2007). The full record of supporting references can be found in the Normandeau BE.

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Although few wildlife species would inhabit the proposed project area, five habitats of concern received consideration during field reconnaissance: exemplary communities, vernal pools/seeps, bear-clawed beech trees, active raptor nest areas and deer wintering habitat. None of these habitats was found in or likely to be affected by work in the Project Area. The right-of-way does pass within 200-300 ft of one exemplary natural community, a stand of Hemlock-Spruce-Northern Hardwoods, as identified by the New Hampshire Natural Heritage Bureau, in the vicinity of the Dolly Copp Campground (Rowse 2005), but this exemplary natural community would not be affected by the project. However, the hydrologic and biotic indicators necessary for identifying vernal pools were not at their seasonal diagnostic best at the time of the field reconnaissance, which took place in July 2003 and 2004. Some of the deeper ditches and culvert approaches within the NH Highway #16 right-of-way appear capable of supporting small populations of breeding amphibians, including Wood Frog (*Rana sylvatica*) and mole salamanders (*Ambystoma* spp.), at least in some years. Vernal pool habitat may also be present in small, disjunct areas of concentrated runoff.

**Federal Endangered, Threatened and Proposed Species and Regional Forester's Sensitive Species** – Appendix D compares the habitat suitability of the Project Area with the habitat requirements or preferences of each Federally-listed Endangered, Threatened or Proposed Species (ETPS) and each Regional Forester's Sensitive Species (RFSS). Of the few plant species that were considered, as a result of the pre-field review, capable of occurring somewhere in the Project Area, none was found during field searches. These were accordingly not included in the evaluation of impacts.

Unlike plants, animal species, with their capability of movement, cannot be discounted as habitat users on the strength of negative findings from a field survey. Although not observed during the 2003-2004 surveys of the Project Area, two RFSS mammals are considered possible periodic occupants: the Eastern Small-footed Bat (*Myotis leibii*) and Northern Bog Lemming (*Synaptomys borealis sphagnicola*); and two insects: Brown's Ameletid Mayfly (*Ameletus brownii*) and the Third Ameletid Mayfly (*Ameletus tertius*).

## 3.7.2 Direct and Indirect Effects on Wildlife Resources

**Alternative 1: No Action** – The No Action Alternative would have no direct or indirect effects on the wildlife resources under discussion here. The right-of-way would continue to be managed as a linear clearing with herbaceous and low woody growth abutted partly by NH Highway #16, partly by forest.

**Alternative 2: Proposed Action** – Adverse direct and indirect effects of the Action Alternative would be uniformly infrequent and slight. The unobtrusive nature of the proposed project, its location in an already managed right-of-way for its entire length, and the consequent light use most animals make of it, all amount to negligible adverse impact on any wildlife habitat and hence on wildlife themselves. The same considerations apply in the case of the few animal RFSS identified as possible occupants of the right-of-way, and none of the plants identified as potentially vulnerable was detected in field surveys for them. Neither of the two RFSS vertebrates would make more than incidental use of the right-of-way habitat. Larvae of the two invertebrates might depend on water

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bodies crossed by the right-of-way, but the subterranean or aerial routing of the cable would avoid direct impact on the larval aquatic habitat. All or most indirect impacts (e.g. sedimentation in larval habitat from erosion products during project implementation, or displacement of vertebrates from their temporary occupancy of sites adjacent to the right-of-way), can be avoided altogether by best management practices and seasonal timing. Those impacts that do nevertheless occur would all be minor, brief in adverse effect, and reversible.

Any vernal pool activity associated with the fish-free upper reaches of drainage ditches and ephemeral flooded depressions beside the roadway would be explicitly avoided as part of the standards and guidelines that apply to management of riparian and aquatic habitats (USFS 2005a).

**Table 3-1: Summary of Proposed Action effects on listed species. Note: Only those Federally-listed species and Regional Forester's Sensitive Species that are considered the most liable to some adverse impact from this project have been listed here. No listed plants with potentially suitable habitat in the Project Area right-of-way were detected in it, and are assumed absent.**

Species	Status	No effect	May impact individuals or habitats, but is not likely to cause a trend to Federal listing or loss of viability (May affect, but is not likely to adversely affect)	Will impact individuals or habitats, and is likely to cause a trend to Federal listing or loss of viability (May adversely affect)
Eastern Small-footed Bat	RFSS*		X	
Northern Bog Lemming	RFSS		X	
Brown's Ameletid Mayfly	RFSS		X	

\* RFSS = Regional Forester's Sensitive Species

### 3.7.3 Cumulative Effects on Wildlife Resources

The analysis area for cumulative effects on Wildlife Resources is the immediate project area. The analysis timeframe is 10 years in the past to 10 years in the future. This timeframe was chosen because experience on the Forest indicates that 10 years is generally more than enough time for roadside wildlife habitat to be completely restored after soil disturbing activities. Ten years is also a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects on Wildlife Resources, since there would be no short or long-term direct or indirect effects of the project. The majority of the land within the cumulative effects analysis area is either in the WMNF or NHDOT right-of-way, and consequently, past, present and future activities on these lands are carefully controlled to ensure that impacts to soils and vegetation, and consequently to Wildlife Resources, are kept at acceptable levels. It is expected that these conditions

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will remain into the foreseeable future. On private lands, it is conceivable that some level of growth and development will continue that would have the potential to impact Wildlife Resources in the privately-owned portions of the analysis area. Regulations are in place from other regulatory agencies that should prevent unacceptable negative impact to Wildlife Resources from these activities.

Under Alternative 2, short-term potential direct effects to Wildlife Resources could add cumulatively to existing, minor wildlife impacts that have resulted or are expected to result from past, present and reasonable foreseeable future activities in the analysis area. Past, present and future activities that influence Wildlife Resources within the analysis area include NHDOT highway and especially roadside ditch construction, maintenance and operation and utility line repair and maintenance. Traffic impacts (e.g., roadkill) may also affect wildlife in the project area. In addition, portions of both the Peabody and Ellis Rivers watersheds are allocated to Management Area (MA) 2.1 lands. MA 2.1 lands are managed, in part, for timber production and therefore Alternative 2 could cumulatively add to short-term Wildlife Resources impacts occurring where logging activities require access across the analysis area. With appropriate BMPs and application of Forest-Wide Management Direction, Standards and Guidelines, cumulative effects to Wildlife Resources from implementation of Alternative 2, when added to all past, present and foreseeable future activities, are expected to remain at minor and negligible and insignificant levels.

Because neither the long-term direct nor indirect impacts to Wildlife Resources are considered significant, neither Alternatives 1 nor 2 would have significant cumulative effects on Wildlife Resources within the analysis area, even in combination with past, present and foreseeable future projects within the analysis area.

## 3.8 INVASIVE PLANTS

### 3.8.1 Affected Environment

The Forest Service lists 42 non-native invasive plant species for the WMNF as either already established or likely to become so. Of these, 25 species have already been mapped in the WMNF. The remaining 17 are thought to have comparable invasive potential, and hence bear close watching (USFS 2005a). Only 3 of the 42 listed species were found during Forest Service field surveys along the NH Highway #16 right-of-way: Purple Loosestrife (*Lythrum salicaria*), Bittersweet Nightshade (*Solanum dulcamara*), and Japanese Knotweed (*Polygonum cuspidatum/Fallopia japonica*). Not surprisingly, these 3 species are among those already mapped. In 2001, the New England Wild Flower Society (NEWFS) carried out a survey for invasive plants along the same highway corridor between Gorham and Jackson. Most of the NEWFS records came from urban-suburban garden and adjacent roadside settings outside the WMNF (NEWFS 2001), but all 4 of the species listed by the Forest Service as most invasive in the WMNF (USFS 1998) were recorded inside (where the WMNF borders NH Highway #16): Purple Loosestrife, Japanese Knotweed, Sheep Sorrel (*Rumex acetosella*), and Coltsfoot (*Tussilago farfara*). The WMNF no longer lists Sheep Sorrel as invasive (Matricker

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2007), presumably because even when dominant in early-succession plant communities, it has not been found to impair the viability of protected species. Sheep Sorrel may even provide net benefits, serving to stabilize soft, sparsely vegetated road shoulders.

Although the 2001 NEWFS invasive plant survey reported more invasive occurrences south of Pinkham Notch, toward Jackson, the Normandeau survey's narrowly focused search found more occurrences north of the Notch. By far the most conspicuous alien species was Sheep Sorrel, which frequently invested the mown roadway edge in monotypic swaths and patches of 200 square feet or more, especially in barren areas with little competition from other, similarly weedy species. Although the Forest Service now considers Sheep Sorrel innocuous in such an environment (LeMieux 2006), the NEWFS did record its presence selectively in the 2001 survey (NEWFS 2001).

In addition to the recently delisted Sheep Sorrel, only 2 other occurrences of invasive plants were detected in the proposed project right-of-way. A single plant of Purple Loosestrife was found in a ditch on the east side of NH Highway #16 immediately opposite the signposted entry to the Dolly Copp Campground. Another individual plant, of Japanese Knotweed, was found in mown wetland on the west side of the highway just south of the Clay Brook bridge.

One alien species not listed as invasive at all by the WMNF (either in USFS 1998 or USFS 2005a) did appear to have established an aggressive population at one point along the project right-of-way. Just north of Glen House, where the pole line and the eastern edge of NH Highway #16 converge, *Rugosa Rose* (*Rosa rugosa*) has formed a dense patch between the forest and a discontinuous band of Sheep Sorrel next to the highway. The State of New Hampshire list of invasive plants does not include this species, but the Invasive Plant Atlas of New England (IPANE 2004) numbers it among 111 species it considers invasive or potentially invasive. The Pinkham Notch occurrence of *Rugosa Rose* appears confined to the NH Highway #16 right-of-way, and hence probably constitutes no more of a threat to native plant communities in such a perpetually disturbed landscape than does the Sheep Sorrel with which it grows.

## 3.8.2 Risk Assessment of Invasive Plant Species

Assessing the risk of invasive plant species includes two main components: (1) determining the potential for suspect invasives to become established and spread in a given area, and (2) estimating the adverse impact of these invasives on extant plant and animal species and habitats. This exercise can be performed by considering all an area's potentially invasive plants as an entity and assigning them a single, generalized rank of aggressiveness and adverse project impact (USFS 2004). NatureServe (2004) ranks individual invasive plant species by their adverse impact on a nationwide (USA) scale. Morse et al. (2004) have developed a protocol for NatureServe that evaluates the impact of individual non-native plant species on the biodiversity of selected regions. The present approach adapts this protocol to the WMNF as the region of concern, with appropriate consideration of the Project Area in particular.

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Of the four non-native invasive plant species observed in the Project Area (Purple Loosestrife, Japanese Knotweed, Sheep Sorrel and Rugosa Rose), only the first two became the subject of an individual data form and scoresheet (see Appendix E). Documentation of both plant's potential and actual invasiveness in the Project Area comprised findings from both the available literature and the assessors' own field observations. The result of both species' assessment is an Invasive Species Impact Rank, expressed as a letter code (A, B, C, D), indicating severity of impact as either High, Medium, Low, and Insignificant respectively. These qualitative rankings correspond to the following definitions from the protocol of Morse et al. (2004).

- High:** Species represents a severe threat to native species and ecological communities.
- Medium:** Species represents a moderate threat to native species and ecological communities.
- Low:** Species represents a significant but relatively low threat to native species and ecological communities.
- Insignificant:** Species represents an insignificant threat to native species and ecological communities.

Generally speaking, factors which can push a species' I-Rank upward (towards High) are the ability to change ecosystem processes; ability to invade relatively undisturbed ecological communities; ability to cause substantial impacts on rare or vulnerable species or ecological communities, or high-quality examples of more common communities; wide distribution and general abundance where present. Conversely, species with minimal impacts on ecosystem processes, native species, and ecological communities will generally be assigned an I-Rank of Low or Insignificant. Other factors that can push a species' I-Rank downward are lack of potential to spread beyond a small existing range, stable or decreasing abundance within the current range, and ease of control.

(Morse et al. 2004)

On a Forest-wide basis, this assessment obtained the following results.

<b>Species</b>	<b>Impact Rank</b>
Purple Loosestrife	Medium
Japanese Knotweed	Low
Sheep Sorrel	Insignificant
Rugosa Rose	Insignificant

A relatively small area of the entire WMNF, and a correspondingly small proportion of its protected plant and animal species, provides habitat that Purple Loosestrife can invade and dominate. However, roughly one quarter of all WMNF RFSS-listed plant species can colonize wet soils or roadside ditches, places that are highly vulnerable to invasion of Purple Loosestrife and Japanese Knotweed (Mattrick 2007). Therefore, on the scale of

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the Project Area, the Impact Rank may appropriately be shifted up one stage apiece for both Purple Loosestrife and Japanese Knotweed, to High and Moderate respectively. Both species take advantage of open, moist and disturbed landforms like roadway ditches. Roads provide migration routes for the propagules: primarily stem sections in the case of Japanese Knotweed, both stem and abundant seed in the case of Purple Loosestrife. As a wetland plant with a considerable tolerance of salt, Purple Loosestrife can thrive in roadside ditches. Several RFSS-listed plant species (e.g. *Osmorhiza berteroi*) may find suitable habitat in ditches, if not too salty, and could be displaced by an aggressive growth of Purple Loosestrife. Although the necessary periodic clearing of a ditch may make this environment a transitory habitat for many protected species, it facilitates the spread of invasives if care is not taken with the ditch excavate. Like most roads in mountainous terrain, NH Highway #16 follows the low-lying valley floors cut by flowing water, which not only can provide wetland habitat but also transport invasive propagules. Both Purple Loosestrife and Japanese Knotweed thrive in nutrient-rich floodplain environments and, although most river sedimentation occurs farther downstream than the WMNF boundary, the WMNF does have areas of net deposition, notably along the Ellis River, that are vulnerable to these two species.

### 3.8.3 Control of Invasive Plants

If Alternative 2 were selected, Verizon and its contractors would be required to follow standards and guidelines described in the Forest Plan for preventing NNIS. Actions that are consistent with the Decision Notice and Finding of No Significant Impact for the White Mountain National Forest Forest-wide Invasive Plant Control Project (USDA – Forest Service, 2007) would be taken to control invasive plant populations. Verizon would be required to consult with the WMNF Botanist or representative to identify areas of special concern and appropriate techniques to prevent spread of any known, established NNIS populations in the project area.

Selection of Alternative 1 (No Action) would not include any specific control or prevention actions related to NNIS.

### 3.8.4 Direct and Indirect Effects of Project-related Actions of the Spread of Invasive Plants Species

**Alternative 1: No Action** – Selection of this alternative would mean continued maintenance of the Project Area right-of-way as part herbaceous highway verge and part powerline cut through woods. Invasive plant population trends would proceed, subject to no change in direction or rate resulting from this Alternative.

**Alternative 2: Proposed Action** – Direct effects of project implementation on invasive plants could include (1) the spread of propagules (e.g. plant parts and seed) by project-related equipment, vehicles and footgear, and (2) the disturbance of vegetation and establishment in the exposed soil of new plants, either clonally from extant fragments or sexually from germinating seed. Indirect effects would stem from the direct, and could lead to proliferation of invasives at the expense of native species. Implementation of the prevention and control measures referenced in Section 3.8.3 is not likely to completely eradicate existing invasive plants, but would minimize the potential for spread of existing

# ENVIRONMENTAL ASSESSMENT

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populations of invasive plants and for introduction of new species as a result of proposed activities.

If control measure were not followed, the direct and indirect effects of Alternative 2 on invasive plant species could extend in the foreseeable future to all low-elevation wetland and riparian habitats in the project area. Animal habitat values could decline, and several native plant species would face competition from NNIS. Invasives could also become dominant along other segments of the project area, from which vantage points they might gain further access to vulnerable habitat wherever vehicles, foot traffic, water and wind provide the means.

Although few of the 16 invasive species recorded by the NEWFS (2001) survey were found within the Project Area, or even in its road right-of-way, the remainder have the potential to extend their distribution, which at present is chiefly confined to residential property and environs. The most likely route for range extension is the relatively disturbed, open border of NH Highway #16. The most disturbed portion of this route could, for a few months, conceivably be that portion of the project area designated for burial of the cable, and the resultant unvegetated strip of bare-soil excavate. The most highly mobile propagules on the NEWFS list include the windborne seeds of Coltsfoot and the primarily birdborne fruit of Japanese Barberry (*Berberis thunbergii*), Winged Euonymus (*Euonymus alatus*), Multiflora Rose (*Rosa multiflora*), Asiatic Bittersweet (*Celastrus orbiculatus*), Morrow Honeysuckle (*Lonicera morrowii*), Tatarian Honeysuckle (*L. tatarica*), and Common Privet (*Ligustrum vulgare*). Although the seeds of Norway Maple (*Acer platanoides*) are windborne, they carry only a short distance from their source tree. Black Locust (*Robinia pseudoacacia*) also spreads incrementally, by root extension more often than by seed. Goutweed (*Aegopodium podagraria*) tends to move in the same gradual way, from backyard to abutting woodlot and roadside. However, its small seeds can easily be caught up in the cleats of a boot or treads of a motor vehicle, and deposited at a great distance.

The establishment of these invasives within the project area as a result of selecting Alternative 2 may not be inevitable, but their known presence in the vicinity indicates their invasive potential. Close monitoring of the project area after completion of construction can eliminate most invasive occurrences as they happen. The best kind of invasive control is prevention, at the first onset of occurrence. Such early eradication, combined with the control measures referenced in Section 3.8.3, would reduce the likelihood of new outbreaks.

### **3.8.5 Cumulative Effects of Project-related Invasive Plants on Native Habitats and Species**

Since with prevention and control measures, neither Alternatives 1 nor 2 would have significant short or long-term, direct or indirect effects on invasive species within or outside of the analysis area, no significant cumulative effects would result from this project, even when combined with past, present and foreseeable future events. Although other activities both within and outside of the WMNF will continue to contribute to the spread of invasive species, mitigation measures referenced in Section 3.8.3 are expected

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to control the spread of invasive species within and outside the public portion of the analysis area. On private lands, it is likely that without mitigation, invasive species will continue to proliferate in suitable habitats.

## 3.9 HERITAGE RESOURCES

### 3.9.1 Affected Environment for Heritage Resources

A cultural resource reconnaissance report (CRRR #04-24) was completed for the project area based on field surveys and review of historic maps and literature. The New Hampshire State Historic Preservation Office (SHPO) has reviewed the resource report and has approved the proposed cultural resource management measures.

The ground-disturbing portion of the project area is virtually entirely within the shoulder or maintained right-of-way of NH Highway #16. This area constitutes the analysis area for direct, indirect and cumulative effects. The impacted area is composed mainly of fill and can be classified as highly disturbed. As such, no impacts to cultural resources are expected.

### 3.9.2 Direct and Indirect Effects on Heritage Resources

**Alternatives 1 and 2: No Action and the Proposed Action** – There would be no direct or indirect effects on Heritage Resources under either the No Action or Proposed Action Alternatives, since no Heritage Resources are known to exist in the project area. Accordingly, no mitigation measures are expected to be necessary. Even so, the Forest Service would condition the permit, should one be approved, such that the installation crew would be required to contact the Forest Archeologist immediately should cultural resources be discovered during the construction process.

### 3.9.3 Cumulative Effects on Heritage Resources

Because there are no expected short-term or long-term, direct or indirect impacts to Heritage Resources, neither Alternatives 1 nor 2 would cumulatively affect these resources within the analysis area, even in combination with past, present and foreseeable future projects.

## 3.10 SCENIC RESOURCES

### 3.10.1 Affected Environment for Scenic Resources

The Forest Service adopted a Visual Resources Management System (VRMS 1974) for NFS lands for the purpose of inventorying and managing scenic resources. The process under this system identified and classified scenic quality and established specific Visual Quality Objectives (VQOs) for management of the scenic resources. Recently, the Forest Service updated the original Visual Management System to incorporate new technology, resulting in quality objectives that better incorporate the principles of ecosystem management. Now called the Scenery Management System (SMS), the SMS develops Scenic Integrity Objectives (SIOs) rather than VQOs.

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The overall goal for managing Scenic Resources is for all management activities to achieve the assigned SIOs, while realizing the importance to society of a natural appearing landscape distinct from the human-made environments dominant in the East. By integrating scenic resource management into other resource activities, scenic quality is maintained that provides a desirable setting for Forest users, attracts visitors and generates economic benefits to local communities and the state.

The proposed action considered by this EA is located on lands with a variety of management objectives. Management Areas include MAs 2.1, 7.1, 8.3 and 8.5. The SIOs for each of these MAs recognize that roads, utility corridors and other activities may result in significant (moderate integrity – slightly altered to very low integrity – heavy altered) impacts to scenic resources.

## 3.10.2 Direct and Indirect Effects on Scenic Resources

**Alternative 1: No Action** – There would be no direct or indirect effects on Scenic Resources under the No Action Alternative. Moderate impacts from existing utility corridors, poles and lines would remain unchanged. No communication lines would be removed from the existing pole lines and one remote section of pole line in the vicinity of Nineteen Mile Brook and partly adjacent to the Peabody River would remain in place.

**Alternative 2: Proposed Action** – Short-term impacts to scenic resources would occur during the construction phase of this project. Construction vehicles, temporary trenches and excavated material would all contribute to a short-term decline in scenic quality throughout the project area. In the long-term, the only negative impacts to scenic resources would be from aboveground pedestals that would be installed approximately every mile along the belowground sections of the project. Each pedestal would be 48”L, 30”W and 24”D and would be colored green to blend into the surrounding vegetation. Pedestals would be sited so as to not be visible from the Appalachian Trail. Cable strung on existing poles would be lashed to existing communication cable, making the new cable virtually indistinguishable to the casual observer. Positive impacts to scenic resources would result from the removal several miles of copper cable from existing pole lines and the removal of both cable and poles from about 1,000 feet of line in the vicinity of Nineteen Mile Brook.

## 3.10.3 Cumulative Effects on Scenic Resources

The analysis area for cumulative effects to Scenic Resources is the viewshed from the project area. This viewshed is more or less represented by the upper watersheds of the Peabody and Ellis Rivers. This analysis area was selected because potential Scenic Resources impacts from this project are limited to those areas from which the project area is visible. The analysis timeframe is approximately 250 years in the past to 10 years in the future. This timeframe was chosen because activities that occurred within the last 250 years are still influencing Scenic Resources today. Ten years in the future is a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects to Scenic Resources, since there would be no short or long-term direct or indirect effects of the project. Scenic

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Resources would remain as they presently are, influenced by the existence of a state highway and maintenance garage, utility corridors, recreation-oriented facilities and some private development in the Glen House area and to the north and south of the Forest boundaries. Since the majority of the analysis area is WMNF, only future activities that comply with SIOs for the various MAs would be permitted. Thus, no significant impacts to Scenic Resources are expected for most of the analysis for the foreseeable future. Continuing development activities on private lands could increase impacts to Scenic Resources, but most of those impacts would be at the northern and southern edges of the analysis area.

Under Alternative 2, short-term potential direct effects to Scenic Resources could add cumulatively to existing impacts due to the presence of construction equipment and materials. These short-term impacts would be eliminated when construction is completed. In the long-term, aboveground access pedestals would have a minor cumulative effect on the Scenic Resources immediately adjacent to NH Highway #16, but there would be no cumulative impact in the majority of the analysis area. Removal of copper cable from some existing pole lines and removal of about 1,000 feet of existing cable and poles from an area near Nineteen Mile Brook would improve scenic quality in the immediate areas of the removals, but would have no cumulative effect on Scenic Resources in the majority of the analysis area.

## 3.11 RECREATION RESOURCES

### 3.11.1 Affected Environment for Recreation Resources

The Pinkham Notch area of the WMNF is one of the most highly visited recreation areas of the entire Forest. NH Highway #16 provides outstanding access to the area which attracts recreational drivers, hikers, downhill skiers, picnickers, swimmers and waders and campers. The AMC Pinkham Notch Visitors Center, Wildcat Ski Area, Mount Washington Auto Road, Glen Ellis Falls, the Ellis and Peabody Rivers and Dolly Copp Campground all contribute to the array of recreation opportunities offered in the Pinkham Notch area.

### 3.11.2 Direct and Indirect Effects on Recreation Resources

**Alternative 1: No Action** – There would be no direct or indirect effects on Recreation Resources under the No Action Alternative. All recreation facilities and opportunities would continue as presently exist or as planned.

**Alternative 2: Proposed Action** – Short-term impacts to Recreation Resources would occur during the construction phase of this project. Construction vehicles, construction noise, temporary trenches and excavated material would all contribute to a short-term impact on Recreation Resources throughout the project area. Recreational driving would be affected in all active construction areas due to the presence of construction vehicles and required traffic control. Access to recreation facilities would be impacted by construction vehicles and trenching during construction. Noise from construction activities would negatively affect the recreation experience wherever active

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construction occurred in recreation areas. Hiking trails crossing the project area (e.g. the Appalachian Trail) would be temporarily affected by construction activity.

All short-term impacts could be mitigated to minimize impacts. Access to all recreation areas and trails would be maintained during construction by appropriate construction sequencing, temporary re-routing, etc. Construction activities in the vicinity of the Pinkham Notch Visitors Center would be restricted to the hours between 8AM and 5PM and would avoid prime summer/fall high use periods to the extent possible. Traffic disruptions would be minimized to the extent possible. Construction staging areas would avoid recreation areas.

No long-term impacts to Recreation Resources are expected.

### 3.11.3 Cumulative Effects on Recreation Resources

The analysis area for cumulative effects to Recreation Resources is limited to those recreation facilities immediately adjacent to the project area since no significant impacts beyond these areas are anticipated. The analysis timeframe is 100 years in the past to 10 years in the future. This timeframe was chosen because certain activities that occurred within the last 100 years (creation of the WMNF, construction of the Mt. Washington auto road) are still influencing and contributing to today's recreational opportunities. Ten years in the future is a reasonable timeframe for considering foreseeable future activities.

Under Alternative 1, there would be no cumulative effects to Recreation Resources, since there would be no short or long-term, direct or indirect effects of the project. Recreation Resources would remain as they presently are, with opportunities provided by the WMNF, Special Use Permit holders and private facilities. Demand for Recreational Resources within and adjacent to the project area is expected to continue to grow, consistent with recreation demand growth rates for the entire WMNF, which may impact the quality of available recreational experiences.

Under Alternative 2, short-term potential direct effects to Recreation Resources could add cumulatively to past, present and foreseeable future impacts due to the presence of construction equipment, materials and activities. Past, present and foreseeable impacts are largely related to continually increasing uses of recreation facilities which may negatively affect the recreational experience for some users. These short-term cumulative impacts would be eliminated when construction is completed.

No long-term significant cumulative effects to Recreation Resources are anticipated.

## 3.12 SOCIO-ECONOMICS

### 3.12.1 Affected Environment for Socio-economics

As note in Chapter 1, certain northern areas of New Hampshire are at considerable telecommunications risk due to a lack of redundancy in the routing network. These communities include Gorham, Berlin, Milan, and other communities in the northeastern part of New Hampshire as well as North Conway, Conway, Madison, Bartlett, and

# ENVIRONMENTAL ASSESSMENT

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Jackson. In total, more than 36,000 subscribers are at greater communication risk than subscribers in other parts of New Hampshire. Telecommunications today provide functions that go well beyond the historic uses of a telephone and include such things as public health and safety, business and even national security. Our modern social structure is largely dependent on telecommunications. The analysis area for socio-economics is therefore focused primarily on the Berlin-Gorham and Conway-North Conway region.

## 3.12.2 Direct and Indirect Effects on Socio-economics

**Alternative 1: No Action** – The No Action Alternative would maintain the existing telecommunications infrastructure and therefore the associated local and regional telecommunication risks. Certain North Country communities and Pinkham Notch users would continue to be directly impacted by being more vulnerable to disrupted services than most other New Hampshire communities. In an area that is struggling economically due to continued loss of its industrial base and weather-related downturn in winter recreation activities, a deficient telecommunications network is just another obstacle to achieve economic rebound and growth which could indirectly result in negative impacts to the North Country economy.

**Alternative 2: Proposed Action** – The Proposed Action would improve the reliability of telecommunications for approximately 36,000 subscribers in the Berlin-Gorham and Conway-North Conway area by eliminating the risk of loss of services due to the current lack of redundancy in routing options. This Alternative would provide immediate (after construction) and permanent direct benefits to personal telecommunication uses, health and public safety and businesses. Although not reasonably quantifiable, Alternative 2 would indirectly contribute to the economic recovery and growth of the North Country by improving telecommunications reliability to existing and potential subscribers.

Locally, the Proposed Action would benefit Pinkham Notch users by moving some of the existing telecommunication line from aerial poles to underground conduits, thereby reducing the likelihood of loss of service due to weather or traffic accident.

## 3.12.3 Cumulative Effects on Socio-economics

The analysis area for cumulative effects on Socio-economics is the entire service area that is influenced by the proposed project, namely most of the New Hampshire North Country and the Conway/North Conway/Jackson/Bartlett area. The analysis timeframe is from 100 years in the past to 10 years in the future. This timeframe was chosen because activities that occurred even 100 years ago, such as development of the wood products and recreation industries still have measurable impact on current socio-economic conditions. A future analysis timeframe of 10 was selected, because activities beyond 10 years are not reasonably foreseeable.

Under Alternative 1, no action would cumulatively add to the difficult socio-economic times that portions of the analysis area have been experiencing in the recent past. Intermittent operation and now closure of the Burgess Pulp Mill in Berlin combined with

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greatly reduced winter visitation in the entire analysis area due lack of snowfall has had significant negative effects on the socio-economics of the area. Without improved reliability of telecommunications, it is expected that periodic loss of service would continue to negatively impact certain types of telecommunications-dependent economic activity, emergency services and personal telephone and internet activities, thus negatively affect the ability of communities in the analysis area to stimulate economic activity and growth.

Under Alternative 2, the proposed action would help to reduce the cumulative effects of past, present and future activities on Socio-economics. Improved reliability of telecommunications would at the very least reduce the number of incidences of lost service, which would improve personal and societal well-being in the analysis area. At best, improve telecommunications could stimulate economic development that would help to counteract some of the socio-economic difficulties that much of the analysis area has been experiencing in recent years and will continue to experience in the foreseeable future.

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## 3.13.1 Comparison of Consequences by Alternative

Table 3-2 presents a summary of the resource consequences anticipated for each alternative.

<b>Resource</b>	<b>Alternative 1 – No Action</b>	<b>Alternative 2 – Proposed Action</b>
<b>Water Resources</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term negative effect to Water Resources during construction due to possible erosion. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Soils</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term negative effect to low value, roadside Soils due to disturbance, potential erosion and compaction. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Vegetation - general</b>	No direct, indirect or cumulative effects anticipated.	Short-term loss of individual plants during construction due to excavation and trampling. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Vegetation – ETPS, RFSS</b>	No direct, indirect or cumulative effects anticipated.	No direct, indirect or cumulative effects anticipated.
<b>Riparian and Aquatic Habitats</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term negative effects to Riparian and Aquatic Habitats due to sedimentation from erosion and wetland disturbance during construction. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Fish and Aquatic Biota</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term negative effects to Fish and Aquatic Biota due to turbidity and sedimentation from erosion during construction. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Air Resources</b>	No direct, indirect or cumulative effects anticipated.	Minor short-term negative effects to Air Resources due to emissions from construction vehicles and from construction site dust. Negligible long-term improvement in local air quality due to reduced maintenance requirement for buried cable.

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<b>Resource</b>	<b>Alternative 1 – No Action</b>	<b>Alternative 2 – Proposed Action</b>
<b>Wildlife - general</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term negative effects to aquatic vertebrates and invertebrates during construction due to sedimentation or minor wetland disturbance. No significant long-term direct, indirect or cumulative effects anticipated.
<b>Invasive Plants</b>	No direct, indirect or cumulative effects anticipated.	Potential short-term enhancement of Invasive Plants due to spread of plant parts and seeds by construction activities and by soil disturbance. Mitigation would control invasive species, so no long-term direct, indirect or cumulative effects are anticipated.
<b>Heritage Resources</b>	No direct, indirect or cumulative effects anticipated.	No direct, indirect or cumulative effects anticipated.
<b>Scenic Resources</b>	No direct, indirect or cumulative effects anticipated.	Short-term negative effects to Scenic Resources from presence of construction vehicles. Minor long-term effects to roadside scenic resources due to occasional telecommunication pedestals. Minor improvements in scenic resources due to the removal of aerial cable from some existing pole lines and to the removal of 1,000 feet of both cable and poles.
<b>Recreation</b>	No direct, indirect or cumulative effects anticipated.	Short-term negative effects to Recreation due temporary interruption of traffic flow, partial blockage of recreation area access points, noise from construction activities and minor re-routing of hiking trails crossing the project area during times of active construction. No long-term direct, indirect or cumulative effects anticipated.
<b>Socio-economics</b>	No direct effects anticipated. Potential minor negative indirect and cumulative negative effects on North Country economic recovery and growth due to continuing risk of telecommunication disruption.	Positive direct effects to subscribers due to reduced occurrence of telecommunication disruption. Potential minor positive indirect and cumulative positive effects of North Country economic recovery and growth due reduced occurrence of telecommunication disruption.

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## CHAPTER 4 – LIST OF PREPARERS

### 4.0 Preparers

This EA was prepared by Mark Hutchins of Hutchins Consulting Services, Salisbury, NH, and Patrick Fairbairn, Ph.D, of Normandeau Associates, Bedford, NH.

### 4.1 Forest Service Participation

The following people participated in initial scoping, continuing project review and direction, provided materials for incorporation into the EA and/or provided technical review of field studies and document review:

Tom Wagner	Forest Supervisor
George Pozzuto	Former District Ranger – Androscoggin Ranger District
Katherine Stuart	District Ranger – Androscoggin Ranger District
Tom Moore	Recreation Planner – Androscoggin Ranger District
David Neely	Assistant District Ranger – Androscoggin Ranger District
Rod Wilson	Natural Resource Specialist
Rob Fallon	Former Forest NEPA Coordinator
Lesley Rowse	Wildlife Biologist
Stacey Lemieux	Forest NEPA Coordinator
Joe Gill	Cultural Resources Paraprofessional
Karl Roenke	Forest Archeologist/Historian

### 4.2 Other Agencies Contacted

James McConaha	State Historical Preservation Office.
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## **VERIZON-PINKHAM NOTCH FIBER OPTIC CABLE PROJECT**

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#### **APPENDICES**

<b>Appendix A:</b>	<b>Project Figures</b>
<b>Appendix B:</b>	<b>Scoping Comments and Responses to Comments</b>
<b>Appendix C:</b>	<b>References</b>
<b>Appendix D:</b>	<b>Regional Forester's Sensitive Species Impact Assessment</b>
<b>Appendix E:</b>	<b>Non-Native Invasive Species Risk Assessment Forms</b>

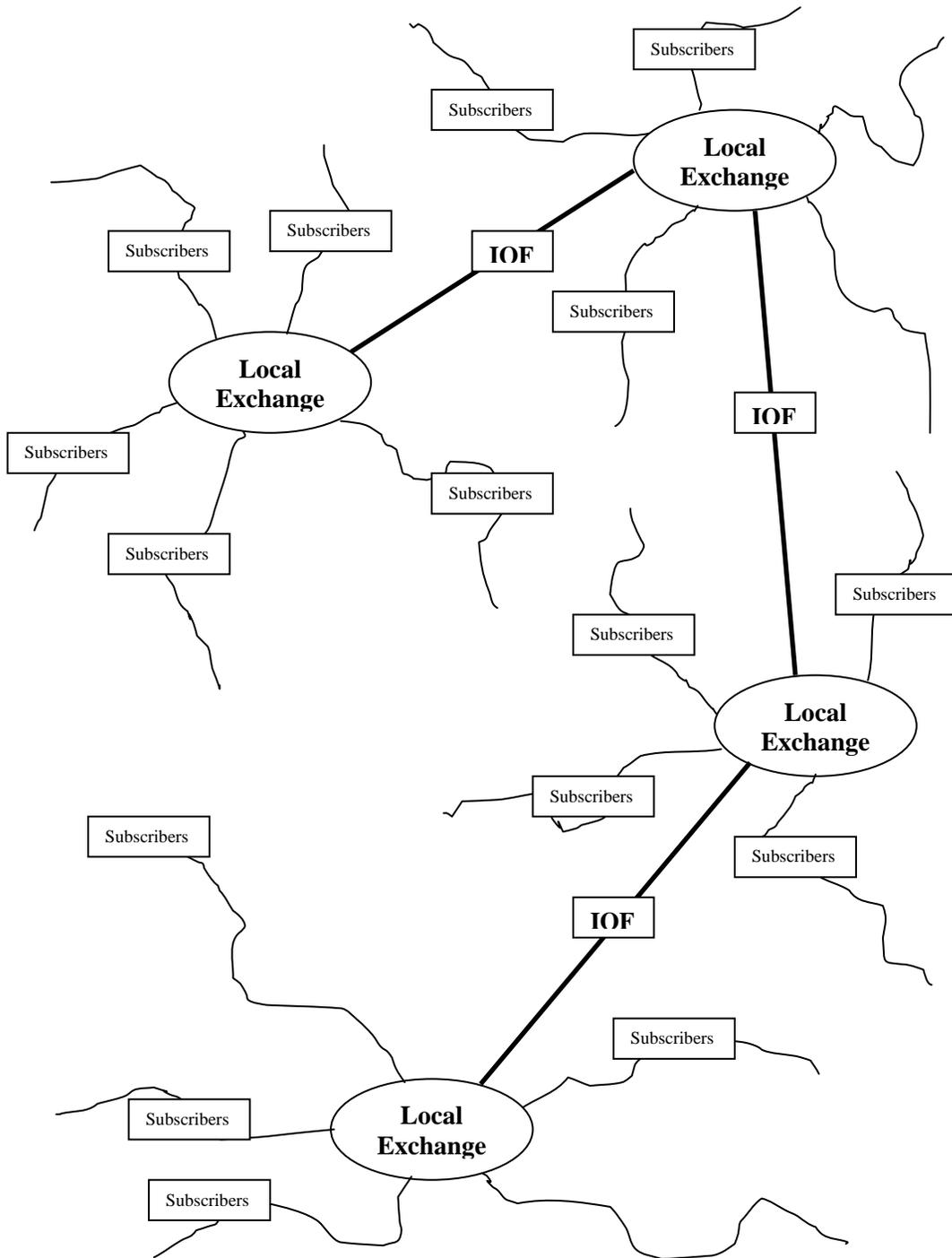
# **ENVIRONMENTAL ASSESSMENT**

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## **Appendix A - Project Figures**

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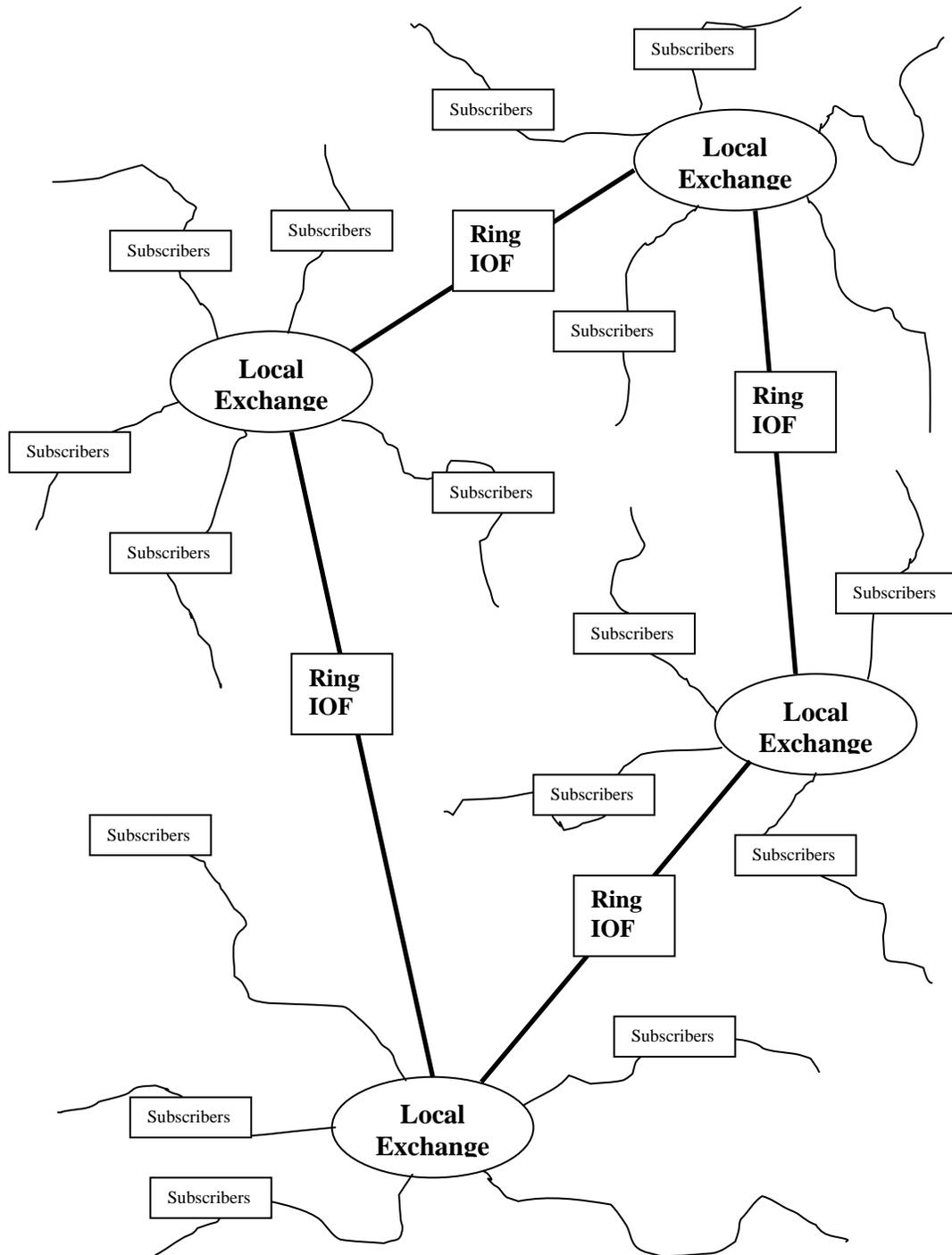
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**Appendix A: Figure 1 – Traditional Local Exchange/Interoffice Facility Network**

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**Appendix A: Figure 2 – Local Exchange/Ring Interoffice Facility Network**

# ENVIRONMENTAL ASSESSMENT

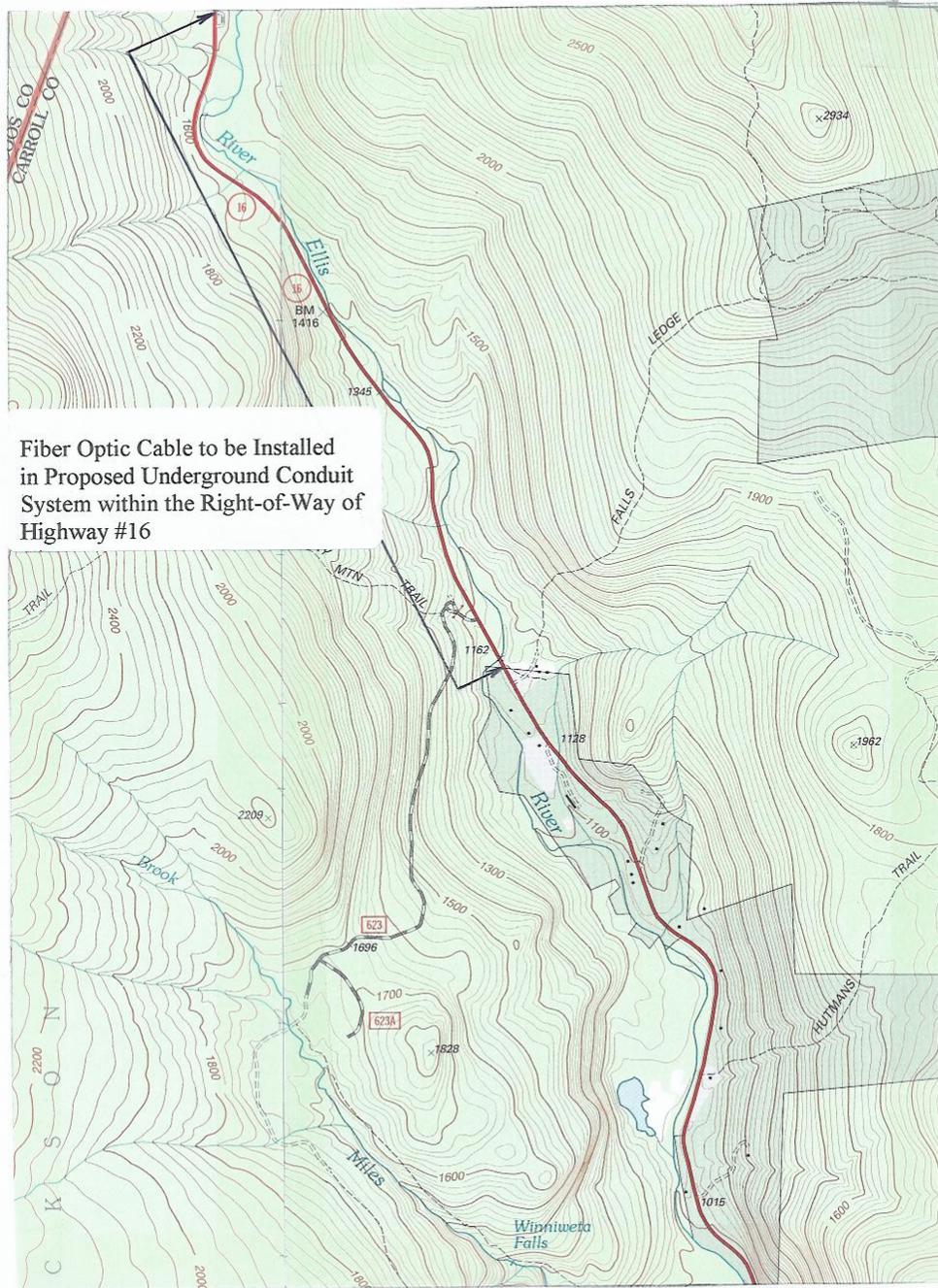


Figure 3a

Appendix A: Figure 3a – Southern Portion of the Project Area.

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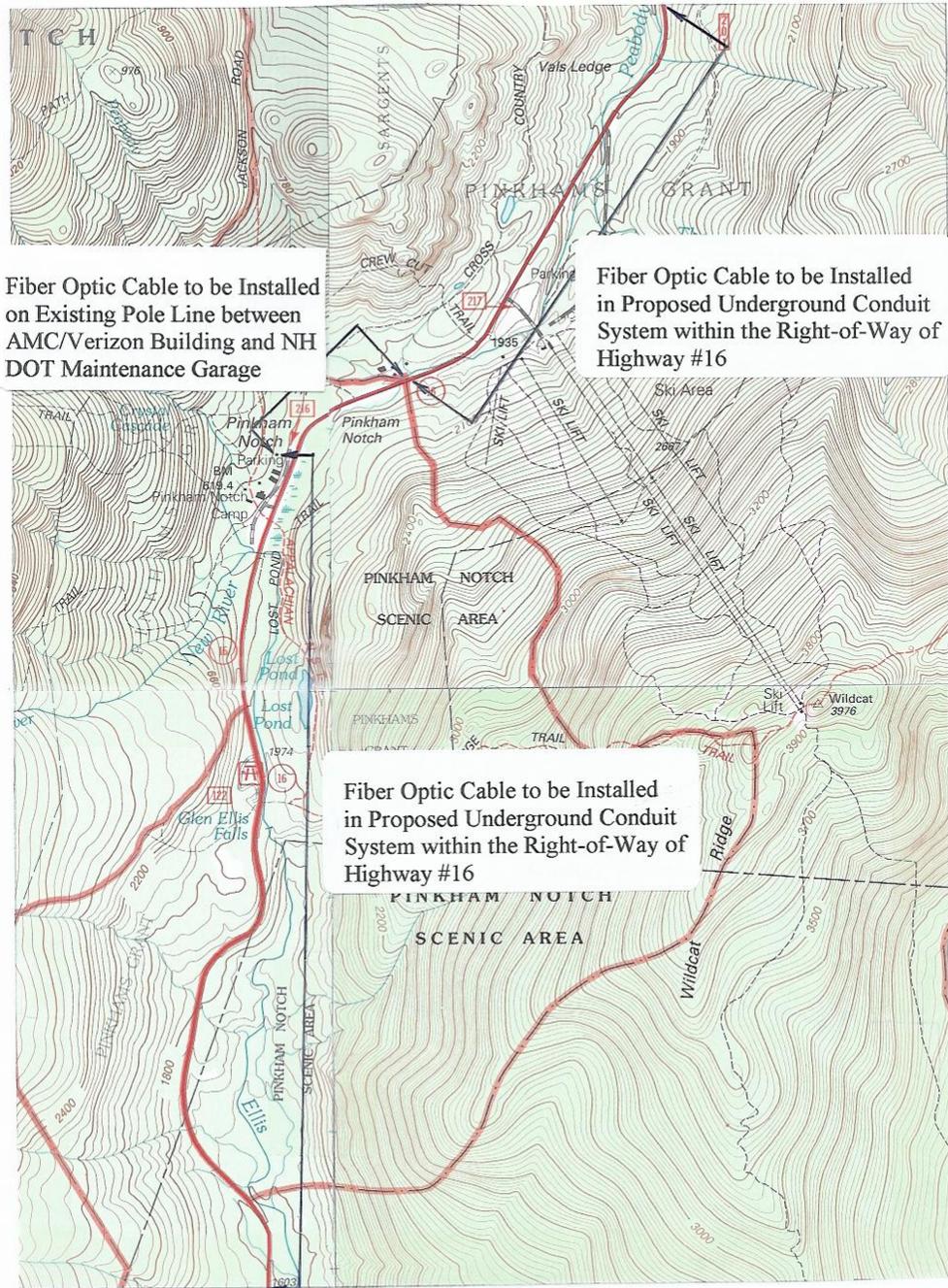


Figure 3b

Appendix A: Figure 3b – South-Central Portion of the Project Area

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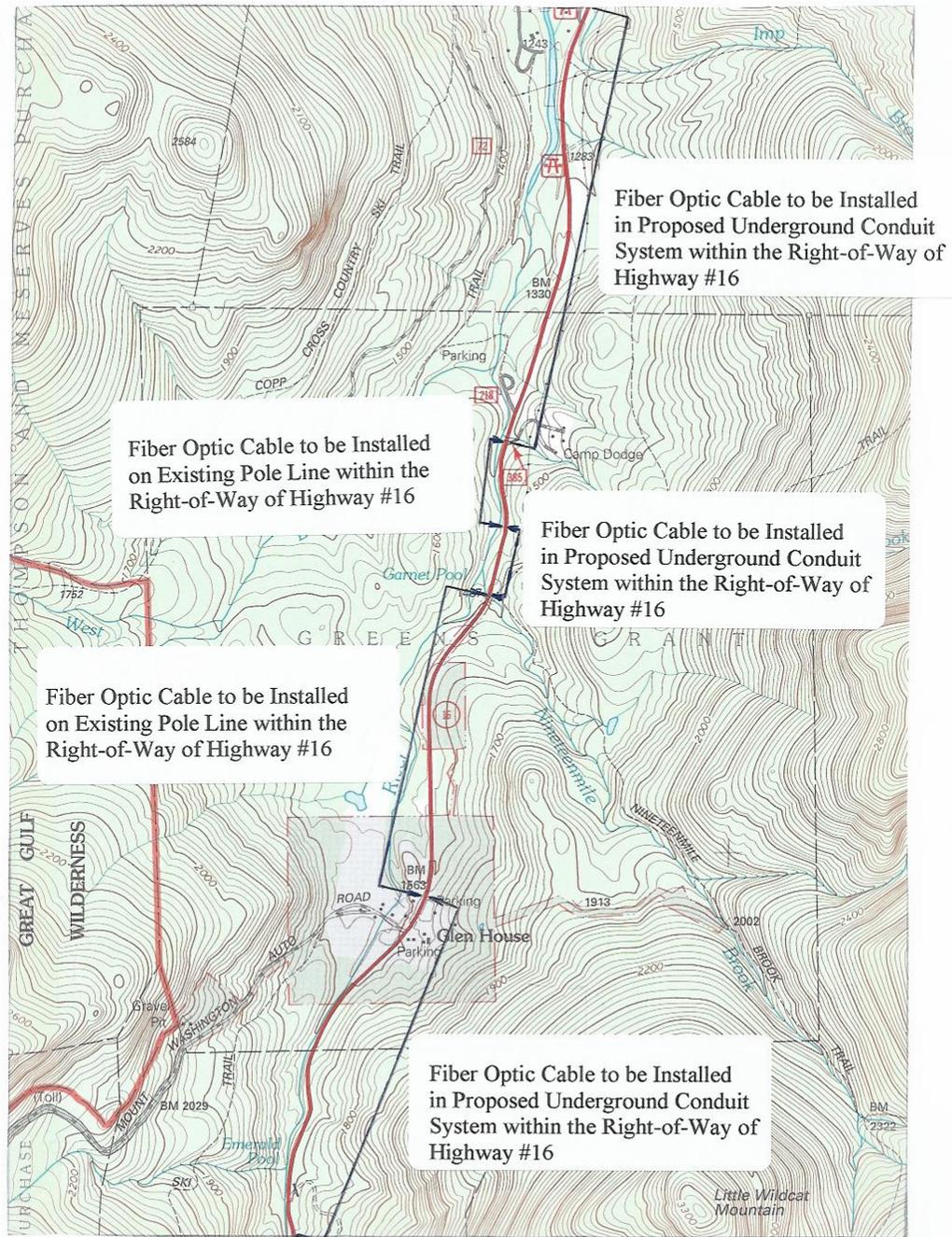


Figure 3c

## Appendix A: Figure 3c – North-Central Portion of the Project Area

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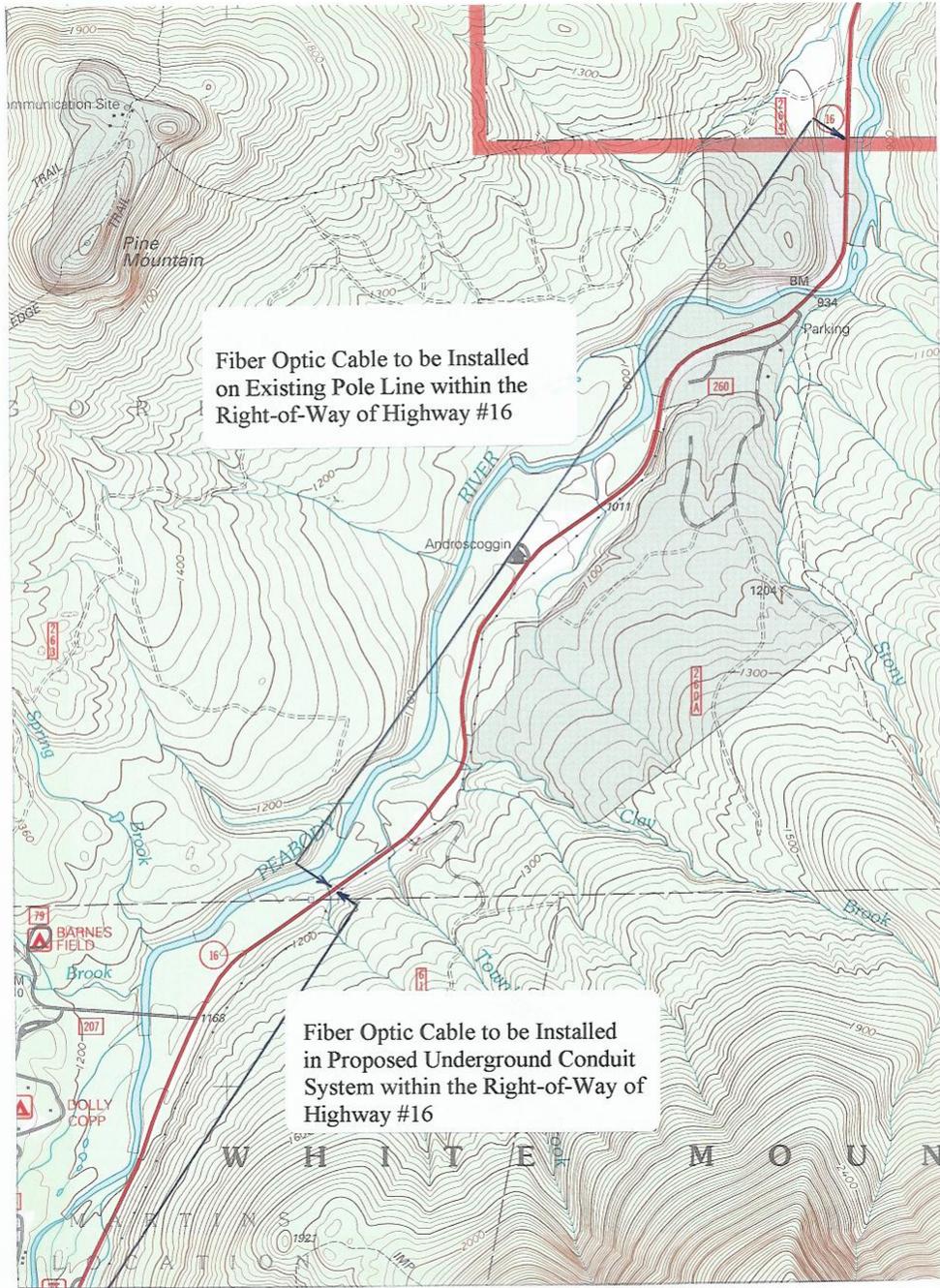
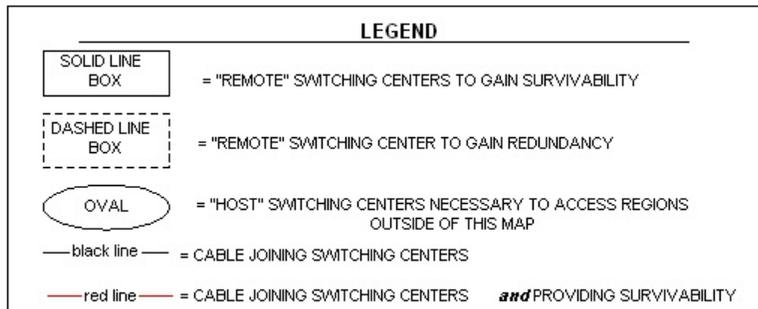
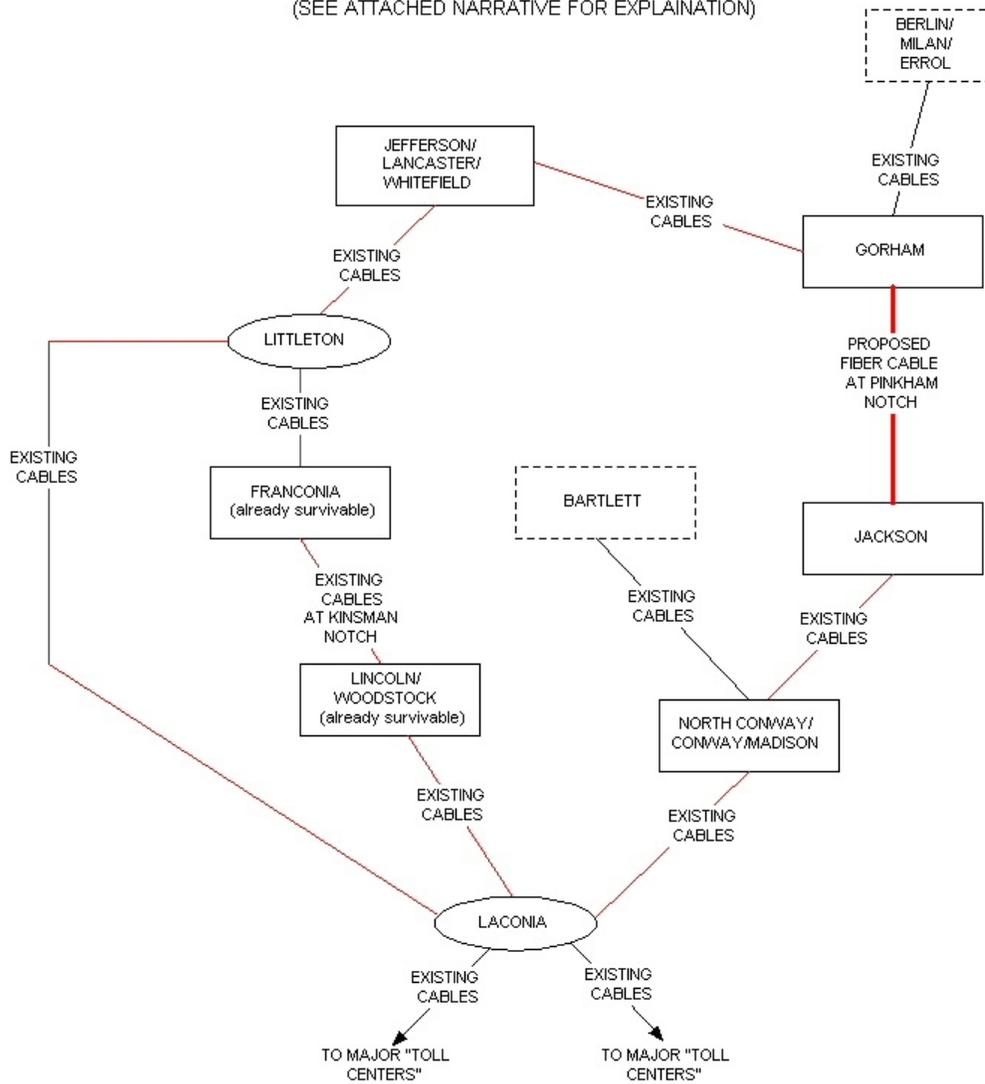


Figure 3d

## Appendix A: Figure 3d – Northern Portion of the Project Area

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**PINKHAM NOTCH, NH**  
**PROPOSED INTEROFFICE FIBER CABLE**  
**SURVIVABILITY / REDUNDANCY MAP**  
 (SEE ATTACHED NARRATIVE FOR EXPLANATION)



page #1 of 3

**Appendix A: Figure 4 – Existing and Proposed Northern New Hampshire Telecommunications Survivability/Redundancy Plan**

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## NARRATIVE FOR “SURVIVABILITY / REDUNDANCY MAP”

### TERMINOLOGY

- Littleton and Laconia are “host” switching centers (all switch centers are also known as “central offices” or “offices”) which provide access to the communications network beyond the areas shown on the map. Host offices also aid their remote offices in directing calls within and beyond the remote groups, establishing “busy signals”, recording call duration for billing, etc.
- “Remote” switching centers handle communications traffic within limited geological areas commonly called “exchanges” which may or may not follow the political boundaries of towns and cities.
- Remote switching center areas are dependant on their host offices to gain access to the world outside of their area including adjacent exchanges.
- The cables connecting central offices are referred to as “Interoffice” facilities” (IOF) or “Toll” cables whether or not these cables connect remote offices to other remote offices, remote offices to host offices, or host offices to host offices.
- “Hierarchy” is the concept of remote offices being subordinate to host offices for their operation and therefore being lower than host offices in the communications hierarchy.
- A “ring” is the arrangement of central offices in a pattern loosely resembling a circle, such that following a cable map originating at any office on the ring always permits access to another office of a higher hierarchy. For example, Lincoln, Woodstock, and Franconia remote offices are on a ring that includes the Laconia and Littleton host offices. (Although not shown on the map, the Laconia and Littleton host offices are also on rings of a higher level in the hierarchy).
- “Survivability” is described as the ability of a remote switching center to continue normal communications even if one of the interoffice facilities linking it to its host is severed. Survivable offices are always found on a ring.
- “Redundancy” is described as the presence of a single interoffice facility connecting a remote office to a point on a survivable ring. The differentiation between survivability and redundancy is fundamental to the understanding of ring architecture: the remote offices not on the ring but a “spoke” off of the ring are offices enjoying redundancy. If the spoke is severed between the remote office and the ring, the remote office with only redundancy will fail. However, if any point on the ring is severed, remote offices located on a spoke off of the ring and protected only by redundancy will continue to serve their customers because their uninterrupted access to the survivable ring will provide a connection to their host.

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## ANALYSIS OF THE LITTLETON AND LACONIA SURVIVABILITY / REDUNDANCY MAP

- The Littleton host office offers control and administration of communications traffic to its remote offices including Gorham, Berlin, Lancaster, Whitefield, Jefferson, Milan, Errol, Franconia, and others not shown on the attached map
- The Laconia host office offers control and administration of communications traffic to a large area in central New Hampshire including North Conway, Conway, Madison, Woodstock, and others not shown on the attached map
- Franconia, Woodstock, and Lincoln are on a survivable ring recently completed through Kinsman Notch. Severing the ring at any point will not interrupt service at these remote offices because the remote switching centers will automatically choose the available alternate route back to their host.
- North Conway, Jackson, Gorham, and others are not presently survivable because they are not located on a survivable ring. Severing the spoke that attaches them to a ring within their respective host's areas will result in service interruption.
- The proposed IOF cable between Jackson and Gorham closes a gap in the ring that passes through the Gorham, Jefferson, Lancaster, Whitefield, Jackson, North Conway, Conway, and Madison remote switching offices in the Littleton and Laconia host office areas. These offices will become survivable after construction of the proposed IOF cable at Pinkham Notch.
- Bartlett, Berlin, Milan, and Errol do not presently enjoy survivability or redundancy. They are now at, or near, the end of a line formed by the cables connecting them to their host office. They will enjoy redundancy when the cable through Pinkham Notch is completed because they will assume their position as a spoke off of the new ring created by this project.

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## **Appendix B - Scoping Comments and Responses to Comments**

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## Comments Received on the Verizon Scoping Report

1. **Edward Beaulieu**  
**188 Dotown Rd.**  
**Rumney, NH 03266**

**Telephone response:** Favors the proposal. “Let Verizon do what they need to do.”

**Response to Comment Letter #1: Thank you for your comments.**

2. **J.T. Horn**  
New England Regional Director  
Appalachian Trail Conservancy  
One Lyme Common | P.O. Box 312  
Lyme, NH 03768

### **e-mail response:**

Mark Hutchins  
Hutchins Consulting Services  
PO Box 130  
Salisbury, NH 03268

Dear Mr. Hutchins:

I am writing on behalf of the Appalachian Trail Conservancy (ATC) to comment on the proposed fiber-optic cable along Route 16 in Pinkham Notch, NH. ATC is a 35,000 member non-profit education organization dedicated to the management and maintenance of the Appalachian National Scenic Trail, a 2,175-mile hiking trail from Georgia to Maine.

At this time ATC wishes to endorse the proposal to bury the fiber optic cable in the existing road and utility right of way. ATC’s policy on “Utilities and Communications Facilities” contained in the Local Management Planning Guide (February 1997 edition) encourages new utility rights of way to be co-aligned with existing impacts such as roads. The Verizon proposal at Route 16 appears to meet this co-alignment standard. Burying the cable along the section of road where the Appalachian Trail crosses by the Pinkham Notch Visitor Center is the best alternative to meet visual quality objectives in this scenic area.

However, we request that the WMNF include permit conditions that will minimize the impacts on the Appalachian Trail. First, we request that no junction boxes be located within sight of the Appalachian Trail footpath. ATC also requests that utility signs in the vicinity of the Appalachian Trail indicating the existence of the cable be held to a minimum necessary to meet public safety standards. Last, it is essential that during construction the Appalachian Trail footpath be uninterrupted. The USFS should require a permit condition that allows for safe hiker passage across the work site at all times. [#2-1]

Thank you for the opportunity to comment. If you have any questions please do not hesitate to contact me at our New England Regional Office at 603-795-4935.

Sincerely,  
J.T. Horn  
New England Regional Director

# ENVIRONMENTAL ASSESSMENT

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Response to Comment Letter #2, Issue #1: Thank you for your comments. With respect to your requests, no above ground pedestal boxes will be located within sight of the AT (EA, p. 37). The underground conduit system contains a copper locating wire, so utility locator signs will be kept to a minimum and can be eliminated in the vicinity of the AT. Finally, during the brief (less than 1 week) time that construction activity will be crossing or in the immediate vicinity of the AT, alternate routing and signage would be provided to ensure that passage on the trail is unimpeded.

**3. Craig Seaver  
3 Andrew Way  
Madbury, NH 03820**

## e-mail response

The plan to lay cable through Pinkham is clearly necessary and, as an interested party in WMNF developments, I support it.

The outline of how the project would be done did, however, raise two questions in my mind.

First, when the underground cable is described as going "within the cleared ROW of NH Rt. 16", I wonder where that is in relation to the road itself. I don't know what the width of the ROW is there. I hope that the trenching would be done as close to the paved surface as possible in order to minimize impact on the wetlands and surface waters in the area. [#3-1]

I'm sure silt fencing or barriers of some kind will be used, but I've seen how those work, too. Unless they are maintained they tend to sag and get overrun. Then at the end of the work they are sometimes left to disintegrate on their own with no effort made to prevent siltation as the vegetation recovers and binds the soil. These drainages are of the highest importance, standing as they do at the very start of main tributaries to the Androscoggin and Saco Rivers. Careful attention to minimizing the environmental effects of this project is essential, [#3-2]

Second, the plan calls for wires to cross Rt. 16 between the NHDOT building and Wildcat on poles. I don't remember whether there are poles there now or not. If there are, I guess it's no worse to put more wires on them. If not, I would strongly suggest your running the wires under the road. It sounds as though you will have the equipment on hand to do this, and it would be worth a bit of time to lessen the pole count in the notch by two. The cable will be going underground over on the east side anyway; why not put it in the ground on the west side and eliminate the jump? [#3-3]

I applaud the effort to enlist other pole users to move their wires underground and thereby make possible the removal of poles all through the notch. This would be terrific step for all the civilization-weary visitors to the area, and I think it would save everyone money in the long run when they didn't have to do extensive repairs on the wires after the next ice/wind/wet snow storm. The notch isn't hospitable to aerial wires or to those who need to work

# ENVIRONMENTAL ASSESSMENT

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on them.

Thank you for your attention to these comments and for the opportunity to offer them.

Craig Seaver  
Madbury, NH

**Response to Comment Letter #3, Issue #1:** *Thank you for your comments. The cable will be buried as close to the pavement as would be allowed by the NH Department of Transportation. In general, burial will be within the shoulder material, on the pavement side of the roadside ditch and will avoid wetland and surface waters. No surface waters will be directly impacted by the entrenchment, but some short lengths of roadside wetlands will be necessarily impacted during the project. These areas will be fully restored to their existing condition after construction.*

**Response to Comment Letter #3, Issue #2:** *We recognize the need for implementing best management practices (BMPs) during construction to minimize environmental impacts. We also recognize the need for periodic maintenance of the BMP, particular after rainstorms, to ensure that they continue to function as intended. Should the Forest Service decide to permit this project, the permit would be conditioned to require implementation and maintenance of appropriate and applicable BMPs to minimize potential environmental impacts. In addition, Verizon must prepare, and contractors would be required to follow, a Storm Water Pollution Prevention Plan, pursuant to the 1987 amendments to the Clean Water Act. We are confident that the combination of our and USEPA's permitting authorities will ensure that this project could be constructed with a minimum of environmental impact.*

**Response to Comment Letter #3, Issue #3:** *With respect to the overhead lines in the vicinity of the NH Department of Transportation garage near the top of Pinkham Notch, the Proposed Action would continue to maintain overhead lines here by simply overlashing fiber optic cable to the existing telecommunication line. We have evaluated the benefit of requiring burial here and elsewhere in the project area and have concluded that the potential benefit to Forest resources does not justify the environmental and financial costs of burial. Because aerial electricity cable also exists on this pole line and that cable would remain aerial, the potential visual benefits of burying the telecommunication cable are negligible. Furthermore, the additional fiber optic cable, when lashed to existing communication cable would not be visually apparent to the casual observer. Consequently, we do not presently plan to require burial of fiber optic cable in this location.*

**4. George Howard  
Box 5  
Glen, NH 03838**

**e-mail response**

# ENVIRONMENTAL ASSESSMENT

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I have reviewed the project package and have no comments as I believe the course of action proposed is the best and responds to the need. I am concerned with the level of review this project demands given most of it lies outside the WMNF and in either the NH Highway ROW or the proclamation area. Equally important is the scope of the project, installing fiber optic cable in no major activity and is done throughout the State and Nation without this type review and without any adverse impact. Overkill at its best!!!

George Howard

**Response to Comment Letter #4, Issue #1: Thank you for your comments. The Forest Service is required by the National Environmental Policy Act to rigorously evaluate the potential impact of all actions on the National Forest System land. The process that must be followed is dictated by the Act and Forest Service implementing regulations.**

# ENVIRONMENTAL ASSESSMENT

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5. **Wilma Corrigan**  
**PO Box 124**  
**Jefferson, NH 03583-0124**

## Letter response

PO Box 124  
Jefferson, NH 03583-0124

March 27, 2006

White Mountain National Forest  
Mark Hutchins  
Hutchins Consulting Service  
PO Box 130  
Salisbury, NH 03268

Dear Sir:

Upon receiving your information on the Pinkham Notch Fiber Optic Cable Project I would like to thank you very much for this packet of explanation and maps of descriptions of layout.

I agree that for the best way to better serve the majority of the greater north communities is for the route of Pinkham Notch to be taken. This is the closest corridor to the Berlin/Gorham area and I believe covers a much better terrain to work with than Crawford Notch would provide.

I am not familiar with Fiber Optic Cable, but I am expecting this will help serve the computer service that is much needed in the north country to carry on business transactions especially for the Postal Service, Hospitals, Doctors, and other operating businesses, personal household computers, along with telephone communications.

It appears that there should not be much corruption to the National Forest as the cable will be installed along the existing lines. Only where a trench will be dug to lay underground lines will be disturbed and that will be done with much care to restore to original nature.

I am passing this information on to my son Dan and Denise Corrigan who live in Gorham and will advise them to please share the materials with other residence of their area.

Sincerely,



Wilma Corrigan  
Interested Person

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**Response to Comment Letter #5: Thank you for your comments.**

# ENVIRONMENTAL ASSESSMENT

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6. **Charlie Kellogg**  
**4 Alpine Road**  
**Manchester, MA 01944**

## e-mail response

Dear Mark,

My first visit to Pinkham Notch was in 1955 when I went to work for the AMC. I had no idea that a telephone might work there then, and there were times when it didn't. Now, we depend on broadband and expect it.

Therefore, as much as I hate to see the WMNF dug up for any reason, this project is compelling and important. Not-with-standing, it would have to be done carefully, not quickly, with a small footprint and minimal disruption to flora and fauna. [#6-1]

I agree with its purpose and location; where else could it go unless wireless supplants the need in short order.

The plan for digging up the roadway should be well vetted and so forth, but I approve of the concept. [#6-1]

Charlie

Charlie Kellogg  
4 Alpine Road  
Manchester, MA 01944 USA  
978 526 8241

*Response to Comment Letter #6, Issue #1: Thank you for your comments. This Environmental Assessment evaluates the potential for this project to impact environmental resources on the WMNF. We believe that the analysis indicates that the proposed action, combined with mitigation and implementation of Best Management Practices would have minimal impacts to flora and fauna and other Forest resources.*

7. **R. Eric Jones**  
**1785 Chadwick Road**  
**Englewood, Florida**  
**34223**  
**(941) 475-1039**

## e-mail response

**4 April, 2006**

You state that Verizon has determined that this project is necessary. I submit that the Forest Service lacks the expertise to determine the veracity of this assertion by a private, for profit, publicly held corporation seeking to use our land for no compensation. It would seem that The Forest Service has already decided to grant this permit. The Scoping Report" states that "This project, as proposed, is indeed the only feasible solution if certain large, northern NH communities are to enjoy the safety of a redundant or survivable

# ENVIRONMENTAL ASSESSMENT

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telecommunications link.” I suggest that the Forest Service insist that Verizon pay for an analysis of the need for this project by an independent engineering firm (with competence in this field) hired by the Forest Service. [#7-1]

- ❑ I commend your consideration of the impact this project would have on those lands not yet owned but within the WMNF Proclamation Boundary. Although the pace of land purchase by the WMNF is pitifully slow, this is forward thinking, just in case.
- ❑ It is not completely clear to me from the “Scoping Report” whether **ANY** of the underground cable is proposed to be on land that is not within the “cleared right-of-way of NH Highway #16”. The “Scoping Report” states that the under-ground cable at Wildcat Ski Area parking lot to the Glen House is proposed to be “**LARGELY** within the cleared right-of-way of NH Highway #16”. If any new clearing is proposed I would urge you to deny that new clearing. We have too many permitted private uses on our WMNF. [#7-2]
- ❑ It is wrong to ask the public to comment on the acceptability of a proposed project when the specificity of important components is not stated and is left to the party seeking the permit. I refer to the placement and number of the above-ground pedestals along the under-ground cable route. The “Scoping Report” also fails to specifically describe (height, width, length and composition) of these symbols of man’s presence. In my opinion this makes the “Scoping Report” inadequate. [#7-3]
- ❑ The “Scoping Report” states that “the Forest Service has noted that over-head utility lines in the Pinkham-Notch scenic Corridor do not meet the desired visual quality objectives for the area”. The proposed project seeks as follows: “From the NHDOT garage, the proposed cable would cross aerially to the eastern side of NH Highway #16.....”. This is a **NEW** aerial cable. Additionally, the “Scoping Report” alludes to an **EXISTING** aerial cable crossing NH Highway #16 at the Dolly Copp Campground. I urge you, if you grant this permit, to insist that Verizon remove these two aerial lines and replace them with underground highway crossings. [#7-4]
- ❑ The “Scoping Report” states that “the Forest Service has **suggested** that Verizon **encourage** other utility providers to consider relocating their lines to the proposed Verizon under-ground trench”. I suggest that the Forest Service NOT Verizon specifically urge NH Electric Coop, Public Service of NH and Adelpia Cable in light of the facts that their permits will come up for renewal and that “the Forest Service has noted that over-head utility lines in the Pinkham-Notch scenic Corridor do not meet the desired visual quality objectives for the area”. Be reminded that each time a private entity seeks exclusive use of the public land over which you are the fiduciary; you must seek to get something for that which you give away. We are counting on you. [#7-5]
- ❑ The “Scoping Report” states that under NEPA rules “this project may be categorically excluded from documentation in an Environmental Impact Statement because (among other reasons) it involves less than (5) FIVE contiguous acres of land. Can it be true that a (17) SEVENTEEN MILE project involves less than 5 contiguous acres. [#7-6]

Thank you for this opportunity to share my views with you on this project.

Sincerely yours,

R. Eric Jones

***Response to Comment Letter #7, Issue #1: The Forest Service uses a rigorous process of public review and environmental evaluation, pursuant to the National Environmental Policy Act, to ensure that a proposed action on National Forest System lands a) is warranted; b) can not be reasonably implemented on private lands; and 3) if permitted on the Forest, can be constructed without undo impact to Forest resources. At the time***

# ENVIRONMENTAL ASSESSMENT

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the Scoping Report was released, the Forest Service had not made any decisions relative to permitting this project, nor have we now. Rather, as is consistent with our policy, we are letting the NEPA process and public comment help us determine whether this project should be permitted and, if so, under what permit conditions.

**Response to Comment Letter #7, Issue #2:** None of the proposed underground cable would be outside of the the cleared portion of the NH Highway #16 right-of-way. The term “largely” was inaccurate with respect to the underground cable. Some of the overhead cable is not within the cleared right-of-way and would remain so, but the underground cable would all be within the cleared right-of-way.

**Response to Comment Letter #7, Issue #3:** One of the purposes of early scoping is to identify issues that require additional information before an informed decision can be made. These issues, including the specifics associated with aboveground pedestals, are presented and evaluated in detail in this EA.

**Response to Comment Letter #7, Issue #4:** The aerial pole line that crosses NH Highway #16 near the NH DOT highway maintenance garage and Wildcat Ski Area is not new. It is an existing line, carrying both electrical and telecommunication cable, as is the line to Dolly Copp Campground. As explained in Section 2.1.2 (pp. 11-12) of the EA, even if the aerial telecommunication line were removed, the aerial electrical line would remain which does virtually nothing to eliminate the inconsistency with the Forest Plan. Consequently, the Forest Service, should they chose to permit the project, is not presently planning to require Verizon to bury cable in either of these locations.

**Response to Comment Letter #7, Issue #5:** The Forest Service recently reissued permits to Verizon, NH Electric Co Op and Public Service Company of New Hampshire for aerial pole lines here in Pinkham Notch and elsewhere on the Forest. As part of our review, we considered whether these utilities should be required to bury their cable. It was determined that the environmental and financial cost to bury those line was prohibitive and that a requirement for burial could jeopardize public safety and welfare if some or all of these lines were abandoned as a result of a burial requirement. Nevertheless, when the opportunity arises, as with this Verizon project, the Forest Service will continue to actively pursue utility burial with the project proponent.

**Response to Comment Letter #7, Issue #6:** The Forest Service was initially considering Categorical Exclusion as a potential permitting mechanism. After further review, in part because of your comment, it was determined that the amount of disturbance exceeded that amount allowed for categorical exclusion by Forest Service regulation. Therefore, we required the preparation of this EA

# ENVIRONMENTAL ASSESSMENT

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8. Robert Richardson  
1262 County Road  
Walpole, NH 03608

Letter response

ROBERT RICHARDSON  
1262 COUNTY ROAD  
WALPOLE, NH 03608  
603-756-3503  
APRIL 2, 2006

TOM WAGNER, FOREST SUPERVISOR  
WHITE MOUNTAIN NAT'L FOREST  
719 N. MAIN ST.  
LAGONIA, NH 03246

DEAR MR WAGNER

THIS IS IN RESPONSE TO YOUR MARCH 15, 2006,  
LETTER SEEKING PUBLIC COMMENT ON THE PROPOSED  
"VERIZON - PINKHAM NOTCH FIBRE OPTIC CABLE".

AS I UNDERSTAND IT, THE PROPOSED FIBRE  
OPTIC TELEPHONE CABLE WILL BE INSTALLED OVERHEAD  
AND/OR IN THE GROUND BUT ALWAYS WITHIN THE "RIGHT  
OF WAY" OF NH ROUTE 16.

STATE OF THE ART, REDUNDANT TELEPHONE CAPABILITY  
IS A NECESSARY RESOURCE PARTICULARLY IN TIMES OF  
EMERGENCY OR DISASTER.

ADDITIONALLY, THE NH ROUTE 16 CORRIDOR HAS BEEN  
THE PRINCIPAL HIGHWAY RUNNING NORTH/SOUTH THROUGH  
THE EASTERN PORTION OF NEW HAMPSHIRE FOR CENTURIES.  
IT IS TRAVELED DAILY BY BOTH COMMERCIAL AND PRIVATE  
VEHICLES.

THE PRESENCE OF MANMADE HIGHWAYS AND  
UTILITY SYSTEMS ALREADY EXISTS. I DOUBT THAT THE  
ADDITION OF A FIBRE OPTICS TELEPHONE LINE WILL  
PRESENT AN UNFAVORABLE ENVIRONMENTAL IMPACT OR ANY  
MORE OF AN INTRUSION ON WILD PLACES THAN ALREADY  
EXISTS.

I AM IN FAVOR OF PROCEEDING WITH THE  
PROJECT.

THANKS FOR THE OPPORTUNITY TO COMMENT.

BEST REGARDS

BOB RICHARDSON

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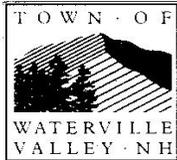
Response to Comment Letter #8: Thank you for your comments.

# ENVIRONMENTAL ASSESSMENT

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9. **Donald Jasinski**  
**Chairman, Planning Board**  
**Town of Waterville Valley**  
**P.O. Box 500**  
**Waterville Valley, NH 03215**

## Letter response



March 31, 2006  
RE: Verizon-Pinkham Notch Fiber Optic Cable Project  
Mark Hutchins  
Hutchins Consulting Services  
P.O. Box 130  
Salisbury, N.H. 03268

Subject: Comments on the proposed project

Dear Mr. Hutchins:

I strongly suggest that more, if not all of the cable lines are installed underground for two reasons:

1. Underground utility lines are less likely to be damaged.

It has been our experience in the Waterville Valley jurisdiction, that the severe weather conditions in the mountainous area has greatly contributed to the failure of overhead lines, whereas the underground cables are very much less vulnerable.

2. Overhead cable lines and the supporting poles mar the natural beauty of the landscape.

The White Mountains economy depends largely on tourism which in turn is directly dependent on the natural beauty of the area. All of the Town of Waterville Valleys' cable, power and satellite lines are underground, greatly preserving the natural beauty of the area.

I understand the notable initial extra cost of this suggestion, however, it will save on continuing repair costs, interruption of service especially dire at times of emergency.

Sincerely,

A handwritten signature in black ink, appearing to read "Donald Jasinski".

Donald Jasinski 603-236-4730  
Chairman  
Planning Board, Town of Waterville Valley

Post Office Box 500  
Waterville Valley  
New Hampshire 03215  
(603) 236-4730

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**Response to Comment Letter #9: Should Alternative 2 be selected, we will require burial in those areas where burial represents the most environmentally acceptable**

# ENVIRONMENTAL ASSESSMENT

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method of installation. In some cases, aerial installation offers the greatest protection to the environment while only negligibly impacting existing visual impacts. These considerations are fully discussed in Chapter 3 of this EA.

10. Rev Carleton Schaller  
61 Fairview St.  
Littleton, NH 03561-4603

## Letter response

Mr. Mark Hutchins  
P.O. Box 130  
Salisbury, New Hampshire 03268

Dear Mr. Hutchins:

I appreciate the opportunity to comment on the proposed Verizon - Pinkham Notch Fiber Optic Cable Project. To a layman, this is a complicated and highly technical matter, and therefore I am quite limited in the substance of my comment.

Issues of Concern on Page 9 of the Scoping Report refer to a suggestion that Verizon be asked to encourage other utility providers to relocate their lines to the Verizon underground trench. This seems to be a novel and useful concept, for consolidation

(Page 2)

of lines offers to minimize the visual intrusion and impact of several separate ones. I hope that the Forest Service will thus press for such a consolidation and, furthermore, look to other possibilities for doing so throughout the overall area of the project.

Sincerely,  
(5th Par.) Carleton Schaller Jr.  
61 Fairview Street  
Littleton, New Hampshire 03561  
Tel. 603-444-0466

**Response to Comment Letter #10: The Forest Service requested that the Verizon actively invite other utilities to participate in their cable burial project. Verizon did as**

# **ENVIRONMENTAL ASSESSMENT**

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requested and received no interest from any utilities that currently have cable in Pinkham Notch. The Forest Service cannot require other utility participation without just cause and that cause does not presently exist.

**11. Jeff Schall**  
**North Country Internet Access**  
**38 Glen Ave.**  
**Berlin, NH 03570**

## **e-mail response**

Mark Hutchinson,

Please accept my comments to Verizon's Pinkham Notch Fiber Optical Cable Project.

My name is Jeff Schall, Network Director of NCIA (North Country Internet Access). NCIA has been providing Internet access to northern New Hampshire since 1995. NCIA provides dial-up access along with broadband services to over 3,000 customers including businesses, schools, and municipalities. NCIA's IP packet network is comprised of leased data lines from Verizon. Internet access for northern New Hampshire is dependent on Verizon circuits to southern New Hampshire.

Over the course of years providing Internet Access there has been several times when long term outages for northern New Hampshire occurred because IOF links were broken due to fiber cuts in Madison, Twin Mt. and Lisbon. Had there been a ring network connecting Gorham to Jackson, there would have been no interruption of Internet services.

I am in full support of Verizon's Optical Fiber project through Pinkham Notch. Making Verizon's network redundant with another path to northern New Hampshire provides greater safety for its residents for both E-911 and Internet access.

Respectfully submitted,

Jeff Schall  
NCIA  
38 Glen Ave.  
Berlin, NH 03570  
w603-752-1250  
c603-723-7819  
f603-752-8134

**Response to Comment Letter #11: Thank you for your comments.**

**12. Robert Cavanagh**  
**127 Field Ave.**  
**Auburn, ME 04210**

## **e-mail response**

# ENVIRONMENTAL ASSESSMENT

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Dear Mark Hutchins, I support Verizon's proposed fiber optic cable route using the combination of aerial construction on existing poles and underground construction where pole lines are inaccessible or non-existent. I understand that the proposed action would eliminate the majority of Verizon's existing overhead lines. Erosion control during construction would be necessary.

Sincerely,  
Robert Cavanagh  
127 Field Ave.  
Auburn, ME 04210

*Response to Comment Letter #12: Thank you for your comments.*

**13. Howie Wemyss, General Manager  
Mt Washington Auto Road  
Great Glen Trails Outdoor Center  
PO Box 278  
Gorham NH 03581**

## **e-mail response**

April 25, 2006

Greetings;

The Mt Washington Auto Road wishes to go on record as being in support of this proposed project as outlined in the scoping letter dated March 16, 2006. I have no idea if the end of the comment period has passed or not as we were not officially invited to comment even though we are abutters to this project and in fact have granted Verizon an easement across our property in Greens Grant.

I am satisfied to note that my biggest concern of there being any more aerial cables erected apparently will not happen and it seems that as a result of this project there will be slightly less aerial cables and poles when the project is completed. We have worked very hard over the years to minimize and remove any remaining aerial utility structures on our property and are happy to see the Forest Service holding others to this standard. I was particularly happy to see where the underground fiber optic line will cross major rivers that it will be attached to the bridge and not strung aerially.

Thanks for doing a great job overseeing this project so far.

Howie Wemyss, General Manager  
Mt Washington Auto Road  
Great Glen Trails Outdoor Center

# ENVIRONMENTAL ASSESSMENT

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PO Box 278  
Gorham NH 03581  
603 466 3988  
www.mt-washington.com

*Response to Comment Letter #13: Thank you for your comments, and we apologize for inadvertently leaving you off the mailing list.*

**14. Paul Cunha**  
**Director of Facilities**  
**For the Appalachian Mountain Club**  
**PO Box 298**  
**Gorham, NH 03581**

## **e-mail response**

To: Mark Hutchins  
Fr: Paul Cunha, AMC  
Re: Scoping Response for Verizon - Pinkham Notch Fiber Optic Cable

Project  
Da: April 25, 2006

This note serves as formal response by the Appalachian Mountain Club (AMC) to the scoping of the above project by the USFS. The AMC is a not-for-profit conservation and recreation membership organization with significant operations in the White Mountains including its Pinkham Notch Visitor Center (PNVC). The Pinkham Notch Visitor Center is a key information and education center as well as a principle trailhead for access to the backcountry. In addition, the PNVC serves as a Search and Rescue base for the area.

I appreciate an on-site orientation meeting held April 18th, which included representatives from Verizon and the USFS.

These comments are limited to the project as it is designed around the Pinkham Notch Visitor Center. Our general expectation for best management practice in areas to the North and South of AMC Pinkham is assumed to be dictated by USFS and NH DOT requirements to a high standard appropriate to the location of the project. [#14-1]

In the immediate vicinity of PNVC, AMC requests a number of mitigations which were discussed at the on-site meeting:

- 1) Maintain continuous access into the AMC Pinkham complex at the main entry by drilling under the access drive and/or other considerations as required. [#14-2]
- 2) Remove a minimum of vegetation between the highway and the PNVC parking lot where the cable leaves the Route 16 ROW to connect with the Verizon building. [#14-3]
- 3) Conduct project operations during quieter periods outside of the

# ENVIRONMENTAL ASSESSMENT

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prime summer/fall season. [#14-4]

4) Limit project operations to day-time periods between 8AM and 5PM. [#14-5]

5) Provide reasonable notice of commencement of operations and complete all operations in the PNVC vicinity in a minimum start-to-finish period of time. [#14-6]

6) Use best management practice especially in wetland areas and in managing beaver habitat. [#14-7]

7) Coordinate with NH DOT at the bridge over the Cutler/New Rivers to avoid conflicts with the proposed pedestrian bridge project. [#14-8]

8) Consider implementing simultaneous replacement of other aging Verizon

telecommunications cables in the project area. [#14-9]

Paul Cunha  
Director of Facilities  
For the Appalachian Mountain Club  
PO Box 298  
Gorham, NH 03581

603-466-2721  
pcunha@outdoors.org

**Response to Comment Letter #14, Issue #1:** *(See comment #3, issue #2 above) If a decision is made to select Alternative 2, the permit would be conditioned to require implementation and maintenance of appropriate and applicable BMPs to minimize potential environmental impacts. In addition, Verizon must prepare, and contractors would be required to follow, a Storm Water Pollution Prevention Plan, pursuant to the 1987 amendments to the Clean Water Act. We are confident that the combination of our and USEPA's permitting authorities will ensure that this project could be constructed with a minimum of environmental impact.*

**Response to Comment Letter #14, Issue #2:** *It is Verizon's plan to directional drill under the Pinkham Notch Visitor's Center(PNVC) access road, thereby maintaining continuous, uninterrupted access to the Center.*

**Response to Comment Letter #14, Issue #3:** *Verizon representatives have stated that trenching through this forested buffer between NH Highway #16 and the PNVC parking lot would be kept to smallest width possible, little more than the width of an excavator bucket.*

**Response to Comment Letter #14, Issue #4:** *Verizon representatives have stated that they will do everything reasonably possible to schedule their construction activities in the vicinity of the PNVC outside the timeframe of concern. However, to minimize potential environmental impact, the Forest Service will require that earth disturbing activities avoid the spring/late fall timeframes when minimizing environmental impacts are more difficult. Consequently, it may not be possible for Verizon to completely avoid the period of concern.*

# ENVIRONMENTAL ASSESSMENT

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**Response to Comment Letter #14, Issue #5:** *Verizon representatives have stated that they will limit their times of operation to 8:00 AM to 5:00 PM, when working in the vicinity of the PNVC.*

**Response to Comment Letter #14, Issue #6:** *Verizon representatives have stated that they will provide the PNVC with notification of when construction is expected to commence in the immediate vicinity of the PNVC and how long construction is expected to last.*

**Response to Comment Letter #14, Issue #7:** *See response to Issue #1.*

**Response to Comment Letter #14, Issue #8:** *If a decision is made to select Alternative 2, the permit would be conditioned to require Verizon to coordinate with the NH DOT regarding timing of construction along the entire permit area. At present, Verizon is proposing to directional drill under the river in this area so there should be no impact to the bridge or the proposed pedestrian walkway project.*

**Response to Comment Letter #14, Issue #9:** *As part of their Special Use Permit, the Forest Service requires Verizon to maintain and repair their telecommunications equipment when malfunction or damage has potential public health and safety impacts. Repair and maintenance issues that do not have public health and safety implications are outside of the Forest Service's jurisdiction.*

## **Appendix C - References**

# ENVIRONMENTAL ASSESSMENT

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## **Appendix D - Regional Forester's Sensitive Species Impact Assessment**

# ENVIRONMENTAL ASSESSMENT

**Appendix D – Regional Forester’s Sensitive Species Impact Assessment. Information from pre-field and field review of Federal Endangered, Threatened, and Proposed species and Regional Forester’s Sensitive Species within the Route 16 Project Area; Jackson, Pinkham’s Grant, Green’s Grant, Martin’s Location, and Gorham; Carroll and Coos Counties, New Hampshire.**

Species	Status	Habitat Requirements	Sightings (present or historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>FEDERAL THREATENED AND ENDANGERED SPECIES</b>						
<b>MAMMALS</b>						
<i>Canis lupus</i> <b>Eastern Gray Wolf **</b>	T	Large expanses of forested habitat with adequate prey base, e.g. Moose, White-tailed Deer and Beaver.	NO	NO	NO	The USFWS considers Gray Wolf extirpated from the WMNF (6 June 03 letter from USFWS, project file). Forested habitat with moose and deer adjoins but does not include the Project Area.
<i>Felis concolor cougar</i> <b>Eastern Cougar **</b>	E	Large expanses of forested habitat, with adequate prey base, e.g. Moose and White-tailed Deer.	NO	NO	NO	The USFWS considers Eastern Cougar extirpated from the WMNF (6 June 03 letter from USFWS, project file). Forested habitat with moose and deer adjacent to but not in the Project Area.
<i>Felis lynx canadensis</i> <b>Canada Lynx **</b>	T	Favors coniferous or mixed wood forests frequented by Snowshoe Hare. Travel corridors include ridges, saddles, and riparian habitat.	NO	NO	NO	Tracks of Canada Lynx have recently been reported twice in the northern WMNF, the first confirmed evidence of this species in the WMNF in decades (NHFG 2006) There is currently not enough information to determine distribution, number of individuals, and resident status. The Project Area contains unsuitable lynx (and hare) habitat on the basis of WMNF interpretation of habitat guidelines defined in <i>Lynx Conservation Assessment and Strategy</i> (Ruediger et al 2000).

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Status	Habitat Requirements	Sightings (present or historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>FEDERAL THREATENED AND ENDANGERED SPECIES</b>						
<b>MAMMALS</b>						
<i>Myotis sodalis</i> <b>Indiana Bat</b>	E	Hibernacula: chiefly caves and old mines. Roosts: under exfoliating bark or in cavities of dead or partly dead trees in partially open upland and riparian forests at lower elevations. Foraging: in upper forest canopy bordering rivers, lakes and open areas. Recent research indicates that most Indiana bats hibernating in northern New England disperse to the Champlain and Connecticut River Valleys (Prout 2005).	NO	NO	NO	No hibernacula are known in the WMNF. Maturing forest, and riparian habitat in and adjacent to the Project Area, may provide some necessary summer habitat elements, such as large exfoliating trees near streams. However, recent research in northern New England indicates most of the WMNF is unsuitable for Indiana Bat due to high forest canopy closure, cool temperatures, and the remoteness of the Project Area from known hibernacula over rugged terrain. Female bats emerging from hibernacula in New York State traveled less than 40 miles to summer habitat (Prout 2005). The nearest hibernating females would have to traverse mountains and at least twice that distance to reach the Project Area, which borders unsuitably dense tree canopy at all levels.
<b>BIRDS</b>						
<i>Haliaeetus leucocephalus</i> <b>Bald Eagle</b>	T	Large bodies of water with fish and large trees for nesting.	NO	NO	NO	No large bodies of water in the Project Area.
<b>PLANTS</b>						
<i>Isotria medeoloides</i> <b>Small Whorled Pogonia</b>	T	Open woods with an oak component. Less than 1500' elevation. Enriched hardpan soils or underlying ledge.	NO	NO	NO	Habitat in and adjacent to the Project Area was not listed as potential habitat using the method developed by Spereduto (1988). No oak woods.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat Suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>REGIONAL FORESTER'S SENSITIVE SPECIES</b>					
<b>MAMMALS</b>					
<i>Myotis leibii</i> <b>Eastern Small-footed Bat</b>	Hibernacula include caves, mines, and abandoned buildings. Preferred roost sites include rocky ridgetops and outcrops, talus slopes, crevices in cliff faces, possibly under bridges and exfoliating bark of dead and dying trees, or in buildings. May forage in or near wooded areas, over wetlands, and along cliffs.	NO	YES	<b>YES</b>	Mature forest and riparian habitat near the Project Area, and occasional fissures in roadcut bedrock may be suitable for non-hibernation roosting and/or foraging.
<i>Synaptomys borealis sphagnicola</i> <b>Northern Bog Lemming</b>	Prefers sedge meadows and bogs. Other habitats include riparian areas, openings, krummholz, and softwoods. Requires moist to wet, loose soils. Prefers dense herbaceous or mossy understory. Uses burrows.	NO	YES	<b>YES</b>	Right-of-way is too exposed to be suitable, except for brief segments that diverge from Rte. 16. Riparian and softwood habitats occur adjacent to the Project Area.
<b>BIRDS</b>					
<i>Catharus bicknelli</i> <b>Bicknell's Thrush</b>	Breeding: Spruce, fir, birch, and krummholz communities of high elevations (greater than 3,000 ft).	NO	NO	NO	Project Area scarcely exceeds 2,000 ft at highest point.
<i>Falco peregrinus</i> <b>American Peregrine Falcon</b>	Requires rocky cliffs for nesting, often near water. Forages in open areas.	NO	NO	NO	No active eyries in or near the Project Area. No suitable foraging habitat in or near the Project Area.
<i>Gavia immer</i> <b>Common Loon</b>	Lakes and ponds at least 0.25 mi long. Nests on water's edge. Requires adequate prey base of small fish, amphibians to feed young.	NO	NO	NO	No large lakes or ponds present in the Project Area.
<i>Pandion haliaetus</i> <b>Osprey</b>	Nests on dead and living trees, cliffs, utility poles, wooden platforms on poles, usually near or above rivers, lakes, ponds and other waterbodies.	NO	NO	NO	No suitable foraging or nesting habitat in or near Project Area.
<i>Podilymbus podiceps</i> <b>Pied-billed Grebe</b>	Nesting habitat usually > 12 contiguous acres that include open water and emergent vegetation.	NO	NO	NO	No suitable foraging or nesting habitat in or near Project Area.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>REPTILES</b>					
<i>Clemmys (Glyptemys) insculpta</i> <b>Wood Turtle</b>	Riparian areas of slower moving streams. Wooded or heavily vegetated stream banks as well as fields and meadows used for foraging. Hibernates in stream bottoms or muddy banks. Sandy and gravelly areas used for nesting sites.	NO	YES	NO	Streams near both downgradient ends of Project Area could be deep and slow enough in some reaches to support suitable aquatic habitat, with open sandy to gravelly areas suitable for nesting in or near streams and road right-of-way. However, absence of even historical records indicates no usage of Project Area.
<b>INSECTS</b>					
<i>Ameletus browni</i> <b>Brown's Ameletus Mayfly</b>	Larvae prefer erosional areas in cold, fast, well oxygenated headwater streams of circumneutral pH that are lined with rocks and boulders under >50% riparian canopy. Adults typically remain streamside, near emergence point.	YES	YES	YES	Project avoids contact with larval streambed habitat at all crossings. Weak-flying adults are at risk from increased vehicular and pedestrian movement.
<i>Ameletus tertius</i> <b>Third Ameletus Mayfly</b>	Larvae are found in small and large streams in secondary depositional areas and on submerged grasses and detritus along margins of riffles and transitional areas. Water with high oxygen concentrations and circumneutral pH, over cobble and boulders usually with sand and/or gravel. Canopy cover >50%. Adults typically remain streamside, near emergence point.	YES	YES	YES	Project avoids contact with larval streambed habitat at all crossings. Weak-flying adults are at risk from increased vehicular and pedestrian movement.
<i>Boloria montina montina</i> ( <i>B. titania m./B. chariclea</i> ) <b>White Mountain Fritillary</b>	Alpine. Inhabits lush, moist areas near sheltered spots, wet springs, and rocky outcrops above 4,500 ft. Alpine Goldenrod common food plant. Larval host plant unknown; may be a blueberry or willow.	NO	NO	NO	Project Area is not in alpine zone.
<i>Cicindela ancocisconensis</i> <b>Boulder Beach Tiger Beetle</b>	Open sand or mix of sand and cobble along permanent streams of mid-sized rivers; feed and live on the sandy areas exposed by receding rivers.	NO	NO	NO	Streams in the Project Area are not of a size to support suitable larval habitat.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>INSECTS (Cont'd)</b>					
<i>Oeneis melissa semidea</i> <b>White Mountain Butterfly</b>	Alpine. Prefers sedge meadows. Adult host plant unknown. Larva feeds on Bigelow's Sedge.	NO	NO	NO	Project Area is not in alpine zone.
<i>Somatochlora incurvata</i> <b>Warpaint Emerald</b>	Breeds in bogs, fens, and similar peatlands, usually in <i>Sphagnum</i> moss.	NO	NO	NO	No bogs, fens and other peatlands in Project Area.
<b>PLANTS</b>					
<i>Arabis missouriensis</i> <b>Missouri Rock-cress</b>	In the WMNF, probably restricted to semi-open conditions of richer sites, typically south- or west-facing slopes <1,500 ft. Associated species: Red Oak, ash, Basswood, Sugar Maple.	NO	NO	NO	Most of Project Area is >1,500 ft high, acidic and bordered by predominantly softwood forest.
<i>Arctostaphylos alpina</i> <b>Alpine Bearberry</b>	Typically on the exposed end of the dry-mesic heath meadow system of alpine communities; known primarily from a few patches on the ridgelines of the Presidentials.	NO	NO	NO	No alpine habitat in the Project Area.
<i>Arnica lanceolata</i> <b>Arnica</b>	Alpine ravines, damp banks and rock ledges. At low elevations on rocky river banks, gravel bars, beaches, and alluvial flats of rivers and streams at low elevations. Needs constant water supply.	NO	NO	NO	Project Area is not in alpine zone. No permanently wet ledges, rocky river banks or gravel bars occur in Project Area.
<i>Astragalus robbinsii</i> var. <i>minor</i> <b>Robbins' Milkvetch</b>	In northern New England, the habitat comprises calcareous cliffs and ledges.	NO	NO	NO	No calcareous cliff habitat in Project Area.
<i>Betula minor</i> <b>Dwarf White Birch</b>	Bogs and wet, rocky alpine slopes, summits and gullies. Acidic rocky barrens and peaks.	NO	NO	NO	Project Area is not in alpine zone. No high-elevation bogs or rocky slopes are present in Project Area.
<i>Calamagrostis lacustris</i> ( <i>C. stricta inexpansa</i> ) <b>Pond Reed Bent-grass</b>	Alpine and subalpine areas of wet rocky or gravelly sites. Wet ledges. Streamside meadows.	NO	NO	NO	Project Area is not in alpine or subalpine zone. Only artificial wet meadow patches occur in right-of-way, where it crosses wetland.
<i>Cardamine bellidifolia</i> <b>Alpine Bitter Cress</b>	Cold ravines or wet mossy rocks in the alpine area.	NO	NO	NO	Project Area is not in alpine zone.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>PLANTS (Cont'd)</b>					
<i>Carex baileyi</i> <b>Bailey's Sedge</b>	Wetland (fens, swampy woods and meadows, ditches, disturbed openings).	NO	YES	NO	Ditches occur along Rte. 16 right-of-way. A field review did not find this plant within the Project Area.
<i>Carex capitata</i> ssp. <i>arctogena</i> <b>Head-like Sedge</b>	Alpine; usually wet, acidic, rocky or gravelly soil.	NO	NO	NO	No alpine zone in the Project Area.
<i>Carex cumulata</i> <b>Piled-up Sedge</b>	Open ledges, dry sandy soils; open oak forests or hardwood talus; clearings; burned oak-pine rocky summit woodlands.	NO	NO	NO	No open oak forest, in any particular combination with other noted habitat features. Plant surveys of Project Area did not find this species.
<i>Carex scirpoidea</i> <b>Scirpus-like Sedge</b>	Strongly associated with circumneutral to calcareous rocky summits and cliffs. In NH, known only from open ledges and subalpine habitats.	NO	NO	NO	No alpine zone in the Project Area.
<i>Carex wiegandii</i> <b>Wiegand's Sedge</b>	Boggy or peaty soils, boreal bogs; acidic soils of drier, shrubby, sometimes disturbed, margins of acidic <i>Sphagnum</i> bogs or poor fens.	NO	NO	NO	No boggy soils in the Project Area.
<i>Chenopodium foggii</i> <b>Fogg's Goosefoot</b>	Apparently circumneutral cliff bases, rocky slopes and outcrops, and sparsely wooded areas.	NO	NO	NO	Project Area probably too acidic, clear of trees, avoiding rocks. None of this species found in Project Area plant surveys.
<i>Corallorhiza odontorhiza</i> <b>Autumn Coralroot</b>	Can be found in a variety of deciduous and mixed forest habitats. Mycorrhizal host required.	NO	NO	NO	Project Area provides no tree canopy cover.
<i>Dryopteris goldiana</i> <b>Goldie's Woodfern</b>	Rich, damp woods of calcareous soils. Rich mesic forests.	NO	NO	NO	No areas of enrichment occur in Project Area. Plant surveys did not find this species in the Project Area.
<i>Euphrasia oakesii</i> <b>Oakes' Eyebright</b>	Alpine. Exposed gravelly slopes or ledges or open ledgy areas.	NO	NO	NO	Project Area is not in alpine zone.
<i>Festuca prolifera</i> <b>Proliferous Red Fescue</b>	Alpine. Rocky or peaty soils.	NO	NO	NO	Project Area is not in alpine zone.
<i>Galium kamschaticum</i> <b>Boreal Bedstraw</b>	Somewhat rich seep habitats preferred, with unchanneled surface flow; in cool, wet forest of deciduous to evergreen habit, including swamps and mountains.	NO	NO	NO	Project Area is not forested.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>PLANTS (Cont'd)</b>					
<i>Geocaulon lividum</i> <b>Northern Comandra</b>	Peat bogs at high altitudes. Damp humus in spruce-fir woods (fir- wave zone). This species occurs at 2,200-2,650 ft in WMNF.	NO	NO	NO	Project Area scarcely attains 2,000 ft. No peat bogs or fir waves in or adjoining Project Area.
<i>Geum peckii</i> <b>Mountain Avens</b>	Moist alpine areas. Snowbank, wet meadow, streamside communities in the alpine zone. Occurs rarely at low-elevation sites, in rocky streams.	NO	NO	NO	Project Area is not in alpine zone. Plant surveys did not find this species in the Project Area.
<i>Harrimanella hypnoides</i> <b>Moss Bell-heather</b>	Alpine snowbank communities, seeps and crevices.	NO	NO	NO	Project Area is not in alpine zone.
<i>Juglans cinerea</i> <b>Butternut</b>	Rich, moist, alluvial soils and dry, rocky hillsides with limestone. Old farmsteads.	NO	NO	NO	No areas of enrichment in the Project Area. Plant surveys of Project Area did not find this species.
<i>Listera auriculata</i> <b>Auricled Twayblade</b>	Temporarily flooded and seasonally ice-scoured riverbanks on sandy alluvial deposits. Often grows on sandy, acidic soils but has been reported in <i>Sphagnum</i> bogs, riverside alder thickets, and calcareous soils.	NO	YES	NO	Some potential habitat at wetland crossings, but Project Area right-of-way is intensively cut and otherwise disturbed. A field review did not find this species in the Project Area.
<i>Listera convallarioides</i> <b>Broad-leaved (or Broad-lipped) Twayblade</b>	Wet woods, usually in deep shade; peaty glades, spruce/fir woods; thickets; nutrient-poor, mossy, forested seeps. Favors cool conditions and often occurs in ravines or at moderately high elevations.	NO	NO	NO	Project Area right-of-way is too exposed to be suitable habitat for this species. Field surveys did not find it.
<i>Listera cordata</i> <b>Heartleaf Twayblade</b>	Wet, cold woods and <i>Sphagnum</i> bogs; sub-alpine scrub; bases of wet, seepy ledges, outcrops/cliffs, spruce/fir woods on lime.	NO	YES	NO	Some potential seepy habitat, but Project Area is highly disturbed, and a field review did not find this species.
<i>Oligoneuron album</i> <b>Prairie Goldenrod</b>	Preferably dry calcareous cliffs and ledges, also open fields and roadsides. All NH locations are calcareous soil or bedrock.	NO	NO	NO	No calcareous sites in Project Area.
<i>Omalotheca supina</i> ( <i>Gnaphalium supinum</i> ) <b>Alpine Cudweed</b>	Gravelly slopes and ravines at high altitudes; exposed alpine areas and snowbank communities.	NO	NO	NO	Project Area is well below tree-line.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>PLANTS (Cont'd)</b>					
<i>Ophioglossum pusillum</i> <b>Northern Adder's Tongue</b>	Variety of early-successional, seasonally moist to wet habitats, including open fens, bogs, marsh edges, pastures, old fields, grassy shores, wet thickets, cedar and hardwood swamps, floodplain woods, wet swales, damp sand, and roadside ditches. WMNF location is a maintained wildlife opening.	NO	YES	NO	Plant surveys found none of this species.
<i>Osmorhiza berteroi</i> <b>Mountain Sweet-Cicely</b>	Rich, moist, deciduous, shaded woods. Recently found on Bog Dam road in ditch.	YES	NO	NO	Historical record only in Project Area. Plant surveys did not find this species in the Project Area.
<i>Oxyria digyna</i> <b>Mountain Sorrel</b>	Typically, snowbank communities and rocky slopes and ledges of headwalls; also near alpine streambanks. Above 3,500 ft, in northern New England.	NO	NO	NO	Project Area is not in alpine zone.
<i>Panax quinquefolius</i> <b>American Ginseng</b>	Moist soils of almost any type. Often cool, rich, rocky, deciduous woods with shrubby underbrush. Semi-mesic forests with rocky, thick humus of colluvial soils.	NO	NO	NO	Project Area lacks forest. Plant surveys did not find this species in the Project Area.
<i>Paronychia argyrocoma</i> <b>White Mountain Silverling</b>	Mid-elevation, bare rocky summits, ledges, and cliffs; sand/gravel barrens of Saco River between Bartlett and Fryeburg.	NO	YES	NO	A few rock outcrops associated with road cuts in Project Area, but plant surveys did not find this species.
<i>Petasites frigidus</i> var. <i>palmatus</i> <b>Sweet Coltsfoot</b>	Swampy woods, meadows with calcareous soils. Cedar swamps.	NO	NO	NO	No areas of enrichment in Project Area. Plant surveys did not find this species in the Project Area.
<i>Piptatherum (Oryzopsis) canadensis</i> <b>Canada Mountain Ricegrass</b>	Dry, rocky openings just below treeline and into krummholz zone.	NO	NO	NO	Project Area is well below treeline.
<i>Poa laxa</i> ssp. <i>fernaldiana</i> <b>Wavy Bluegrass</b>	Alpine gardens in Presidential and Franconia Mts.	NO	NO	NO	Project Area is not in alpine zone.
<i>Poa pratensis</i> ssp. <i>alpigena</i> <b>Alpine Meadow Grass</b>	In NH, nutrient-poor soils in alpine/subalpine dry-mesic heath and meadow communities.	NO	NO	NO	Project Area is not in alpine or subalpine zones.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>PLANTS (Cont'd)</b>					
<i>Polygonum douglasii</i> <b>Douglas Knotweed</b>	Typically, exposed rocky slopes and hillside ledges in well-drained soil where little other vegetation grows; also open-canopy, nutrient-enriched hardwood forests; often associated with rocks.	NO	YES	NO	Right-of-way roadcuts might provide suitable habitat, but plant surveys found none of this species in the Project Area.
<i>Polygonum viviparum</i> <b>Viviparous Knotweed</b>	Alpine to subalpine: snowbank communities, wet mossy rocks and seeps, also near streams.	NO	NO	NO	Project Area is not in alpine or subalpine zones.
<i>Potentilla robbinsiana</i> <b>Robbins' Cinquefoil</b>	Alpine zone in Presidential Range of WMNF.	NO	NO	NO	Project Area is not in alpine zone.
<i>Prenanthes (Nabalus) boottii</i> <b>Boott's Rattlesnake Root</b>	Variety of alpine habitats, moist tundra, steep cirque ledges and crests, and disturbed alpine sites such as trailside and hut areas	NO	NO	NO	Project Area is not in alpine zone.
<i>Pyrola asarifolia</i> <b>Pink Wintergreen</b>	Rich, moist woods and bogs of calcareous soils. Moist alluvial soil of lower river terrace forests. Spruce/fir forests. Prefers areas around wetlands.	NO	YES	NO	No areas of enrichment in Project Area. Plant surveys did not find this species in the Project Area.
<i>Salix argyrocarpa</i> <b>Silverleaf Willow</b>	Moist soils in alpine to subalpine streamsides and ravines.	NO	NO	NO	Project Area is not in alpine or subalpine zones.
<i>Salix herbacea</i> <b>Dwarf Willow</b>	Alpine in NH: cool, wet ravines, snowbank communities, streamsides; grassy, sandy or rocky places, often on thinner soils than other snowbank-wet ravine species.	NO	NO	NO	Project Area is not in alpine zone.
<i>Sanicula trifoliata</i> <b>Three-leaved Black Snakeroot</b>	Calcareous deciduous woods below 1,500 ft, chiefly on steep slopes. Dense, lush ground cover under forest canopy, but also in better light near clearcuts and cliffs.	NO	NO	NO	Project Area is not wooded, and lacks a calcareous substrate.
<i>Saxifraga paniculata</i> <b>Livelong Saxifrage</b>	Alpine. Exposed calcareous gravels and rocks; seepy, open, calcareous cliffs.	NO	NO	NO	No alpine habitat in Project Area.

(continued)

# ENVIRONMENTAL ASSESSMENT

## Appendix D. (continued)

Species	Habitat Requirements	Sightings (Present or Historical)	Habitat suitability within the Project Area	Possibility of project impacts on species or habitat	Rationale
<b>PLANTS (Cont'd)</b>					
<i>Saxifraga rivularis</i> <b>Alpine Brook Saxifrage</b>	Alpine ravines, wet and mossy areas and wet cliffs; also some alpine-subalpine dry-mesic heath communities.	NO	NO	NO	No alpine or subalpine habitat in Project Area.
<i>Silene acaulis exscapa</i> <b>Moss Champion</b>	Moist alpine meadows. Gravelly barrens.	NO	NO	NO	Project Area is not in alpine zone.
<i>Triphora trianthophora</i> <b>Nodding Pogonia</b>	Mid-elevation beech hardwoods, usually on south-facing slopes. Deep leaf litter with humus.	NO	NO	NO	No forest in Project Area. Plant surveys did not find this species in the Project Area.
<i>Vaccinium boreale</i> <b>Boreal Blueberry</b>	Alpine bogs, meadows of Presidential and Franconia Mts. Exposed gravelly or rocky sites.	NO	NO	NO	Project Area is not in alpine zone.

\*\* Considered extirpated from the White Mountain National Forest.  
E = Endangered, T = threatened.

# **ENVIRONMENTAL ASSESSMENT**

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## **Appendix E - Non-Native Invasive Species Risk Assessment Forms**

# ENVIRONMENTAL ASSESSMENT

## DATAFORM

SPECIES INFORMATION		ASSESSOR'S INFORMATION	
Scientific name:	Lythrum salicaria	Assessor:	Patrick W. Fairbairn
Synonyms:		Assessor's Affiliation:	Normandeau Associates Inc.
Common Name(s):	Purple Loosestrife	Mailing Address:	25 Nashua Road, Bedford, NH 03110
Native Range:	Europe	Phone:	603-472-5191
Region of Interest (e.g., U.S.):	White Mtns. Nat. Forest	Fax:	603-472-7052
Mixed-Status Species (y/n):	n	Email:	pfairbairn@normandeau.com
		Date Evaluated (mm/dd/yyyy):	4/29/2005
<b>QUALIFYING QUESTIONS</b>		<b>COMMENTS &amp; SHORT CITATIONS</b>	
i. Non-native established outside of cultivation in region of interest?	Y	i. USFS 1998; NEWFS undated; IPANE 2005.	
ii. Occurs in conservation areas?	Y	ii. as above	
<b>I. ECOLOGICAL IMPACT</b>			
1. Impact on ecosystem processes and system-wide parameters	C	1. Impact is primarily biotic, not physico-chemical.	
2. Impact on ecological community structure	B	2. Severe impact on less robust emergent veg., & on some submergent veg.	
3. Impact on ecological community composition	B	3. Forms virtually monotypic stands.	
4. Impact on individual native plant or animal species	A	4. Alters habitat for animals dependent on diverse emergent wetland.	
5. Conservation significance of the communities and native species threatened	A	5. Many rare wetland vertebrates adversely affected.	
<b>II. CURRENT DISTRIBUTION AND ABUNDANCE</b>			
6. Current range size in region	C	6. Little wetland in WMNF or Project Area.	
7. Proportion of current range where species is negatively impacting biodiversity	B	7. USFS 1998. Category 1 invasive ranking in WMNF.	
8. Proportion of region's biogeographic units invaded	C	8. Occurrence limited to emergent and shallow submergent wetlands.	
9. Diversity of habitats or ecological systems invaded in region	C	9. as above	
<b>III. TREND IN DISTRIBUTION AND ABUNDANCE</b>			
10. Current trend in total range within region	B	10. USFS 1998.	
11. Proportion of potential range currently occupied	B	11. Assessor 2005.	
12. Long-distance dispersal potential within region	B	12. Natural transport along waterways; human transport by vehicle, boat, roads.	
13. Local range expansion or change in abundance	C	13. Increase.	
14. Inherent ability to invade conservation areas and other native species habitats	B	14. TNC 2005.	
15. Similar habitats invaded elsewhere	B	15. as above.	
16. Reproductive characteristics	A	16. Vigorous vegetative as well as seed propagation.	
<b>IV. MANAGEMENT DIFFICULTY</b>			
17. General management difficulty	A	17. TNC 2005; mech., chem. & biotic control lack full effectiveness vs. big pop.	
18. Minimum time commitment	B	18.	
19. Impacts of management on native species	C	19. Net effects probably good but hard to sustain.	
20. Accessibility of invaded areas	C	20. Project Area follows roadway, hence open to control measures.	
<b>I-Rank:</b> Medium		<b>OTHER CONSIDERATIONS:</b>	
(Add * to I-Rank if adjusted from calculated I-Rank)		<b>ADJUSTMENT JUSTIFICATION:</b>	
		<b>I-RANK REASONS SUMMARY:</b>	Will colonize roadway ditches unless controlled, but little of WMNF proper.
<b>INFORMATION SOURCES:</b>	<ul style="list-style-type: none"> <li>• IPANE 2005. Records database current as of 19 April 2005. Invasive Plant Atlas of New England website.</li> <li>• NEWFS undated. <i>Field manual of invasive plants for the Northeast</i>. New England Wild Flower Society, Framingham, MA.</li> <li>• TNC 2005. Website fact sheet. The Nature Conservancy, Arlington, VA.</li> <li>• USFS 1998. <i>Weeds in the Whites: Invasive exotic plants of the White Mountains National Forest</i>. USDA Forest Service, Laconia, NH.</li> </ul>		
(Full citations)			

Appendix E: Non-Native Invasive Species Risk Assessment Forms – Lythrum salicaria

# ENVIRONMENTAL ASSESSMENT

## SCORESHEET

Species: *Lythrum salicaria*

Date Evaluated: 4/29/2005

**DIRECTIONS:**

1. Fill in the ANSWER column with your answers to the 20 criteria questions as recorded on the dataform. Also fill in SPECIES NAME and DATE EVALUATED.

2. Fill in the MAX PTS and MIN PTS column with the point value of your ANSWER (e.g., for question 1, A = 33). The correct points associated with each answer can be found under the ABCD columns for each question.

If you have a single-letter answer (e.g., B), record the same number of points in both the MAX PTS and MIN PTS columns. If you have a multi-letter answer (e.g., AC), record the point value of your highest answer in the MAX PTS column, and the point value of the lowest answer in the MIN PTS column. If you have an 'U', place the A and D point values for that question in the MAX PTS and MIN PTS columns, respectively.

3. Sum the points in each of the MAX PTS and MIN PTS column in the boxes at the bottom of each subrank section. Use these sums to obtain the MAX SUBRANK and the MIN SUBRANK by correctly placing them in the ABCD numerical ranges, as defined for each subrank.

4. Record the subrank as a word rank (e.g. High) in the SUBRANK boxes on the top right of each subrank section, and also record the subrank as letters (e.g., AB) in the SUBRANK column in the Invasiveness Rank section.

5. Assign points to the subranks and record them in the MAX PTS and MIN PTS column, using the same rules stated in #2. Sum each column and obtain the MAX RANK and the MIN RANK by correctly placing them in the ABCD numerical ranges, as defined for the I-Rank. Record the I-Rank as a word rank.

**SUBRANKS**

	A	B	C	D	Answer	Max Pts	Min Pts				
<b>I. ECOLOGICAL IMPACT</b>											
1.	33	22	11	0	C	11	11	78-102	A = High	<b>SUBRANK I</b> Medium	
2.	18	12	6	0	B	12	12	52-77	B = Medium		
3.	18	12	6	0	B	12	12	27-51	C = Low		
4.	9	6	3	0	A	9	9	0-26	D = Insignificant		
5.	24	16	8	0	A	24	24				
						68	68	Max Subrank	B	B	Min Subrank
<b>II. CURRENT DISTRIBUTION &amp; ABUNDANCE</b>											
6.	15	10	5	0	C	5	5	28-36	A = High	<b>SUBRANK II</b> Low	
7.	15	10	5	0	B	10	10	19-27	B = Medium		
8.	3	2	1	0	C	1	1	10-18	C = Low		
9.	3	2	1	0	C	1	1	0-9	D = Insignificant		
						17	17	Max Subrank	C		C
<b>III. TREND IN DISTRIBUTION &amp; ABUNDANCE</b>											
10.	18	12	6	0	B	12	12	55-72	A = High	<b>SUBRANK III</b> Medium	
11.	3	2	1	0	B	2	2	37-54	B = Medium		
12.	9	6	3	0	B	6	6	19-36	C = Low		
13.	18	12	6	0	C	6	6	0-18	D = Insignificant		
14.	6	4	2	0	B	4	4				
15.	9	6	3	0	B	6	6				
16.	9	6	3	0	A	9	9				
						45	45	Max Subrank	B	B	Min Subrank
<b>IV. MANAGEMENT DIFFICULTY</b>											
17.	18	12	6	0	A	18	18	39-51	A = High	<b>SUBRANK IV</b> Medium	
18.	15	10	5	0	B	10	10	27-38	B = Medium		
19.	15	10	5	0	C	5	5	14-26	C = Low		
20.	3	2	1	0	C	1	1	0-13	D = Insignificant		
						34	34	Max Subrank	B		B
<b>INVASIVE SPECIES IMPACT RANK</b>											
I.	50	33	17	0	B	33	33	76-100	A = High	<b>CALCULATED I-RANK</b> Medium	
II.	25	17	8	0	C	8	8	51-75	B = Medium		
III.	15	10	5	0	B	10	10	26-50	C = Low		
IV.	10	7	3	0	B	7	7	0-25	D = Insignificant		
						58	58	Max I-Rank	B		B

Appendix E: Non-Native Invasive Species Risk Assessment Forms – *Lythrum salicaria*

# ENVIRONMENTAL ASSESSMENT

## DATAFORM

SPECIES INFORMATION		ASSESSOR'S INFORMATION	
Scientific name:	Polygonum cuspidatum F	Assessor:	Patrick W. Fairbairn
Synonyms:	Fallopia japonica	Assessor's Affiliation:	Normandeau Associates Inc.
Common Name(s):	Japanese Knotweed	Mailing Address:	25 Nashua Road, Bedford, NH 03110
Native Range:	eastern Asia	Phone:	603-472-5191 Fax: 603- 472-7052
Region of Interest (e.g., U.S.):	White Mtns. Nat. Forest	Email:	pfairbairn@normandeau.com
Mixed-Status Species (y/n):	n	Date Evaluated (mm/dd/yyyy):	4/29/2005
<b>QUALIFYING QUESTIONS</b>		<b>COMMENTS &amp; SHORT CITATIONS</b>	
i. Non-native established outside of cultivation in region of interest?	Y	i. USFS 1998.	
ii. Occurs in conservation areas?	Y	ii. as above	
<b>I. ECOLOGICAL IMPACT</b>			
1. Impact on ecosystem processes and system-wide parameters	D	1.	
2. Impact on ecological community structure	B	2. TNC 1991.	
3. Impact on ecological community composition	A	3. as above	
4. Impact on individual native plant or animal species	A	4. as above	
5. Conservation significance of the communities and native species threatened	B	5. as above	
<b>II. CURRENT DISTRIBUTION AND ABUNDANCE</b>			
6. Current range size in region	CD	6. Assessor 2005.	
7. Proportion of current range where species is negatively impacting biodiversity	D	7. as above	
8. Proportion of region's biogeographic units invaded	CD	8. as above	
9. Diversity of habitats or ecological systems invaded in region	CD	9. as above	
<b>III. TREND IN DISTRIBUTION AND ABUNDANCE</b>			
10. Current trend in total range within region	B	10. Assessor 2005.	
11. Proportion of potential range currently occupied	B	11. as above	
12. Long-distance dispersal potential within region	B	12. Along rivers primarily; veg. parts transported, little germination. TNC 1991.	
13. Local range expansion or change in abundance	U	13.	
14. Inherent ability to invade conservation areas and other native species habitats	C	14. TNC 1991. A light-demanding lowland species.	
15. Similar habitats invaded elsewhere	C	15. as above	
16. Reproductive characteristics	A	16. as above	
<b>IV. MANAGEMENT DIFFICULTY</b>			
17. General management difficulty	C	17. TNC 1991.	
18. Minimum time commitment	C	18. as above	
19. Impacts of management on native species	B	19. as above	
20. Accessibility of invaded areas	B	20. as above	
<b>I-Rank:</b> Low		<b>OTHER CONSIDERATIONS:</b>	
(Add * to I-Rank if adjusted from calculated I-Rank)		<b>ADJUSTMENT JUSTIFICATION:</b>	
		<b>I-RANK REASONS SUMMARY:</b> Dispersal by wind, water, man. Project Area roadway facilitates control.	
<b>INFORMATION SOURCES:</b>			
(Full citations)	<ul style="list-style-type: none"> <li>• TNC 1991. Element Stewardship Abstract for <i>Polygonum cuspidatum</i>. The Nature Conservancy, Arlington, VA.</li> <li>• USFS 1998. <i>Weeds in the Whites: Invasive exotic plants of the White Mountains National Forest</i>. USDA Forest Service, Laconia, NH.</li> <li>• _____</li> <li>• _____</li> </ul>		

Appendix E: Non-Native Invasive Species Risk Assessment Forms – Polygonum cuspidatum

# ENVIRONMENTAL ASSESSMENT

## SCORESHEET

Species: *Polygonum cuspidatum* SUBBRANKS

Date Evaluated: 4/29/05

**DIRECTIONS:**

1. Fill in the ANSWER column with your answers to the 20 criteria questions as recorded on the dataform. Also fill in SPECIES NAME and DATE EVALUATED.

2. Fill in the MAX PTS and MIN PTS column with the point value of your ANSWER (e.g., for question 1, A = 33). The correct points associated with each answer can be found under the ABCD columns for each question.

If you have a single-letter answer (e.g., B), record the same number of points in both the MAX PTS and MIN PTS columns. If you have a multi-letter answer (e.g., AC), record the point value of your highest answer in the MAX PTS column, and the point value of the lowest answer in the MIN PTS column. If you have an 'U', place the A and D point values for that question in the MAX PTS and MIN PTS columns, respectively.

3. Sum the points in each of the MAX PTS and MIN PTS column in the boxes at the bottom of each subrank section. Use these sums to obtain the MAX SUBRANK and the MIN SUBRANK by correctly placing them in the ABCD numerical ranges, as defined for each subrank.

4. Record the subrank as a word rank (e.g., High) in the SUBRANK boxes on the top right of each subrank section, and also record the subrank as letters (e.g., AB) in the SUBRANK column in the Invasiveness Rank section.

5. Assign points to the subranks and record them in the MAX PTS and MIN PTS column, using the same rules stated in #2. Sum each column and obtain the MAX RANK and the MIN RANK by correctly placing them in the ABCD numerical ranges, as defined for the I-Rank. Record the I-Rank as a word rank.

	A	B	C	D	Answer	Max Pts	Min Pts			
<b>I. ECOLOGICAL IMPACT</b>										
1.	33	22	11	0	D	0	0	78-102	A = High	<b>SUBRANK I</b> Medium
2.	18	12	6	0	B	12	12	52-77	B = Medium	
3.	18	12	6	0	A	18	18	27-51	C = Low	
4.	9	6	3	0	A	9	9	0-26	D = Insignificant	
5.	24	16	8	0	B	16	16			
						55	55			B B Min Subrank
<b>II. CURRENT DISTRIBUTION &amp; ABUNDANCE</b>										
6.	15	10	5	0	CD	5	0	28-36	A = High	<b>SUBRANK II</b> Insignificant
7.	15	10	5	0	D	0	0	19-27	B = Medium	
8.	3	2	1	0	CD	1	0	10-18	C = Low	
9.	3	2	1	0	CD	1	0	0-9	D = Insignificant	
						7	0			
								Max Subrank	D D	Min Subrank
<b>III. TREND IN DISTRIBUTION &amp; ABUNDANCE</b>										
10.	18	12	6	0	B	12	12	55-72	A = High	<b>SUBRANK III</b> Low-Medium
11.	3	2	1	0	B	2	2	37-54	B = Medium	
12.	9	6	3	0	B	6	6	19-36	C = Low	
13.	18	12	6	0	U	18	0	0-18	D = Insignificant	
14.	6	4	2	0	C	2	2			
15.	9	6	3	0	C	3	3			
16.	9	6	3	0	A	9	9			
						52	34			B C Min Subrank
<b>IV. MANAGEMENT DIFFICULTY</b>										
17.	18	12	6	0	C	6	6	39-51	A = High	<b>SUBRANK IV</b> Low
18.	15	10	5	0	C	5	5	27-38	B = Medium	
19.	15	10	5	0	B	10	10	14-26	C = Low	
20.	3	2	1	0	B	2	2	0-13	D = Insignificant	
						23	23			
								Max Subrank	C C	Min Subrank
<b>INVASIVE SPECIES IMPACT RANK</b>										
	A	B	C	D	Subrank	Max Pts	Min Pts			<b>CALCULATED I-RANK</b> Low
I.	50	33	17	0	B	33	33	76-100	A = High	
II.	25	17	8	0	D	0	0	51-75	B = Medium	
III.	15	10	5	0	B/C	10	5	26-50	C = Low	
IV.	10	7	3	0	C	3	3	0-25	D = Insignificant	
						46	41			C C Min I-Rank

Appendix E: Non-Native Invasive Species Risk Assessment Forms – *Polygonum cuspidatum*