



Environmental Assessment For The Oconaluftee Visitor Center

Improving Visitor Services

April 2008



Abstract

This Environmental Assessment (EA) addresses the proposal by the National Park Service (NPS) to improve visitor services and vehicular circulation at the existing Oconaluftee Visitor Center. The project site is located near Cherokee, North Carolina, along Newfound Gap Road. To accomplish this the NPS proposes to construct: a new visitor center building to tell the Park's natural and cultural history stories, a new restroom facility and an information kiosk.

The Oconaluftee Visitor Center area is designated in the Park's General Management Plan (GMP) as a general park development subzone. The GMP calls for a new visitor center to be constructed to serve the Park, the Blue Ridge Parkway, and the surrounding region. The location and arrangement of the facility is to be covered by a development concept plan.

Two alternatives are analyzed in this document. Alternative A is the No Action Alternative and Alternative B is the Build Alternative.

Alternative A No Action Alternative - Under this alternative there would be no changes made to the existing buildings, pedestrian pathways, parking, vehicle circulation and restrooms. The manner in which the Park tells the cultural and natural histories of the area to the visitor would remain un-changed.

Alternative B Build Alternative (*Environmentally Preferred and Preferred Alternative*) - Under this alternative, the existing building (c. 1941) currently used for the visitor center would be utilized as a multi-purpose space and employee offices. The existing converted garage building located behind the 1941 building would be removed. Three new structures would be built: a visitor center, restroom building and information kiosk. All structures would be located in an area south east of the existing visitor center building. The proposed visitor center building would be large enough to accommodate visitation and to properly tell the Park's natural and cultural history stories to the Park visitor. In order to support the new buildings the existing parking lot would be reconfigured along with an improved entrance and exit to the Newfound Gap Road.

Executive Summary

**Oconoluftee Visitor Center
Great Smoky Mountains National Park**

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 36 days. The EA has been posted and is available for public review on the NPS' Planning web site at <http://parkplanning.nps.gov>. To access the project site select Great Smoky Mountains National Park and click on the "*Project Title*" link. The public can provide comments directly on the project site by clicking on "Comment on document" from the menu on the left. Our practice is to make comments, including names, home addresses, home phone numbers, and email addresses of respondents, available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of or officials of organizations or businesses, available for public inspection in their entirety.

COMMENTS MUST BE RECEIVED BY May 26, 2008. Written comments may be received later if postmarked by May 26, 2008. Please address written comments to:

Superintendent
Great Smoky Mountains National Park
107 Park Headquarters Rd
Gatlinburg, Tennessee 37738

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1.0 INTRODUCTION

Great Smoky Mountains National Park proposes to improve inadequate visitor service facilities at the Oconaluftee Visitor Center, Swain County, North Carolina. The proposed facility will provide new space for: restrooms, museum displays, a multimedia presentation alcove, information, sales area, storage and vending area. Improved parking and vehicular circulation will help support the new facilities.

1.1 PURPOSE AND NEED

1.1.1 Purpose

The purpose of the project is to meet the present and anticipated future needs of the visiting public and to facilitate telling the story of the Park's significance. In addition, the project purpose is to fulfill the 1982 General Management Plan's objective that called for a new visitor center to be built in the Oconaluftee area. The project will provide facilities that orient visitors to the Park, tell the Park's cultural and natural history stories and provide visitor services through improved facilities.

1.1.2 The Need

The current visitor center is housed in a structure that historically was used for a Federal Magistrates Court, Ranger Station, and maintenance facility. In 1949, the building was converted by the Park for use as a visitor center. This facility was never designed to be a visitor center, and its current 1,100 square foot size is limiting and does not permit adequately for visitor services. The small size limits opportunities to share the Park's unique cultural and natural history, appropriately. There is little room for interpretive talks, displays or demonstrations. On busy days, the visitor center is filled to capacity and often people leave because of the crowding after just opening the door. The current visitor reception area is small for both Park staff and visitors needing information. Educational materials sold at the facility cannot be adequately displayed and compete for space with the other visitor center needs.

Restrooms are poorly located hidden behind the existing visitor center, along a 200 foot sloped pathway. The out of site location and limitations to accessibility has resulted in numerous daily complaints from visitors.

The current parking configuration creates confusion to the visitors and blocks views of the visitor center. There are three major intersections within the existing parking lot configuration that allow for both ingress and egress, and two separate parking lot areas. Busses park in front of the visitor center in one of these lots, blocking the view of the facility from approaching motorists. Once visitors do park, they find it difficult to access restrooms, and vending due to the distance from the parking area and the fact that restrooms/vending is not located in a prominent area. The visitor center itself is frequently overlooked as visitors proceed to the Mountain Farm Museum with little knowledge there is any additional visitation services available. The Mountain Farm Museum is located approximately 200 yards southeast of the visitor center, thus there is not a strong visual connection between the current visitor center and the Mountain Farm Museum. Visitors often leave the area without experiencing the visitor center.

1.2 BACKGROUND

The current Oconaluftee Visitor Center was built in the winter of 1940-1941. This 1941 building was built in the Colonial Revival/National Park Service (NPS) rustic style by a combination of Civilian Conservation Corps (CCC) and contract labor. Its gray quartzite stone was quarried in the Ravensford area on the boundary of the Park and the Qualla Boundary of the Eastern Band of Cherokee Indians. The Chestnut interior trim was salvaged from blighted trees in the Park. The original roof was wood shakes and the slate roof, quarried in Buckingham County, Virginia was added at a later time. The building design reflects the renewed interest in colonial America, fostered by the restoration of Williamsburg in the 1920s and the organic flavor of NPS Rustic. Upon entering the building through the two main entrances, one steps into a large room that is finished with Chestnut walls and flagstone flooring. A large stone fireplace anchors the west end and a small room anchors the east end. This room is used as a book store. Located through a doorway, on the same floor of the large room, are small office spaces used by Park staff. The third floor contains a small space for photo storage and staff workstations. The basement of the building is subdivided into several spaces for mechanical equipment, storage areas, workshop, and restrooms.

The current services provided to the visitor by the Park staff include: information, orientation, interpretation, and visitor services. Park interpretive staff provide both formal and informal interpretive programs to the visiting public within the main room of the visitor center, the front porch, and the adjacent Mountain Farm Museum. Interpretive talks focus on the natural and cultural histories of the Park. The Park staff also provides a variety of exhibits on the walls of the main room in the visitor center. Exhibits focus on Park orientation as well as featuring the natural and cultural significance which sometimes includes periodical displays of cultural artifacts. In addition to interacting with visitors at the visitor center, Park staff work out of the visitor center to provide interpretive and education programs throughout the North Carolina areas of the Park (such as picnic areas and campgrounds). The visitor center frequently serves as point of contact for reporting emergencies and accidents. It is also the main contact area for visitors during winter road closures.

Approximately 1,600 to 2,100 visitors use the visitor center a day during the peak travel months of May to October. Visitor orientation occurs through the display of a topographic relief map of the Park area, brochures, exhibits, and contact with Park staff at the welcome desk. The welcome desk also serves as an area to purchase books and other materials related to the Park. Backcountry hikers are able to obtain backcountry hiking permits at a station located outside the visitor center in a separate building. However, they may obtain trail information and advice from the visitor center staff.

In addition to interpretation and orientation, the current space contains a small book store operated by the Great Smoky Mountains Association. The store is housed in a small room located adjacent to the large room. Sales material has been placed in the large visitor services room competing for space.

The visitor center houses several small offices for the interpretative staff. This staff is responsible for the visitor center and the Parks As Classrooms programs. The staff offices are located on the main floor behind the welcome desk and on the second floor. The basement of the visitor center is used for restrooms and work space.

The primary limitation to providing better visitor services at the Oconaluftee Visitor Center is the lack of space. According to the NPS Planning Model, (a computer program based on large public gathering spaces) the Oconaluftee Visitor Center is deficient by 7,000 square feet for the amount of visitors that it serves. This lack of space forces the Park staff to relay the cultural and natural stories of the Park to the visitor in a limited way. The limited space prevents the appropriate display of historical artifacts or photographs. The sales space operated by the Great Smoky Mountains Association is limited, preventing variety and proper display of sale items. Space to lead interpretive talks is limited to the covered porch located in the front of the visitor center. During heavy rains the talk needs to be located inside the already cramped visitor center. The lack of heated space limits the amount of interpretive programs that can be offered during the winter months.

Detached from the 1941 building and located slightly to the east from the existing visitor center is a five-bay garage. Originally built in 1972 as a maintenance building, it has since been converted to office space, backcountry permitting station, search/rescue storage and restrooms which do not comply with the accessibility codes.

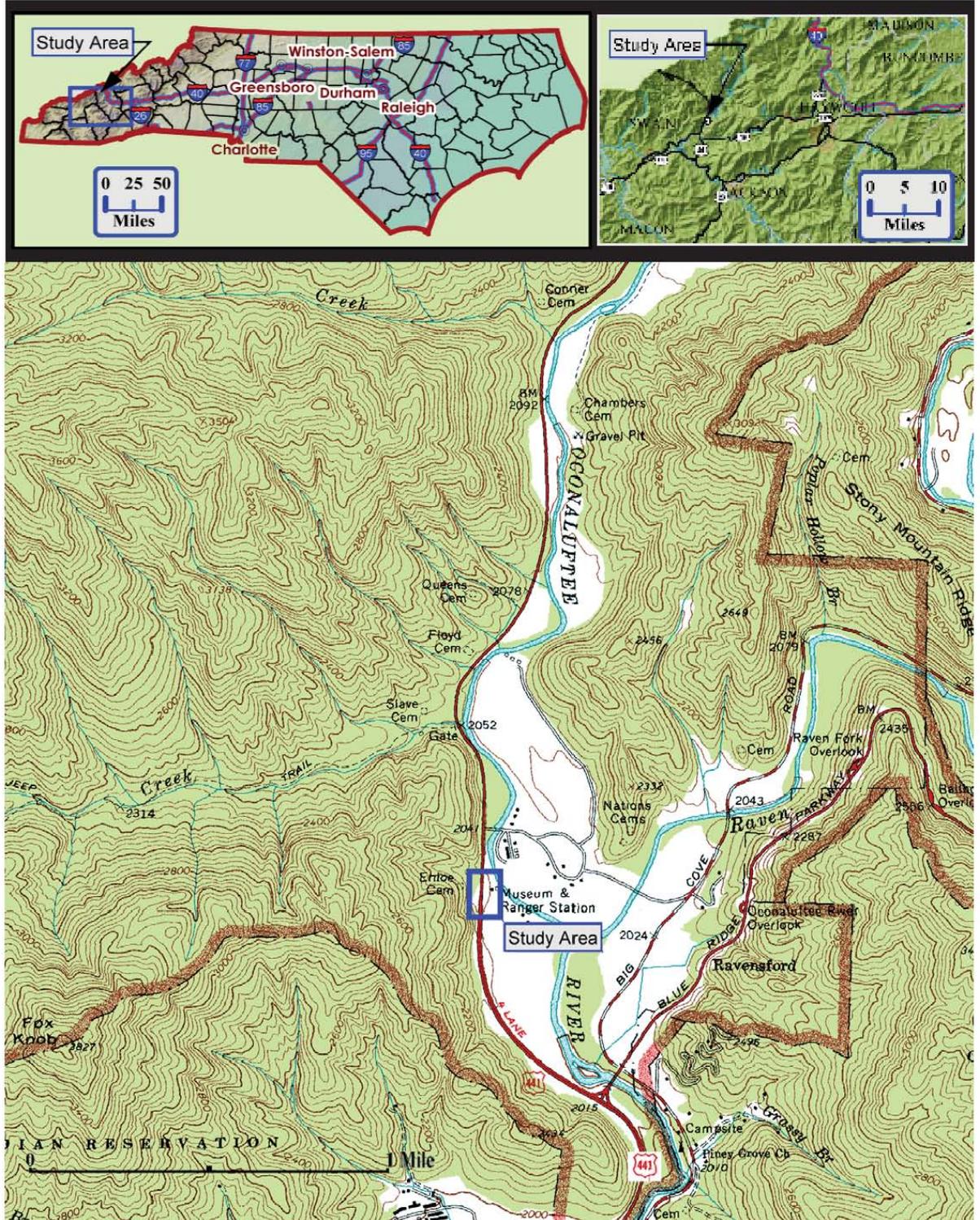
The existing parking lot is located on the western side of the 1941 building. The parking lot was built along with the visitor center and later enlarged. It presently has enough spaces for 65 cars. In 1974, an overflow parking lot was built to the south of the visitor center. It currently has space for 38 cars, six recreational vehicles and or buses. Current vehicle circulation is awkward with several entry and exit points to the parking areas making movement through the lot hazardous. The pedestrian and vehicle circulation does not provide a sense of arrival, and visitors are sometimes confused not knowing where to go.

Southeast of the 1941 building lays the Mountain Farm Museum. The nine structures comprising the museum include: a residence, barn, meat house, chicken house, apple house, corn crib, combination gear shed and corn crib, blacksmith shop, and springhouse. The structures were moved from various areas of the Park to their present location during the 1950s when the Park was making numerous historic structures more accessible to Park visitors. Only the barn was originally located in Oconaluftee, although it was moved from its original location.

1.3 DECISION TO BE MADE

The National Environmental Policy Act of 1969 (NEPA) requires consideration of the environmental impacts of proposed federal actions. This Environmental Assessment (EA) has been prepared to assist the NPS in developing solutions to better meet the needs of the visiting public, as well as provide for opportunities to tell the important stories associated with the Park's cultural and natural histories.

Oconaluftee Visitor Center Environmental Assessment / Development Concept Plan
Figure 1 - Study Area



1.4 INTERRELATIONSHIP WITH OTHER PLANS AND PROJECTS

The Park and the surrounding region have several planning projects that are currently associated with this study. These projects and their actions are considered in the cumulative impact section because of their potential impact to Park visitor services, and natural and cultural resources. A description for each project follows.

The need for improvements to the Oconaluftee Visitor Center have been described since the early 1980's in the Park's General Management Plan (GMP). The GMP states "A new orientation and interpretation center to serve Great Smoky Mountains National Park, the Blue Ridge Parkway, and the surrounding region will be constructed near the Parkway's terminus. The location and arrangement of this facility will be covered by a development concept plan."

In 1987 the Park in association with the Denver Service Center prepared a Development Concept Plan/Environmental Assessment for the Oconaluftee Visitor Center and surrounding area. The alternatives put forth in the 1987 document were: Alternative 1- Expand the existing visitor center to the east. Alternative 2- Build a new visitor center building near the Park boundary with Cherokee. In 1990, a Finding of No Significant Impact was signed that selected Alternative 1 as the preferred alternative.

In 1992, the Park engaged the services of an architectural firm to design a major renovation to the existing visitor center. The design called for a large addition to be added on the eastern side of the building. The construction estimate for that renovation was \$10.5 million in 1992. The project never received funding.

Rehabilitation/resurfacing of Newfound Gap Road on the North Carolina side - Great Smoky Mountains National Park

The project includes repaving all 17 miles of Newfound Gap Road between the Park boundary with Cherokee, North Carolina, and the Tennessee state line at Newfound Gap. Phase 1 of the project is a 10.5 mile stretch of road from the Collins Creek Picnic Area to Newfound Gap. This phase was completed in the spring of 2007. Phase II work is from Collins Creek Picnic Area to the Park boundary. Phase II is to repave the road and realign six intersections to allow for the construction of left turn lanes off of Newfound Gap Road to minor roads. The FONSI for Phase II was signed May, 2007. Construction is anticipated to start in late 2008 or early 2009.

2.0 ALTERNATIVES

There are two alternatives for the Oconaluftee Visitor Center project, a "No Action Alternative" and a "Build Alternative." The alternatives were developed to resolve issues associated with:

- Lack of space to convey the Park's cultural and natural histories to the visitor.
- Poor vehicular and pedestrian circulation.
- Location of restrooms and access for the disabled.
- Lack of relationship between the visitor center and the Mountain Farm Museum.

2.1 Alternative A (No action alternative)

Under Alternative A, there would be no changes made to the existing buildings, pedestrian pathways, parking, vehicle circulation and restrooms. The manner in which the Park tells the cultural and natural histories of the area to the visitor would remain un-changed. The No Action

alternative is presented as a requirement of the National Environmental Policy Act, (NEPA) and is the baseline condition with which proposed activities are compared.

The current use of the visitor center would continue, as it is now. The large interior room would remain as a space easily crowded with Park visitors. Visitor access to the information desk would continue to be limited on heavy days of visitation due to crowding. The main room would be used for limited interpretive displays and sales of educational materials. Both the Park's cultural and natural histories would continue to be told to the visitor but also continue to be restricted by space. Interpretative talks would be held outside of the visitor center on the porch. The disassociation between the Mountain Farm Museum and the visitor center would remain.

Park staff would continue to answer questions on the location of the restrooms and receive six or more complaints a day on their location. Disabled visitors would continue to have difficulty accessing the restrooms located down a 200 foot long sloping pathway.

Vehicular and pedestrian circulation/way finding would continue to be confusing. The parking of cars, busses, and recreational vehicles would remain unchanged. The north exit, center intersection, and south entrance/exit drives would remain unchanged.

The current landscape surrounding the parking area and the visitor center would remain as lawn and meadow. Existing trees and shrubs would remain.

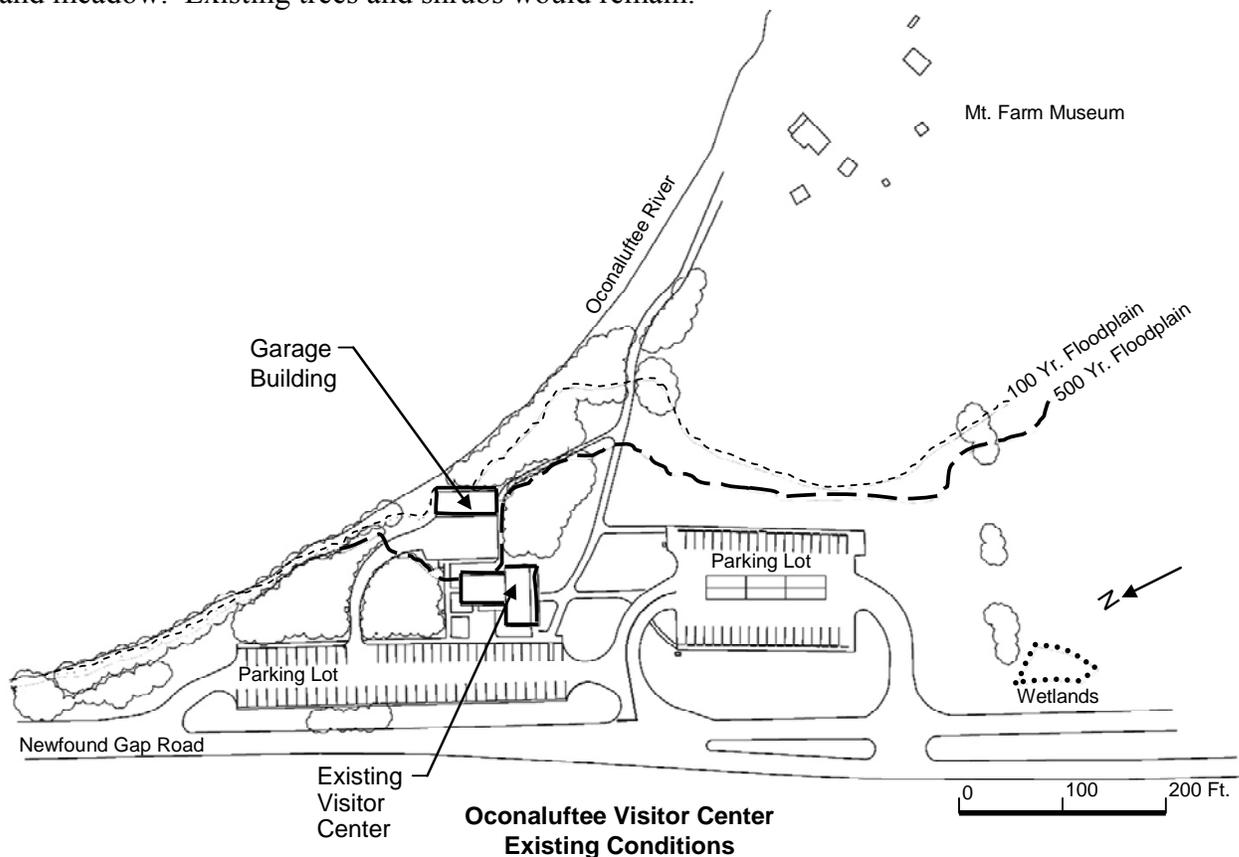


Figure 2 Existing Conditions.

2.2 Alternative B - Build Alternative (Environmentally Preferred and Preferred Alternative)

Under the Build Alternative, the existing building (c. 1941) currently used for the visitor center would be utilized as a multi-purpose space (public meetings, seminars, Parks as Classrooms), and employee offices. The sales area would be removed from the 1941 building, along with all associated shelves and sales displays. The existing visitor center desk would be removed from its current location. The shelves, sales displays and visitor desk were all added to the 1941 building within the past ten years. There would be no changes to the original Chestnut paneling or stone flooring within the large main meeting room or the small room. The exterior of the building would not be altered. The restrooms in the basement of the building would be removed and the space would become storage. The existing converted garage building, which is currently used as accessible restrooms, backcountry permit station and an office, would be removed. This building was constructed in 1972 and is located partially within the 100-year floodplain. Once the garage building is removed, the site will be utilized for government and employee vehicle parking. The existing back country permit station will be relocated to a new information kiosk that will allow visitors to access information after hours. The information kiosk will be in close proximity to the proposed visitor center and restroom buildings. The concessionaire's office and search and rescue cache will be relocated.

Alternative B will be implemented in two phases. The first phase would be the reconfiguration of the south parking lot, entrance, exit drives and the repaving of the north parking lot. The second phase work would be the construction of the new visitor services buildings. Access to the second phase would be facilitated by installation of a temporary drive so as not to disturb the work done in Phase 1.

2.2.1 Phase 1 - Vehicle Access and Parking

The proposed parking lot will be reconfigured to provide more efficient parking for autos and increased parking for busses/recreational vehicles, as well as simplifying traffic movement. The reconfiguration will allow all vehicles to enter at the southern intersection. Vehicles will then travel to both parking lots in a one way direction, and exit at the existing northern intersection. The existing central intersection will be removed.

In order to accommodate the proposed parking configuration, Newfound Gap road will be realigned with the addition of turning and acceleration lanes. These actions are being engineered as part of the rehabilitation of Newfound Gap Road by the Federal Highway Administration (1B19, Phase II). Cars exiting at the northern intersection to go southbound will turn into an acceleration lane that is approximately 300 feet long and separated from the north bound through traffic by a three foot wide median. A left turn lane will be added for cars traveling southbound desiring to turn into the visitor center parking lots. The approximate distance of disturbance, is 15 to 30 feet horizontally to the west, from the area currently encompassed by the parking area/roads.

The amount of spaces for automobiles will remain similar to its current level. The northern parking area will re-paved and striped to provide 10 spaces for bus and recreation vehicle parking. The northern intersection will be realigned to allow for more fluid movement of exiting vehicles. There is no environmental disturbance associated within the north parking area portion of the project footprint.

The southern parking lot will be reconfigured and the entrance will be shifted south of its current location to allow space for the proposed visitor center, as well as avoiding the existing wetland. Once vehicles pull into the parking area, signs and painted pavement markings will direct cars to the south lot, and busses and recreational vehicles to the north lot. (Access to the parking areas will be facilitated by relocating the entrance approximately 200 feet to the south from its current location to avoid existing wetlands and allow a greater turning radius for vehicles.) The reconfigured parking lots will be roughly 3,400 sf larger than the current arrangement.

2.2.2 Phase II - Structures

Three new structures would be built to improve visitor services: a visitor center, restroom building and information kiosk. All structures would be located in an area south east of the existing visitor center building. The location was selected to provide a better transition from the current visitor center to the Mountain Farm Museum, as well as to take advantage of existing underground utilities, an already disturbed site, proximity to the existing parking lot, avoids wetlands/floodplains and preservation of historic views.

The proposed visitor center building would be large enough to accommodate current visitation and to properly tell the Park's natural and cultural history stories to the Park visitor. The building would be approximately 7,000 to 8,000 square feet in size. The interior space of the building would be divided into areas to address and accommodate visitor services and information, a cultural history museum, cooperating association sales area/offices and storage. The proposed restroom and vending building would be located separately from the visitor center. The size of the building will be approximately 1,000 to 1,300 square feet. The vending portion of the structure will be set away from the restrooms but within the same structure.

The proposed information kiosk will stand alone, within close proximity to the visitor center and the restroom building. The approximate size of the building will be 200 to 400 square feet. It will contain maps, a backcountry permit station and orientation/information for visitors who come to the area when the proposed visitor center is closed.

The three structures will be located around a courtyard area. The area will be comprised of accessible pathways with a stabilized surface, and areas for native planting. A new accessible pathway will lead from the courtyard down to the existing pathway to take visitors to the Mountain Farm Museum.

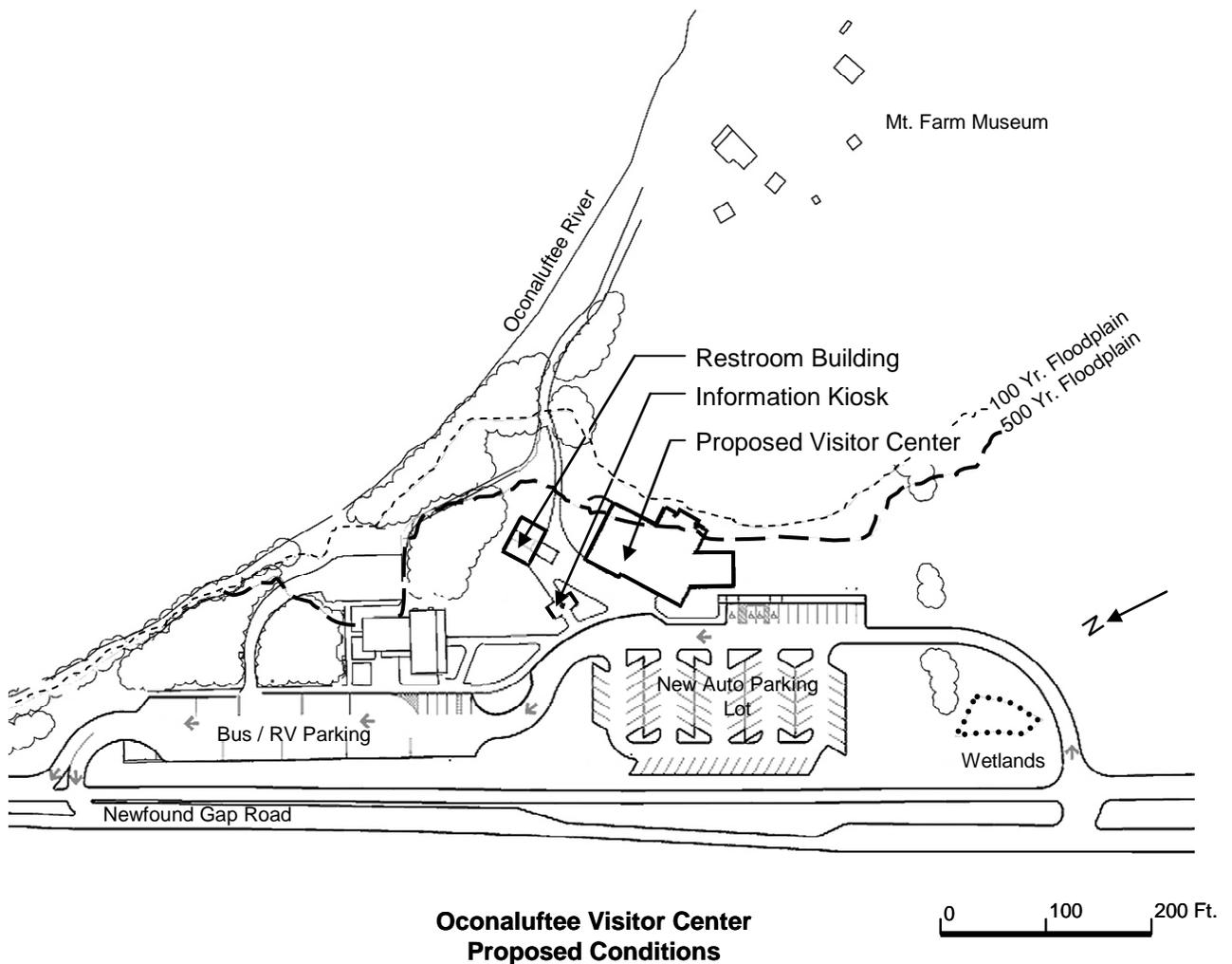


Figure 3 Proposed Conditions (building configuration and placement are approximate)

2.3 Environmentally Preferred Alternative

The National Park Service is required to identify the environmentally preferred alternative(s) for any of its proposed projects. The preferred alternative is the alternative that will promote the national environmental policy expressed in NEPA (Section 101 (b)). This includes alternatives that:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) that “causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ, 1978).

The environmentally preferred alternative is Alternative B since it best meets the goals above regarding trustee responsibilities, ensuring productive surroundings, attaining uses without degradations, preserving natural resources, maintaining diversity, achieving balanced use versus preservation, and enhancing the quality of the resources. While it may not be intuitively obvious that a build alternative is the environmentally preferred, there are several reasons for that choice. The most notable reason being that visitors are not properly oriented under the current visitor center configuration and therefore can potentially impact resources by not understanding the value of those resources and/or how to protect them during their visit. While the build alternative does disturb lands within the Park, those lands have been and continue to be disturbed regardless of which alternative is selected. In addition, the build alternative actually removes structures currently placed within the 100-year floodplain, a positive improvement to floodplain protection. Section 4.0 gives a thorough analysis and forms the basis of this determination and should be reviewed to fully understand this choice. Therefore, it is the Park's belief that Alternative 2 represents the environmentally preferred alternative and that this finding is consistent with Director's Order 12 in the determination of the environmentally preferred alternative.

2.4 Preferred Alternative

The preferred alternative is the Alternative B - Build Alternative. If the visitor services improvements in Alternative B are not completed, the visiting public would continue to not fully understand the cultural and natural significance of the Great Smoky Mountains National Park.

As the preferred alternative, the arrangement of the buildings would preserve the historic view of the existing 1941 stone visitor center from Newfound Gap Road, yet allow for easy access to restrooms, backcountry information and the visitor center. Visitors will better understand the cultural and natural histories of the Park through the museum exhibits, multi-media alcove and increased opportunities for Park staff to provide interpretive talks to the visitor.

This alternative would also improve traffic operations, visitor use, and safety. Traffic congestion would decrease slightly with the provision of a separate turn lane for left-turning vehicles, since through vehicles traveling in the same direction would not have to stop or slow down. The provision of turn lanes also would improve the safety of the road by reducing conflict points between left-turning and through vehicles. In addition, the southbound turn lane will help drivers identify the location of intersections when approaching, and would enable drivers not turning to bypass slow-moving left turning vehicles. Changing circulation within the parking areas to a one-way traffic pattern would reduce vehicle conflicts within the parking areas. Drivers exiting the parking lots to the left would be able to use the proposed acceleration lane. Improved lane geometry south of the proposed Visitor Center would improve safety for drivers heading north past the visitor center or turning right into the parking lots.

2.5 Mitigation Measures

For Alternative B, the Build Alternative, best management practices and mitigation measures would be used to prevent or minimize potential adverse effects associated with the construction project. These practices and measures would be incorporated into the project construction documents and plans to reduce the magnitude of the impacts and ensure that major adverse impacts would not occur.

2.5.1 Practices to Minimize Effects on Natural and Cultural Resources

Archeological investigations occurred during July, 2007 (See 4.5.3). Recovery of found artifacts will take place prior to construction in accordance with the Secretary of the Interior's standards. Areas for contractor activities would be clearly delineated (staked) on the ground to ensure that activities occur only in designated areas. Construction staging and material storage areas will be delineated on the construction documents and delineated on the ground. Workers would be instructed to avoid conducting activities beyond the construction zone and their compliance would be monitored by the Park's Contracting Officer's Technical Representative. Similarly, wetland areas will be flagged and readily identifiable by contract staff to avoid impacts.

Wetlands and floodplains will be protected within this project. Roads and structures have been redesigned to completely avoid impacts to a small 0.043 acres wetland on the site. In addition, 1,507 sf of the existing restroom/back country permit office structure will be removed from the flood plain (446 sf are in the 100 year flood zone, and entirely within the 500 year flood zone as part of Alternative B. Thus, while the Park is proposing new development of 1,260 sf within the 500 year floodplain, some 1,507 sf of historic disturbance will be eliminated.

2.5.2 Practices to be Implemented Following the Discovery of Unknown Archeological Resources or Human Remains

The discovery of human remains, funerary objects and objects of cultural patrimony, will be treated in accordance with the Native American Graves and Repatriation Act (25 U.S.C. 3001). In the event that prehistoric Native American or Historic Cherokee human remains, likely funerary objects, or objects of cultural patrimony are discovered during the excavations, work at that location will stop immediately and the area will be secured and the Construction Foremen will notify the Park Archaeologist and Park Contracting Officer Technical Representative immediately.

2.5.3 Practices to Minimize Effects on Visitor Experiences

To limit adverse effects on the visitor experience, the Park would prioritize construction activities to ensure, to the greatest degree possible, that visitors would continue to have access to current visitor center, restrooms, and the Mountain Farm Museum. Construction activities would be scheduled to avoid visitor high-use periods and to minimize adverse impact on the visitor experience.

Requirements to prevent or minimize adverse effects of construction activities, on visitor use and experience, will be placed in the construction bid documents. Construction activities would be monitored to ensure the adherence to the bid documents.

2.5.4 Practices to Minimize Effects on Soils and Vegetation

Standard erosion control best management practices, including silt fencing, would be used at the down hill limits of construction and around soil stockpiles to control sediment transport. Construction activities would be contained within designated boundaries to reduce effects on vegetation. At the completion of the project, disturbed areas would be restored, which could include soil preparation and reseeding with a native grass seed.

2.6 Alternatives Considered but Rejected

Between the years of 1986 and 1990, the National Park Service (NPS) wrote a Development Concept Plan/ Environment Assessment (DCP/EA) for a new visitor center in the Oconaluftee area of the Park. At that time, the DCP/EA explored two alternatives for constructing a new visitor center. Concept A was to expand the existing visitor center. Concept B was to construct a new visitor center at the Park boundary with Cherokee. The concepts from the 1990 DCP/EA were removed from further consideration for reasons listed below.

2.6.1 Concept A - Expand Existing Visitor Center

In May of 2006, the Great Smoky Mountains Association hired the services of Trotter Architects to facilitate a design workshop to help the Park understand what options were available for improving visitor services. Through the workshop process it became clear that expanding the existing visitor center was not feasible for several reasons. The thick masonry construction would make any renovations difficult and have an increased cost of 25% or more over new construction. The building is eligible for listing on the National Register of Historic Places and the North Carolina State Historic Commission recommends that the southern and western facades of the building not be altered. This would only allow expansion to occur on the north and eastern side of the building, close to floodplains the Oconaluftee River and a mature stand of Hemlock trees. Therefore, this concept did not afford reasonable natural and cultural resource protection.

2.6.2 Concept B - Construct a New Visitor Center at the Park Boundary

The 1990 DCP/EA proposed a new visitor center along Newfound Gap Road, south of the Blue Ridge Parkway. This alternative was removed from further consideration for several reasons. The need to remove existing vegetation, create a Parking area and add a utility infrastructure would add significantly to the cost of the project and result in unreasonable impacts to cultural and natural resources. In addition, the need to have the proposed visitor center connect with the Mountain Farm Museum to tell the Park's cultural stories is very important. Concept 2 would place the visitor center 1.5 miles from the Mountain Farm Museum, losing continuity with the farm site and logistically making it difficult for the visitor center staff to give interpretative programs on the Mountain Farm Museum.

3.0 AFFECTED ENVIRONMENT

As described in the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations for preparing an Environmental Assessments (EA), the affected environment is “interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment” (Title 40 Code of Federal Regulations [CFR] Section 1508.14). This chapter describes the existing natural resources and the environmental, socioeconomic, and man-made conditions within and adjacent to the sites that are the subject of the proposed land exchange. Where appropriate, information is summarized or incorporated by reference from the resource-specific special reports. Some resource discussions are preceded by introductory text where it is useful or necessary to introduce background or explanatory information to facilitate the reader’s understanding of the broader context in which the resource material is presented and analyzed.

The affected environment descriptions presented in this chapter provide the context for understanding the environmental consequences described later in section 4.0. As such, they serve as a baseline against which any changes, positive or negative; resulting from implementation of the proposed action and alternatives can be identified and evaluated. For this EA, the baseline conditions are the existing or current conditions. In addition, these resources and conditions are described in accordance with a defined region of influence, which generally defines the geographic area in which the resources or conditions could be affected by or have an effect on the alternatives described in section 2.0 and evaluated in section 4.0.

3.1 Natural Resources

Great Smoky Mountains National Park (GSMNP) is part of the large Appalachian Mountain system, which consists of a series of mountain ridges trending northeast to southwest from Maine to Georgia. The Unaka Range, a major unit of the Appalachians encompassing the mountains of the Park, lies wholly within the Mississippi River drainage. The Unaka Range is cut into segments by northwesterly flowing tributaries of the Tennessee River. The Pigeon River cuts the main ridge of the Unakas on the northeast and the Little Tennessee cuts the main ridge of the Unakas on the southwest.

The mountain remnants seen today are principally the result of stream erosion. The dominant topographic feature of the Park is the northeastward-trending ridgeline that forms the boundary between North Carolina and Tennessee. For 36 of its 71 miles, the main divide stands more than 5,000 feet above sea level. Lower ridges form radiating spurs from the central ridgeline. The moderately sharp-crested, steep-sided ridges are separated by deep valleys that occasionally widen along the sides of higher ridges. Many of the ridges branch and subdivide, creating complex drainage systems that abound with fast-flowing mountain streams.

3.1.1 Vegetation Resources

The forests of GSMNP have been described as the most complex and diverse in North America. Due to its topographical relief, complex soils, and position in the continent, GSMNP supports an enormous diversity of vegetation. Almost 95 percent of the Park is forested. The Park has more vascular plant species than any other unit in the national Park system, while the number of nonvascular plant species ranks among the highest of any area in North America north of Mexico (pers. com. Keith Langdon). More than 1,600 species of vascular plants have been identified in the Park, including over 100 native tree species. Of these, 160 species are considered rare and

over 350 species are nonnative. More than 4,000 non-flowering plant species are present including 2,250 species of fungi, and 563 species of lichens. About 10 plant taxa new to the Park are discovered each year. Approximately 100,000 acres of old-growth forest are found in the Park. This is one of the largest blocks of virgin temperate deciduous forest in North America.

There are four broad categories of vegetative communities present within the site. These include upland forest, floodplain forest, wetlands, and open fields. Upland forest is found primarily on the mountain slopes in the southern and western portions of the site. Tree species present include: tulip poplar, white oak, eastern hemlock, red maple, sourwood, black locust, black oak, American beech, black walnut, and hickory.

American holly, wild black cherry, sassafras, dogwood, mountain laurel, greenbrier, poison ivy, Virginia creeper, rattlesnake plantain, violets, spotted wintergreen, false Solomon's seal, and false nettle make up the under story/ground vegetation. (Caldwell and Copeland 2001). Floodplain forest, which typically shows signs of seasonal flooding, borders the Oconaluftee River. This community also occurs offsite on the opposite bank of the Oconaluftee River and continues along the stream north of the site. Overstory vegetation within this community includes: sycamore, tulip poplar, eastern hemlock, buckeye, birch, white oak, chestnut oak, northern red oak, elm, and red maple. Within this forest type understory and ground vegetation are: ironwood, dogwood, spicebush, mountain laurel, rhododendron, witch-hazel, poison ivy, violets, spiderwort, mayapple, Solomon's seal, bedstraw, jewelweed, stinging nettle, wild geranium, wild yam, and Christmas fern (Caldwell and Copeland 2001).

The site includes mowed fields and old field habitat. Grasses and forbs present in mowed areas include fescue, orchard grass, purple top, Johnson grass, curly dock, red clover, Canada goldenrod, and Queen Anne's lace. Mowed fields are maintained by GSMNP by cutting twice each summer. Representative plant species present within old field habitat includes cherry, sweetgum, dogwood, blackberry, multiflora rose, sumac, and buttercup (Robertson 2002b). The vascular plant survey identified one rare plant community on the site (Rock 2002) which is the montane alluvial forest (i.e., portion of floodplain forest located adjacent to the Oconaluftee River). An additional rare plant community, the rocky bar and shore community, occurs along the Oconaluftee River. Due to the mountainous nature of the GSMNP, the montane alluvial forests are rare within the Park, and are listed as critically imperiled in North Carolina and imperiled globally (NCNHP 2002a). The montane alluvial forest found on the site contains tree species that differ from other such forests. While alluvial sites are not uncommon in montane areas, very few examples of these communities remain intact. Surrounded by more rugged terrain, these areas were generally the first to be cleared for farming and other development (Schafale and Weakley 1990). The rocky bar and shore community has been affected by dams and other changes in river hydrology; it is considered rare but secure both in North Carolina and globally (NCNHP 2002a; Schafale and Weakley 1990).

3.1.2 Terrestrial and Aquatic Wildlife Resources

GSMNP contains a number of diverse wildlife species due to the Parks size, topography, vegetation, and human land uses. Current inventory data documents the following information about distribution and abundance of species occurring in the Park.

Although mammals of the GSMNP are well documented (Linzey 1995; Linzey, Brecht, and Pickering 2002), only limited surveys have been conducted in the area (Linzey 2002). Based on

range maps for mammals of the GSMNP, as many as 60 mammals could occur within the site area (Linzey, Brecht, and Pickering 2002). However, many of these species would use the site as part of a larger home range (e.g., white-tailed deer, black bear, elk, and various bat species). Of the species potentially occurring on the site, 14 have been identified either directly or indirectly (i.e., by sign) on or very near the site. Some of the mammals identified include the white-tailed deer, elk, European wild hog, mink, eastern chipmunk, big short-tailed shrew, white-footed mouse, and deer mouse (Linzey 2002). The site is an excellent area to observe the American beaver. The area site was surveyed for unusual mammals in the fall of 2000 (Linzey 2002). Three species of significance, the meadow jumping mouse, meadow vole, and golden mouse, were observed. Two meadow jumping mice were captured and released about 1 mile northeast of the Oconaluftee Visitor Center. These represent the first observations of this species on the North Carolina side of the GSMNP since 1935. The meadow jumping mouse is a watch species in North Carolina.

Birds within the area were surveyed in May and June 2000 (DeFoe 2000) and August through December 2001 (Domingue 2001). While birds sampled during the spring and early summer survey were not identified as to the habitat within which they were found, this association was made for the late summer and fall surveys. The four habitat types sampled during the second survey included field/field-forest edge, floodplain forest, upland forest, and wetland. A total of 79 species of birds were recorded within the area. Where habitat/species associations were made, 52 species (77.6 percent) were recorded in field/field-edge habitat, 33 (49.3 percent) in floodplain forest, 29 (43.3 percent) in upland forest, and 34 (50.7 percent) in wetlands. Thirty-four of the 67 species identified during the late summer and fall survey reside permanently on the site, six use the site solely as a wintering area, and 27 use it for summer residence (breeding) and fall migration. Some of the birds seen throughout the site include the downy woodpecker, blue jay, Carolina chickadee, tufted titmouse, hooded warbler, and northern cardinal. All four habitat types present in the area are used by fall migrants. The field/field-forest edge and field/wetland habitats are particularly important in this regard because several migrant flocks were observed using these habitats. None of the birds observed are new Park records or listed by the U.S. Fish and Wildlife Service (USFWS) as threatened or endangered, several are listed by the state.

Although a detailed survey of reptiles present on the site has not been conducted, preliminary observations did not record any significant findings (pers. Com. Keith Langdon). In light of the varied habitat present on the site, a good reptilian population would be expected. Common species that could occur on the site include the eastern box turtle, five-lined skink, northern black racer, and northern copperhead. A total of 40 reptiles have been identified within the GSMNP (GSMNHA 2002).

While common species present on the site were not reported, a number of significant observations were made. A large breeding population of wood frogs was observed in the area and is believed to be unusual for this part of the Park. Also found in the southern portion of the site was the three-lined salamander. This sighting was one of only two that has been made in the Park. Although not identified on the site, the hellbender has been located in the Oconaluftee River. As with reptiles, the varied habitat found within the area would likely result in the presence of a variety of amphibians. Common species that could be present include the eastern American toad, bullfrog, and a number of salamanders. A total of 43 amphibians have been identified within the GSMNP (GSMNHA 2002).

A list of fish species potentially present within the Oconaluftee has been compiled (pers. Com. Becky Nichols). This list is based on previous work conducted within the GSMNP (Simbeck 1990) and not on recent surveys. Twenty-four species of fish (in 4 families), including two introduced trout, were identified as occurring within site streams. The Park currently has 58 stream resident species known to reside in the Park of which 2 are introduced. Sport fish likely present include rainbow, brown, and brook trout, as well as rock and small mouth bass. Fishing is permitted year-round in the Park with a Tennessee or North Carolina fishing license. One federal- and state-listed species, the olive darter, has been observed at the confluence of the Oconaluftee River and Raven Fork.

3.1.3 Threatened and Endangered Species

The NPS has coordinated with the United States Fish and Wildlife Service (USFWS), North Carolina Division of Wildlife Management, and North Carolina Natural Heritage Program concerning threatened, endangered, and other species of concern potentially present at the proposed project site (Appendix B). The Natural Heritage Program in North Carolina ranks rare or unusual plants and animals at both the state and global level (NCNHP 2001, 2002b). The state rankings are also provided in table below for informational purposes for those species designated as endangered, threatened, of concern, or that are otherwise listed in North Carolina.

Figure 4

Federal Listing	
Abbreviation	Ranking Description
E	Endangered. A species that is in danger of loss throughout all or a significant portion of its range. This status provides legal protection.
T	Threatened. A species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. This status provides legal protection.
FSC	Federal Species of Concern. An unofficial designation for species formerly listed as Category 2 species. This status does not provide legal protection under ESA.
D	Delisted. Species has been proposed for delisting
P	Proposed. Species has been proposed for listing
NC State Listings	
SC	North Carolina Special Concern. A species that requires monitoring. This status provides legal protection
SR	North Carolina Significantly Rare. A species that is very rare, generally with 1 to 20 populations in the state
L	Limited. A species whose range is limited to North Carolina and adjacent states
T	Throughout. A species that is rare throughout their range
D	Disjunct. A species is disjunct to North Carolina from a main range in a different part of country or world
P	Peripheral. A species that is at the periphery of its range in North Carolina
W	North Carolina Watch List. A species believed to be rare and of

	conservation concern in the state but not warranting active monitoring. Definitions of watch species vary for plants and animals. This status does not provide legal protection.
W1	Rare, but relatively secure
W2	Rare to uncommon in North Carolina, but are not considered to be declining or otherwise in trouble
W3	Poorly known, but are not necessarily considered to be declining or otherwise in trouble
W5B	Rare because of exploitation
W7	Rare and poorly known (i.e., there is inadequate information on distribution and rarity in North Carolina).
Natural Heritage Program North Carolina Rank – An assessment of a species’ rarity within North Carolina. This status does not provide legal protection.	
S1	1 to 5 extant populations in North Carolina
S2	6 to 20 extant populations in North Carolina
S3	21 to 100 extant populations in North Carolina
S4	100 to 1000 extant populations in North Carolina
S5	1000+ extant populations in North Carolina
Z	Population is not of significant conservation concern. For example, the status “SZN” indicates that the population in the non-breeding seasons is transitory, without any regular locales of occurrence whereby the species can be protected
Natural Heritage Program Global Ranking – An assessment of a species’ rarity throughout its range. This status does not provide legal protection.	
G1	1 to 5 extant populations globally
G2	6 to 20 extant populations globally
G3	21 to 100 extant populations globally
G4	100 to 1,000 extant populations globally
G5	1,000+ extant populations globally
?	Indicates rank is uncertain
Q	Indicates questionable taxonomic assignment
T	The rank of a subspecies or variety

Source: Caldwell et al. 2002; Davison and Smith 2002; Domingue 2002; NCNHP 1993a, 2002b; Pittillo 2002; WNRC 2001.

No federally listed threatened or endangered species or critical habitat was identified on the site. However, four federal species of concern were recorded on or near the site. With respect to state listed species, one endangered species, four species of special concern, 16 significantly rare species, and 14 watch species were identified on or near the site. One federal and state species of concern, the hellbender, was identified in the Oconaluftee River near the site. Individual descriptions of listed species recorded on the site are provided below.

None of the vascular plants identified during surveys of the area are listed as threatened or endangered by either the USFWS or North Carolina (Rock 2002). Several sensitive species have been noted in the area which includes the following: Butternut. This species, also known as

white walnut, grows on rich loamy soils in mixed hardwood forests. The largest population of butternut trees at GSMNP occurs nearby within the Ravensford area. Butternut is a federal species of concern and is on the watch list in North Carolina due to the adverse effects of the butternut canker, a fungus most likely introduced from outside of North America. American ginseng. This species grows in cool and shady hardwood forests. American ginseng, which has declined sharply due to over collection, is listed by North Carolina as a species of special concern. Shingle oak. This species, which requires rich soils, was found throughout the adjacent area. Although shingle oak is on the North Carolina watch list, it is relatively secure within the state. Hairy bush-pea. This species is a southern Appalachian endemic. It was found within floodplain forest north of the project area. It is on the North Carolina watch list due to inadequate information about its distribution and rarity within the state. Southern nodding trillium. This species occurs in rich alluvial woods such as found within the floodplain forest area. It is on the North Carolina watch list due to inadequate information about its distribution and rarity within the state. Horse-gentian. This species tends to be limited to partial canopy conditions. It was found near the project areas at the edge of the wetland area located to the east of Big Cove Road. It is on the state watch list due to inadequate information about its distribution and rarity in North Carolina.

Thirteen bryophytes (all liverworts) identified during field investigations are listed by either the USFWS or North Carolina (Smith and Davison 2001). *Plagiochila sharpii*. (federal species of concern), *Chiloscyphus appalachianus* (federal species of concern), *Drepanolejeunea appalachiana* (listed in North Carolina as significantly rare), *Lejeunea blomquistii* (listed as significantly rare in North Carolina), *Plagiochila echinata* (listed as significantly rare in North Carolina), *Radula sullivantii* (North Carolina significantly rare species), *Riccardia jugata* (listed as significantly rare in North Carolina), *Plagiochila sullivantii* var. *sullivantii* (listed as significantly rare in North Carolina), *Plagiochila austini* (significantly rare in North Carolina), *Acrobolbus ciliatus* (listed as significantly rare in North Carolina), *Lejeunea cavifolia* (listed as significantly rare in North Carolina), and *Radula tenax* (watch species within North Carolina) have each been recorded near the project site area but not directly within the construction footprint.

None of the birds identified within the proposed project area are federally listed as endangered, threatened, or of special concern (DeFoe 2000; Domingue 2001). However, 10 birds were observed on the site that are listed by North Carolina as special concern, significantly rare, or watch species and are as follows: Cooper's hawk (listed as a special concern species within North Carolina), Golden-crowned kinglet (listed within North Carolina as of special concern), Black-billed cuckoo (listed within the state as significantly rare), Hermit thrush (listed by the state as significantly rare), Blue-winged warbler (listed as a significantly rare bird in North Carolina), Savannah sparrow (listed as significantly rare by the state), Rose-breasted grosbeak (watch species in North Carolina), Winter wren (state watch species), Yellow-rumped warbler (watch species in North Carolina), and the Pine siskin (state as a watch species).

No amphibians or reptiles have been identified within the proposed project area that are listed by either the USFWS or state as endangered, threatened, or of concern (Pers. Com. Keith Langdon). However, the hellbender, a very large aquatic salamander listed by both the USFWS and the state as a species of concern has been identified in the Oconaluftee River.

No threatened or endangered fish have been identified from the Oconaluftee River other than the olive darter, which is listed as a species of concern by both the USFWS and North Carolina. It has been recorded in the Oconaluftee River at its junction with Raven Fork (pers. Com Becky

Nichols). Additional populations occur within the GSMNP in Forney, Deep, Hazel, and Noland Creeks, all at elevations between 1,500 to 1,950 feet.

None of the invertebrates identified within the proposed project area are listed as threatened, endangered, or of concern by either the USFWS or North Carolina (Caldwell and Copeland 2001; Morse, Harrington, and Jones 2002; Reeves 2002; Reid 2001; Scholtens 2002; Sullivan and Deutschmann 2002; Wetzel 2001; Wiegmann 2002). However, four invertebrates are listed by the state as either significantly rare or watch. These include the *Scopula ordinata* (a wave moth is on the watch list in North Carolina), *Oligia chlorostigma* (a brocade moth is listed as a watch species by the state) and *Bomolocha appalachiensis* (a bomolocha moth listed by the state as a watch species).

3.1.4 Water Resources

Water quality in the Park streams is generally good. In most streams, the water is cold, fast flowing, slightly acidic, and low in dissolved solids. During normal and low flows the water is clear, although streams become turbid following storms. It is likely that small amounts of sediment, from trails and the surrounding forest may end up in Park streams due to normal sediment transport. The Park is located in one of the highest precipitation regions of the United States averaging 64 inches annually.

All streams within the Park are small and each one drains less than 200 square miles. There are 333 streams (+/- 1,000 miles) in the Park large enough to be classified as fishable. There are ~2,000 miles of streams, fishable and non-fishable. The average drop for each mile of stream channel is 400 feet. Headwater slopes are steep, increasing as much as 2,000 feet per mile. Surface water quality in the Park is considered good but slightly acidic (pH range from 5.9 to 7.5) and low in dissolved solids. Exceptions to this are streams associated with the Anakeesta geologic formation, which have a pH of about 4.5. The streams have a low natural buffering capacity and are therefore sensitive to acid precipitation. Surface water is clear during normal and low flow but turbid during storm events. Historically, water samples from most of the Park streams indicate a low level of coliform bacteria.

Aquatic habitat present on and/or adjacent to the proposed site includes the Oconaluftee River. The Oconaluftee River at this site is considered a fifth-order stream. The Oconaluftee River after its confluence with the Raven Fork is the largest stream (sixth order stream) in the GSMNP. The Oconaluftee River varies in width from about 65 to 100 feet; tree-lined banks shade both banks. The Oconaluftee River is a cold water stream characterized by deep, fast flowing current with substrates comprised of large cobbles, small boulders, and coarse sand.

Surface waters of North Carolina are subject to the schedules of classifications assigned to the waters of the river basins of North Carolina as set forth in Title 15A, North Carolina Administrative Code (NCAC), Subchapter 02B, Surface Water Standards: Monitoring, Sections .0302-.0317, Assignment of Stream Classifications (15A NCAC 02B .0302-.0317) (NCDENR 2002a). Waters are classified based on the existing or contemplated best usage of the various streams and stream segments in each basin. Water quality standards applicable to each classification are established in 15A NCAC 2B.0200 (NCDENR 2002b). The Oconaluftee River is in the Little Tennessee River Basin which is subject to the stream classifications set forth in 15A NCAC 02B .0303. The Oconaluftee River is designated Class C with a supplemental Trout Waters classification (NCDENR 2002a). The Oconaluftee River is also designated Class 1 (primary contact recreation; ceremonial and religious use), which is the highest quality and use designation assigned to Cherokee waters.

In addition, based on watershed health indices maintained by the Environmental Protection Agency (EPA) for the Tuckasegee watershed portion of the Little Tennessee River Basin, designated uses are largely met and other indicators of watershed condition show few problems. Further, no segment of the Oconaluftee River is listed on the State's Clean Water Act (CWA) Section 303(d) list of impaired surface waters (EPA 2002d). The Oconaluftee River, nor any segment thereof, have been designated for inclusion in the National Wild and Scenic Rivers System in accordance with the Wild and Scenic Rivers Act (Public Law 90-542).

Portions of the Oconaluftee site lie within the 100-year floodplain of the Oconaluftee River for which base flood elevations have been determined through detailed hydrologic analysis (FEMA 1989a, 1989b). The 100-year floodplain is comprised of the floodway encompassing the immediate stream channel and an intervening area between the floodway and the boundary of the 100-year floodplain called the floodway fringe. This intervening area is that portion of the floodplain that could be completely obstructed by development without increasing the water-surface elevation of the 100-year flood by more than 1 foot at any point. This is the minimum standard set forth by the Federal Emergency Management Agency in administering the National Flood Insurance Program (FEMA 1989b).

Only a small portion of the study area is specifically delineated as encompassed by the 500-year floodplain. Nevertheless, the 500-year floodplain is not shown where the 100- and 500-year floodplain boundaries are so close together as to be nearly coincident (FEMA 1989b), as is typical of high-gradient stream valleys.

Wetlands in the area (including those actually on the site and those adjacent to the site) were surveyed on June 19, 2007 and evaluated for hydrophytic (wetland) vegetation. The site was evaluated for the presence of jurisdictional wetlands as defined by the USACE (Environmental Laboratory 1987). It was also evaluated using the Cowardin system (USFWS 1979) as required by Director's Order #12 (NPS 2001b). The former system is used by the USACE to define jurisdictional wetlands that are subject to permit requirements of Section 404 of the CWA. This system requires that each of the following wetland characteristics be present for an area to be considered jurisdictional using USACE criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. For the Cowardin system, a wetland must have one or more of the following attributes, unless the area has been disturbed: (1) at least periodically, the land supports predominantly hydrophytic vegetation; (2) the substrate is predominantly undrained hydric soil; or (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year. Thus, the Cowardin system may define some areas as wetlands (e.g., areas with hydrophytic vegetation but without hydric soils) that would not be considered jurisdictional according to the USACE. An additional source of information on wetlands of the site includes the National Wetlands Inventory map of the site (USFWS 1995a). However, because this map was produced from aerial photography with minimal ground truthing, it is of limited value in identifying wetlands on specific tracts of land. For example, while it shows the Oconaluftee River as a wetland, it does not identify any other wetlands on the site.

The total area of wetlands present on and adjacent to the site is 0.043 acres. The wetland is dominated by palustrine scrub-shrub wetland, type 6 (based on the FWS circular). Palustrine wetlands generally include nontidal wetlands dominated by shrubs, and persistent emergent vegetation. The wetland is likely hydrated by runoff from the adjacent road and saturated soil was observed during the site evaluation. The soils show evidence of long term saturation and meet hydric criteria, and although there are no large woody trees in the small area, the shrubby and herbaceous vegetation is predominantly hydrophytic. Therefore, the small area meets the criteria for jurisdictional wetland based on the Corps manual. However, it is not clear that this small wetland area is hydrologically connected to any other jurisdictional features. A drainage pipe was observed in the wetland area, but the terminus of the pipe was not located, and the area is not clearly connected to a receiving stream or wetland. Therefore, the wetland may be considered non-jurisdictional based on USACE criteria as an isolated wetland, which would then be regulated through the North Carolina isolated wetland regulations.

The Oconaluftee River is also classified as a wetland on the National Wetland Inventory map of the site (USFWS 1995). Contained within the stream channels are several areas of rocky bar and shore community. Over story vegetation in the wetland includes a relative sparse canopy of tulip poplar, red maple, wild black cherry and willow (Caldwell and Copeland 2001). Under story and ground species includes spicebush, devil's-walking stick, common alder, purple-stemmed aster, various sedges, bulrush, sensitive fern, meadow beauty, and jewelweed (Caldwell and Copeland 2001; Rock 2002). The rocky bar and shore wetland community occurs at several locations along the Oconaluftee River. This community type is often too rocky, wet, or severely flooded to support trees; however, vegetation can range from dense to sparse shrubs or herbs (Schafale and Weakley 1990).

The best sources of groundwater are from among the thick layers of weathered material overlying highly fractured bedrock. The best locations include the floors of valleys and gentle slopes surrounding the valleys. Water yields from wells in the Park vary from less than one gallon per minute to over 135 gallons per minute. Groundwater quality is similar to surface water in that it is low in dissolved solids and slightly acidic.

The Blue Ridge Belt and physiographic province of western North Carolina is underlain by crystalline-rock and undifferentiated sedimentary and metamorphic rock aquifers. Although no extensive "surficial" aquifer system exists, the bedrock is commonly overlain by regolith of varying thickness that consists of saprolite, colluvium, alluvium, and soil. Groundwater in the bedrock aquifers is recharged by precipitation and runoff, a portion of which infiltrates the relatively permeable regolith and also enters the fractures occurring in the bedrock beneath. However, most of the water quickly runs off after a storm event or travels laterally at a relatively shallow depth as interflow before entering nearby streams.

Overall, the water table tends to mirror the overlying terrain with groundwater moving downslope through the saturated regolith and along fractures to nearby streams or discharging downslope as springs or seeps (USGS 1997). In particular, in areas underlain by crystalline rock aquifers, such as those that underlie the Oconaluftee site, groundwater is principally stored in the overlying regolith and secondarily in the fractured bedrock beneath. Groundwater movement generally occurs along short flow paths from interstream recharge areas to the nearest stream (USGS 1997). Shallow groundwater flow was investigated as part of the site hydrology/wetland study and included the installation of a series of shallow (up to 3.5 feet in total depth) monitoring wells. The study results, in particular, highlighted the importance of shallow subsurface interflow from upslope areas to the east of the site and in driving the hydrology of the channel features and wetlands on the site.

3.1.5 Geology and Geomorphology

The geology of the area that encompasses the proposed project site is lithologically and structurally complex. This complexity is attributable to the fact that the rocks of GSMNP are the product of more than 1 billion years of geologic time during which they have been subjected to the stresses of metamorphism, faulting and folding, weathering, and erosion (DOI 1982b; ORNL 1999). Oconaluftee is located along the southeastern boundary of the Central Blue Ridge lithotectonic belt in which there are appreciable exposures of crystalline "basement rock" ("Grenville" basement rock) of Middle Proterozoic age (i.e., approximately 1 to 1.2 billion years old). This belt is nonconformably overlain on its eastern and western flanks mainly by relatively younger metasedimentary, crystalline basement, and volcanic rocks, with exposures of

sedimentary rocks on the far western flank (Robinson et al. 1992). Together, these lithotectonic regions form the Blue Ridge Belt (NCGS 1985). The region has been subjected to several episodes of metamorphism, the intensity of which generally increases from west to east across the Blue Ridge. Most of this activity took place between about 440 and 480 million years ago. Throughout the Paleozoic Era, the rocks were also deformed by folding and thrust faulting creating thrust sheets. During the Late Paleozoic Era between about 250 and 275 million year ago, the last phase of Appalachian Mountain building concluded (i.e., the “Alleghenian orogeny”) with the collision between the eastern North American and African continents that formed the southern Appalachians and the Great Smoky Mountains. Faulting and folding associated with this event resulted in the transport of blocks of rock over relatively large distances and overriding in-place rock along nearly horizontal thrust faults (ORNL 1999; Robinson et al. 1992).

The area is flanked by parallel thrust faults that traverse the Oconaluftee. The first fault strikes northeast to southwest along the west side of Hughes Ridge and along a portion of the Oconaluftee River. In general, thrust faulting and subsequent erosion has resulted in placing the relatively younger rock of the Snowbird Group (part of the extensive Ocoee Supergroup), represented by the narrower thrust fault feature, into contact with older crystalline basement rock (Robinson et al. 1992). These features are associated with the larger Greenbrier fault system that has generally brought younger rocks in contact with older rocks along most of its extent (NCGS 1985; Robinson et al. 1992). Bedrock beneath the site has been broadly mapped as orthogneiss (predominantly biotite gneiss) of Middle Proterozoic age and interpreted to represent crystalline basement rock (Robinson et al. 1992). The unit has been dated to range between 950 million to 1,250 million years old (NCGS 1985; Robinson et al. 1992). Orthogneiss is a general term for a coarse-grained metamorphic rock derived from the metamorphism of igneous rock. A relatively new pamphlet and associated geologic map of the GSMNP identifies this rock unit simply as “Grenville rocks” (GSMNHA 2000).

3.1.6 Soils

Across a landscape, soils of somewhat differing characteristics occur in distinct patterns. Each type of soil is associated with a particular landscape or portion of the landscape with soils differing due to such factors as topographic relief, drainage patterns, and parent material. Soils belonging to one dominant type, and having a particular set of defined characteristics and properties, can then be delineated and mapped either alone or in combination with other soil types that are associated with it on a landscape for use in land use analysis and planning. Such “soil map units” are generally named for the dominant soil type or types that comprise it and are the basis for the detailed and general soils maps contained in soil surveys prepared by the Natural Resources Conservation Service (NRCS). A “soil series” includes all soils that have a similar physical arrangement or profile. Soils series are further subdivided into “soil phases” which differ either on the basis of surface texture or in one or more physical attributes that affect their use. Detailed “soil map units” are typically delineated and named as “phases” of soil series. By convention, a soil phase is named for its distinguishing physical characteristics or attributes that affect its use and otherwise separate it from other phases of the same series. However, soils are also mapped as “soil complexes” in cases where two or more contrasting soils or miscellaneous land areas (e.g., rock outcrops) occur in such an intricate pattern or in too small an area to be mapped separately (USDA NRCS 1997). Soil surveys are important instruments for use in land use planning and specifically provide information for determining the suitability of different soils for agricultural and engineered uses. The NRCS has recently conducted a soil survey of the Park in accordance with modern soil taxonomy and mapping standards to update and replace the 1948

survey that is no longer in print. Most of the soils across the Oconaluftee site are either derived from floodplain alluvium or from colluvial material lying on or at the toe of sideslopes and are listed as Statler loam (SvB), 0 to 5 percent slopes with maybe a much smaller proportion of Rosman-Reddies (Ro) Complex, 0 to 5 percent slopes, frequently flooded.

3.1.7 Air Quality

Under the Clean Air Act of 1970, Congress established a National policy for preserving, protecting and enhancing air quality. The 1977 amendments to this Act designated all National Parks 6,000 acres in size or greater, and wilderness areas in excess of 5,000 acres as mandatory Class I areas worthy of the greatest degree of air quality protection under the Act. The 1990 Amendments to the Act left intact the requirements for Class I area protection, while providing additional tools to accomplish the protection. Under the Act, the federal land manager has been given the affirmative responsibility to assure that air quality and the air quality-related values in Class I areas, such as GSMNP, do not deteriorate, and to take an aggressive role in protecting, preserving and enhancing the Park's resources. The GSMNP is a prevention of significant deterioration (PSD) Class I area under the Clean Air Act (CAA) Amendments of 1977. Class I areas are afforded the greatest degree of protection from increased air pollution under the CAA.

Air quality is important in the area around the Oconaluftee site not only for the health and welfare of the community but for the effects on the ecological resources and visual resources of the GSMNP, the Parkway, and the Qualla Boundary. Nitrogen oxides, ozone, sulfur dioxide, and particulate matter have been identified as the pollutants of primary concern. The primary local sources of emissions of air pollutants near the site are motor vehicle traffic (primarily on U.S. 441 and the Parkway) and small heating units at residences and Park facilities. The only air pollutant emissions sources on the site are motor vehicles and the 1941 building heating unit.

A variety of air pollutant monitors are operated in the area by the State of North Carolina, State of Tennessee, the NPS, and the EBCI. The closest monitor for each criteria pollutant has been identified, and the highest monitored values from the Environmental Protection Agency (EPA) database for 2001 are summarized in Table 3-2. Criteria air pollutants include carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM10), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM2.5), and sulfur dioxide. The National Ambient Air Quality Standards (NAAQS) for criteria pollutants are shown for comparison in the table. North Carolina ambient standards for these pollutants are the same as the NAAQS. Monitored concentrations for the criteria pollutants in the region are below ambient standards except for ozone.

Figure 5 Ambient Monitored Concentrations and Standards for Air Pollutants

Pollutant	Averaging Period	NAAQS a, b	Monitored Value c	Location
Carbon monoxide, ppm	8 Hours	9	3	Knox County, Tennessee
	1 Hour	35	4.9	Knox County, Tennessee
Nitrogen dioxide, ppm	Annual	0.053	0.012	Knox County, Tennessee

Lead, µg/m ³	Quarterly	1.5	0.02	Knox County, Tennessee
Ozone, ppm	8 Hours	0.08	0.080d 0.076	Clingmans Dome, GSMNPd Purchase Knob, GSMNP
	1 Hour	0.12	0.101	Jackson County, North Carolina
PM10, µg/m ³	Annual	50	29.6	Haywood County, North Carolina
	24 Hours	150	63	Haywood County, North Carolina
PM2.5, µg/m ³	Annual	15	13.8	Swain County, North Carolina
	24 Hours	65	36.2e	Swain County, North Carolina
Sulfur dioxide, ppm	Annual	0.03	0.001	Swain County, North Carolina
	24 Hours	0.14	0.008	Swain County, North Carolina
	3 Hours	0.5	0.013	Swain County, North Carolina

a Short-term National Ambient Air Quality Standards, other than those for ozone, particulate matter, and lead, are not to be exceeded more than once per year. Annual standards are not to be exceeded. The 1-hour ozone standard applies only to nonattainment areas. Requirements for compliance with the standards are described in detail in the regulations.

b North Carolina also has a standard for total suspended particulates.

c 2001 monitored values.

d Although the U.S. Environmental Protection Agency does not yet report monitoring data for ozone on an 8-hour basis, the National Park Service reports data for recent years. The value shown is the 3-year average of the fourth highest daily maximum 8-hour average for the period 2004 through 2006.

e 98th percentile.

Key: µg/m³, micrograms per cubic meter; Great Smoky Mountains National Park (GSMNP); NAAQS, National Ambient Air Quality Standard; PM2.5, particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; PM10, particulate matter with an aerodynamic diameter less than or equal to 10 microns; ppm, parts per million.

Source: 40 CFR 50; EPA 2002a, 2002b; NCDENR 1999, 2003; NPS 2000d, 2000e, 2000f.

In addition to the ozone monitor in Jackson County at Barnett Knob, there are monitors in Haywood County, North Carolina—one within the GSMNP and one along the Parkway. In Sevier County, Tennessee, there are ozone monitors at Cove Mountain and Clingmans Dome within the GSMNP. Maximum 1-hour ozone concentrations at the Haywood County monitors are slightly less than at Barnett Knob, and concentrations at the Sevier County monitors are slightly greater. The PM10 monitor in Haywood County, North Carolina, is in Canton; the carbon monoxide, nitrogen dioxide, and lead monitors in Knox County, Tennessee, are in Knoxville; and the sulfur dioxide monitor in Swain County, North Carolina, is near Bryson City. The site is in an area of Swain County that is designated “better than national standards” for sulfur dioxide and “cannot be classified or better than national standards” for nitrogen dioxide. The area is designated “unclassifiable/attainment” regarding the standard for carbon monoxide.

EPA has not assigned an attainment status designation for lead, and the attainment status for PM10 has not been assigned. Under the EPA’s rule change, which reinstated the 1-hour ozone ambient air quality standard, the 1-hour standard is not applicable because the area previously attained the ozone standard. The area has been classified non-attainment based on the new 8-

hour ozone standard from the "Environmental Protection Agency, Office of Air Quality Planning and Standards, April, 2004".

Monitoring data at three locations within the GSMNP for the period 2004 through 2006 indicate that the 8-hour ozone standard was met. The state of North Carolina has submitted the re-designation request to EPA to be classified as a Maintenance Area. EPA has not made a decision yet on that request.

To meet the charge of preserving the ecological and scenic integrity of the GSMNP and the CAA requirement to prevent significant deterioration of air quality and visibility in this Class I area, the NPS has established an air quality monitoring and research program at the GSMNP. The Air Resources Division monitors climate conditions, visibility, gaseous pollutants, fine particulates, and precipitation chemistry at the GSMNP. Research at the Park has indicated that elevated and prolonged exposures of forests to ozone have resulted in injury to understory plants and hardwood leaves. The effects of acidic precipitation are also a concern in the Park. Visibility impairment at GSMNP is estimated to have reduced the visual range from an annual average of 121 miles in the eastern United States to a median visual range of 24 miles at GSMNP and a summer visual range of 12 miles. A large part of this degradation is attributed to sulfates, with smaller contributions from nitrogen oxides (NPS 2002f). Electricity-generating plants are the source of most sulfates.

3.1.8 Noise

Noise is unwanted sound that interferes or interacts negatively with the human or natural environment. Noise may disrupt normal activities or diminish the quality of the environment. The acoustical environment or soundscape around the site is important as part of the natural setting of the GSMNP. It is important to the enjoyment of the recreational resources around area, including the Mountain Farm Museum, the Oconaluftee Visitor Center, and seasonal fishing sites along the Oconaluftee River.

Primary noise emission sources in the area around site include motor vehicles, occasional aircraft, and agricultural equipment. Most other sounds are natural sounds: wind in the vegetation and sounds of local fauna (e.g., frogs, insects, and birds). Levels of activity at the site are low, and noise levels are expected to be compatible with the agricultural use and Park uses of the area, including recreation, historic preservation, landscape management, and development/transportation. Although the NPS has not collected sound level data for the area around site, sound levels are expected to be in the range of day/night average sound level (DNL) of 35 to 50 decibels A-weighted (dBA) (EPA 1974). Sound levels would be expected to be dominated by natural sounds.

Noise-sensitive receptors around the site include the Mountain Farm Museum, the Oconaluftee Visitor Center, and seasonal fishing sites along the Oconaluftee River. Nearby residences at the NPS housing area and residences also are nearby noise-sensitive areas. Noise sources in the area include motor vehicle noise. Neither the State of North Carolina nor the EBCI has established community noise standards that specify acceptable noise levels applicable to the site. The NPS has not established noise standards or guidelines applicable to the GSMNP. However, the NPS has established a policy for the protection of national Parks soundscapes and units of the National Park System, "Soundscape Management," of the NPS Management Policies 2006 (NPS 2007). "Soundscape Management," the basic principle underlying the development of preservation objectives is "to restore the natural condition wherever possible those park

soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscape from unacceptable impacts." Where natural soundscape conditions are not currently impacted by inappropriate noise sources, the objective must be to maintain those conditions. Where the soundscape is found to be degraded, the objective is to facilitate and promote progress toward the restoration of the natural soundscape. This principle is modified where (a) the Congress has legislated specific provisions for noise-making activities; or (b) there are noise-generating activities appropriate to resource management or visitor services where the goal is instead to minimize noise consistent with those activities.

Current Federal Highway Administration (FHWA) procedures for highway traffic analysis and abatement (23 CFR 772) (the FHWA noise standard) include noise abatement criteria, which are levels that, when approached or exceeded, require consideration of traffic noise abatement measures. The standards consider traffic noise impacts to occur when predicted traffic noise levels approach or exceed the abatement criteria or predicted traffic levels substantially exceed the existing noise levels (USDOT 1995). The criteria are based on hourly equivalent sound levels, Leq (h) and L10, the sound level that is exceeded 10 percent of the time. Leq (h) is the 1-hour equivalent steady-state sound level, which in a 1-hour period contains the same acoustic energy as a time-varying sound level during the same period. Noise abatement levels are not intended to be standards to be met, desirable noise levels, or design goals for noise barriers. The Oconaluftee area would fall in activity category "A" (Leq=57 h(exterior), and L10 = 60 h (exterior)), lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.

Traffic noise from the Blue Ridge Parkway, Newfound Gap Road has been evaluated based on vehicle counts. Traffic noise was assessed using the FHWA noise model (FHWA 1978). For Newfound Gap Road, using a traffic count of 5,800 vehicles per day and assuming these are mostly cars and other light vehicles, the contributions to equivalent sound levels at the site from Newfound Gap Road traffic are estimated to be 24 dBA (NCDOT 2000).

3.2 Cultural Resources

The area surrounding the 1941 building has a long history of human occupation. Seven archeological sites, ranging from Middle Archaic (6,000 B.C. - 5,000 B.C.) through historic Cherokee occupations, have been identified in the Oconaluftee area. In 1982, the Oconaluftee Archeological District was designated and listed on the National Register of Historic Places. The 400-acre district encompasses the entire Oconaluftee area except for the Job Corps Center and Mingus Mill. The maintenance area, staff residential area, and the visitor center were identified as noncontributing structures in the archeological district. Concurrent with the archeological district nomination, the National Park Service nominated the historic farm to the National Register as the Oconaluftee Historic District. That nomination was subsequently rejected because the farm represents an artificially created assemblage of structures that did not exist historically on the present, or any other, single site.

The landscape of the visitor center area is comprised of mature ornamental trees, maintained lawn and meadow, which is currently harvested for hay. The landscape is primarily level, with the eastern portion of the site sloping toward the Oconaluftee River. A large stand of Hemlock trees anchors the south east corner of the 1941 building. The site contains mature shade and ornamental trees, with forested areas along the Oconaluftee River. Views important to the site include looking across the meadow from the south towards of the 1941 building, as well as looking from the building to the surrounding mountains.

3.2.1 Archaeological Resources

Humans have been a part of the Southern Appalachian ecosystem for the past 15,000 years (USDI NPS 1982). Archeological evidence of people utilizing the abundant natural resources of the Smokies begins 12,000 years ago and continues until the formation of the Great Smoky Mountains National Park in 1934 (E.S. Kreuzsch, GSMNP Archeologist, personal communication). In the Smokies, archeological resources consist of prehistoric and aboriginal sites that represent several southeastern cultural periods, as well as historic sites related to mountain culture and the Park development period.

Cherokee Indians occupied the mountains and the adjoining lowlands before white European settlers forced them out in the 1800s. While over 400 archeological sites have been found within the Park boundary, the total remains unknown (E.S. Kreuzsch, GSMNP Archaeologist, personal communication).

The Oconaluftee Archeological District, listed in the National Register of Historic Places (NRHP) in 1982 (NRHP #82001715), contains the entire Oconaluftee Visitor Center site (31SW240/GSMNP152). As originally defined, this district included seven prehistoric archeological sites that had been recorded between 1936 and 1976. Four of the sites are situated within the Ravensford site (across the river) and the remainder is located near the area where NPS housing, NPS maintenance facilities, and the Job Corps Center are located. Few details were known about these sites at the time they were listed (Keel et al. 2002; TRC 2002).

Previous archeological work (Wild and Bassett 1989; Horvath 1991; Kreuzsch 2003,2007) in the field south of the Oconaluftee Visitor Center and west and south of the Mountain Farm Museum have been largely in response to identifying, assessing, and recovering archeological remains in areas proposed for development such as utility corridors. These surveys were confined to linear corridors and did not attempt to identify the geographic extents of the site, although the boundary

was assumed to be confined by natural (the river) and artificial (Newfound Gap Road) boundaries. In July of 2007, the University of Tennessee and Park archeologist performed archeological investigations in the area of the proposed buildings. The field work consisted of mechanically stripping plowzone and fill dirt in an effort to document any undisturbed and potentially significant archaeological deposits. One cultural feature was identified during the study that could be affected by construction activities. Individually, this feature is not considered to be eligible for listing on the National Register of Historic Places, but it should be considered a non-contributing feature of the Oconaluftee Archeological District. The feature is a large, circular (ca. 1.75 m diameter) anomaly filled with very dark loamy soil and rock. The feature has the appearance of the remnants of an old manhole that was abandoned prior to use and filled with rubble upon abandonment. Also in the same year, NPS personnel completed systematic shovel testing in the fields south of southern Parking areas and west and south of the Mountains Farm Museum, in response to the development of baseline archeological site conditions and to determine the nature and extent of archeological deposits. A report documenting the findings is forthcoming and initial findings are consistent with previous findings.

Survey and testing at 31SW240 have produced archeological materials and/or features that demonstrate a continuum of human activity in the Oconaluftee Visitor Center area related to aboriginal prehistoric Native American, Historic Cherokee, and Historic Euro-American occupations. To date, the shovel testing has identified archeological components dating to the Late Archaic, Early Woodland, Middle Woodland, Late Woodland, Mississippian, and Historic Cherokee (Qualla phase) periods, dating to as early as 7,000 years ago. Archeological materials recovered include projectile points and/or knives, food processing tools, prehistoric Native American ceramics, and Cherokee (Qualla phase) ceramics. Significant 19th and 20th century Euro-American deposits are also present representing early agrarian lifeways and the development of the Park's infrastructure.

The depositional environment over much of the tract, have provided a favorable context for site preservation. It is likely that older archeological deposits are present that were not identified in the limited nature of the survey.

3.2.2 Historic Structures

Over 197 structures are listed on the Park's List of Classified Structures (LCS). These structures include historic buildings and early Park infrastructure including roads, bridges, and visitor centers. The current Oconaluftee Visitor Center (historic name Secondary Administrative Building) is located adjacent to the project area. It is listed on the LCS and considered eligible for listing on the National Register of Historic Places (NRHP) because of its association with events that have made a significant contribution to the broad patterns of our history (criteria A), and it embodies the distinctive characteristics of a type period or method of construction (criteria C). The following information is taken from a draft nomination form prepared for this property.

The Secondary Administrative Building was completed in the winter of 1940-1941. It was built in the Colonial Revival/National Park Service (NPS) Rustic Style by a combination of Civilian Conservation Corps (CCC) and contract labor. Its gray quartzite stone was quarried in the Park and worked into place by the CCC. The chestnut interior trim was salvaged from blighted trees in the Park. The slate for the roof was quarried in Buckingham County, Virginia. Many people contributed to the design, although it fell within the genre being used extensively by the National Park Service at that time. The design reflects the renewed interest in colonial America fostered by the restoration of Williamsburg in the 1920s and the organic flavor of NPS Rustic. The

Secondary Administrative Building stands essentially unaltered, except for the conversion of space in the basement and attic to administrative use. The non-contributing garage behind the building was constructed in 1972 by the Job Corps, and an overflow parking lot was built to the right-front (SW) of the building in 1974.

The retaining walls, terraces, drinking water fountains (stone) and the parking area to the front of the current Oconaluftee Visitor Center are also included in the LCS and considered to be significant under NRHP criteria A and C as representing the New Deal era conservation efforts and NPS comprehensive Park planning and rustic architecture.

Newfound Gap Road (NFG Road), which provides access to the current Oconaluftee Visitor Center is not listed on the LCS. However the culverts, walls, tree wells, tunnels, guard rail and bridges associated with NFG Road and the Park development time period are listed on the LCS. This thirty-one mile long, two-lane road connecting Cherokee, North Carolina with Gatlinburg, Tennessee represents NPS naturalistic design as developed by the Eastern Division of Plans and Design. NFG Road and these associated road components are included as contributing features in the Great Smoky Mountains National Park, Park Development Historic District (a draft nomination to NRHP has been prepared) along with other Park resources that date from the Park development time period (including the current Oconaluftee Visitor Center, retaining wall and drinking fountain). The draft nomination for the Park Development District describes the district as being nationally significant under criterion A and C.

The Mountain Farm Museum is also located adjacent to the project area. There are fourteen structures located in this complex of buildings which are used for interpretive purposes. These include several historic structures and some non-historic. All of these structures are included on the LCS, however none are considered to be eligible for listing on the NRHP. The historic structures are ineligible for listing because they have been moved and lack integrity of location and setting.

3.2.3 Cultural Landscapes

The National Park Service maintains a database of historically significant landscapes in the National Park Service known as the Cultural Landscape Inventory (CLI). The Park contains 42 landscapes and component landscapes currently listed on the CLI. These include both landscapes that are documented or certified as cultural landscapes and those that have been identified for further study as cultural landscapes (D. Flaugh, GSMNP Landscape Architect, personal communication).

One of the landscapes included on the CLI for Great Smoky Mountains National Park is Newfound Gap Road with a component landscape of Newfound Gap Overlook. While Newfound Gap Road has been included as a CLI no Cultural Landscape Report has yet been prepared for Newfound Gap Road.

Another cultural resource present at the Oconaluftee site is the historic landscape. The open fields on the site are presently addressed in the Landscape Management Subzone of the GSMNP's Historic Management Zone and are managed to "preserve the open, pastoral appearance of the land" (Keel et al. 2002). While they do provide a pastoral view, their present appearance represents a mid-twentieth century construct rather than a reflection of their nineteenth or early twentieth century appearance. As defined by the NPS, a rural historic landscape is a geographical area that historically has been used by people, or shaped or modified

by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways and natural features. Although visually appealing, the open fields on the Oconaluftee site do not meet this criterion, and therefore were not recommended as being eligible for listing on the NRHP as a rural landscape (Keel et al. 2002; TRC 2002).

3.2.4 Other Cultural Resources

Over 150 known cemeteries are located within the Park's boundaries. Most of these cemeteries are bounded by forest cover. No known cemeteries are within the project study area.

Traditional cultural properties (TCPs) are defined as places that are associated with the cultural practices or beliefs of a living community. Such properties can be determined eligible for the NRHP if they are rooted in that community's history, and are important in maintaining the continuing cultural identity of the community. Although there is oral history of Cherokee use of the Oconaluftee site, the documentation of those activities is limited. The nearby river is and has in the past used for traditional purification ceremonies, but that use has not been specifically recorded.

3.3 Surrounding Community

Eight counties encompass or lie close to boundaries of GSMNP: Blount, Sevier, Cocke and Monroe counties in Tennessee are situated on the northern end, and Graham, Jackson, Swain and Haywood counties in North Carolina occupy the southern vicinity of the Park. The area surrounding the Park is comprised of two national Parkways, three national forests, the Qualla Boundary of the Eastern Band of Cherokee Indians, an extensive system of lakes developed by the Tennessee Valley Authority (TVA) and the Aluminum Company of America (ALCOA), and land belonging to private individuals and organizations. Land surrounding the Park is mostly rural, consisting primarily of forested foothills and mountains. Approximately 84 percent of the land within a six-mile radius of GSMNP boundary is forested. The remaining areas consist mostly of agricultural land (10 percent) and urban development (2 percent). Small towns and communities, some adjacent to the Park, are scattered throughout the region. The mean human population density of the eight county region is +/- 80 individuals / square mile. The majority of the people in the eight county region are employed in retail trade, manufacturing, and personal services. Much of the economy is tourism-related and land traditionally used for forests and agriculture is increasingly being replaced by resort communities, vacation homes, and retail business.

The broad management goals of the Park are to preserve the Park's diverse resources while providing for public benefit and enjoyment. GSMNP is the most heavily visited Park of the national Park system, drawing between 9 and 10 million visitors annually (10,283,600 for 1999). Most visitors to the region travel in private automobiles. In addition to roads providing access to and within the Park, numerous foot and horse trails provide access to the Park's backcountry. The principal use of GSMNP is recreational. Activities include viewing wildlife and scenery from motor vehicles, hiking, biking, camping, horseback riding, kayaking, and fishing. Hunting is not allowed within GSMNP, but bear, deer, and smaller game species are hunted outside its boundaries on both national forest and private land. Park visitation rates vary seasonally, peaking between June and October. Visitation tends to be heavier during weekends and holidays, and backcountry use is high during college breaks. The Park's natural features are the main attraction for visitors, with most activities restricted to driving through the Park, or picnicking,

rather than backcountry camping and hiking. The Park's backcountry contains approximately 850 miles of trail with 102 campsites and 18 shelters. While millions of people came to the Smokies in 2006, it is evident that larger numbers do not spend their time camping. When compared to 2000, a 16 percent decline was recorded at the front country campgrounds. Camper nights numbered 252,581 at the 10 developed campgrounds, just above the 246,899 that was reported in 2005. Back country campers utilized the 102 backcountry campsites registering 69,685 in 2005 compared to 73,787 in 2004.

The GSMNP has an annual budget of \$17 million (2006) and provides an economic hub generating over \$652 million a year for surrounding tourist communities. An estimated 14,000 local jobs are supported by Park spending.

The Oconaluftee site itself is located in Swain County, North Carolina. The Eastern Band of Cherokee Indians (EBCI) has approximately 13,000 enrolled members, most of whom reside on or near the 56,000-acre Cherokee reservation (EBCI 2002). About 36,000 acres are in Swain County, and about 20,000 acres are in Jackson County (JCCC 2002). The town of Cherokee is in the most western region of North Carolina, 33 miles south of Gatlinburg, Tennessee, and 65 miles west of Asheville, North Carolina.

In 2000, the population of Swain County totaled 12,968, of which 4,023 (31 percent) were American Indians. From 1990 to 2000, the county's population increased by 15.1 percent. American Indians comprised 1.6 percent (131,736) of North Carolina's total population of 8,049,313 in 2000. From 1990 to 2000, the state's population increased by 21.4 percent (DOC 2002).

In general, Swain County is considered to be less affluent than most counties in North Carolina. In 2000, the Swain County median household income was \$28,608 or nearly 27 percent lower than the North Carolina median household income of \$39,184 (DOC 2002). About 18 percent of Swain County's population was living below the poverty line according to the 2000 census, compared with approximately 12 percent of North Carolina's population.

In the winter months, unemployment in Swain County tends to be substantially higher than the statewide average because much of the employment in the area is seasonal and tied to months when tourism and the number of visits to the GSMNP are high. The unemployment rate generally starts to drop significantly in May of each year and stays relatively low through October. In 2002, unemployment in Swain County ranged from a high of 18.5 percent in January to a low of 4.8 percent in October. In the latest 12-month period ending November 2002, the annual average unemployment rate for the county was 9.7 percent, which was much higher than the average unemployment rate for North Carolina (6.5 percent) (ESC 2003).

Since it opened in 1997, Harrah's Cherokee Casino has been a leading employer in the region and has helped to lower the western North Carolina region's unemployment rate. The Casino is owned by the EBCI and managed by Harrah's N.C. Casino Company, L.L.C. In 2001, the Casino had 3.3 million visitors. It employs 1,441 individuals. Total salaries and wages benefits paid in 2001 were approximately \$48 million (EBCI 2001a).

The Oconaluftee area is one that represents a larger proportion of minority and low-income populations than the average area in the United States or North Carolina. For example, the minority population in Swain County is approximately 35 percent larger than the minority population in the United States in general and is largely made up of people of American Indian

descent as would be expected given the location of the Qualla Boundary. In fact, the largest minority group in both Swain and Jackson counties is made up of people of American Indian descent.

3.4 Visitor Use and Experience

The broad management goals of the Park are to preserve the Park's diverse resources while providing for public benefit and enjoyment. GSMNP is the most heavily visited Park of the national Park system, averaging between 9 and 10 million visitors annually (9,192,477 for 2005). 2 million visitors enter the Park at the Oconaluftee entrance alone. The staff at the Oconaluftee visitor center estimates that visitors spend about 20-30 minutes at the visitor center and farm, except during demonstration times at the farm when visitors may stay an hour or more.

Most visitors to the region travel in private automobiles. In addition to roads providing access to and within the Park, numerous foot and horse trails provide access to the Park's backcountry. The principal use of GSMNP is recreational activities, which include viewing wildlife and scenery from motor vehicles, hiking, biking, camping, horseback riding, kayaking, and fishing.

Park visitation rates vary seasonally, peaking between June and October. Visitation tends to be heavier during weekends and holidays, and backcountry use is high during college breaks. The Park's natural features are the main attraction for visitors, with most activities restricted to driving through the Park, or picnicking, rather than backcountry camping and hiking (USDI NPS 1982). The Park's backcountry contains approximately 850 miles of trail with 102 campsites and 18 shelters. Camper nights numbered 275,038 at the 10 developed campgrounds in 2005 (GSMNP data 2005) The Park had 69,985 camper nights at backcountry campsites in 2005 (GSMNP data 2005). In 2006, GSMNP had an annual budget of \$17 million (GSMNP data 2007).

3.5 Park Management and Operations

Great Smoky Mountains National Park has 312 onsite Park staff that provides the full scope of functions and activities to accomplish management objectives in law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, community services, utilities, and housing.

Park staff associated with the Oconaluftee Visitor Center includes resource education and facility management staff. The number of staff includes 2 full time maintenance people, as well as 9 summer staff and 5 winter staff for visitor services. The visitor services staff answers questions, provides information to visitors at the visitor desk, provide interpretative talks at both the visitor center and the Mountain Farm Museum. Visitor service staff also provides interpretative talks at Clingmans Dome, Balsam Mountain campground, Collins Creek Picnic Area, Smokemont Campground and Deep Creek campground.

3.6 Important Farmland Soils

Pursuant to the Farmland Protection Policy Act (FPPA) (7 U.S.C. 4201 et seq.), and the implementing regulations (7 CFR 658), federal agencies are required to make FPPA evaluations part of the NEPA process and to take into account the adverse effects of federal programs as to the extent to which they contribute to the unnecessary conversion of important farmlands to nonagricultural uses. Important farmlands include prime farmland, unique farmland, or farmland

of statewide or local importance, as defined in 7 CFR 657.5. However, qualifying farmland in or already committed to urban development, land acquired for a project on or prior to August 4, 1984; and lands acquired or used by a federal agency for national defense purposes, as stipulated in the FPPA's implementing regulations, are exempt from the Act's provisions (7 CFR 658.2-658.4).

Soil mapping units listed by the Natural Resources Conservation Service (NRCS) include Statler loam (StB), 0 to 5 percent slopes with a much smaller proportion of Rosman-Reddies Complex (Ro), 0 to 5 percent slopes, and frequently flooded lands. The state's list of important farmland soils include all Rosman soils, which are classified as prime farmland, if drained and either protected from flooding or not frequently flooded during the growing season (USDA NRCS 2000). The NPS submitted an applicability determination to the NRCS on December 11, 2007. The NRCS has determined that the .2 acres of disturbance is located within prime farmland. The NRCS also recognizes that the existing soil has been disturbed several times over the years.

4.0 ENVIRONMENTAL IMPACTS

NEPA requires that a range of reasonable alternatives and the unavoidable environmental consequences associated with implementation of the alternatives be revealed prior to undertaking proposed federal actions. This chapter provides a summary of the analysis of the environmental consequences associated with implementation of the No Action Alternative and Build the Visitor Center Alternative.

The goals of NPS management for all resources are achieved through consideration of the potential resource impacts associated with each alternative and identification of an alternative that balances unavoidable impacts with the goals and objectives for the project. Resource impacts associated with each alternative differ greatly in their context, intensity and duration and this balanced approach considers the merit of all resources equally.

Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were evaluated: natural resources, cultural resources, surrounding community, public use and experience, and Park management and operations. Other impacts categories were dismissed due to the nature of the project and the lack of direct relevance to the project yet are briefly discussed in Section 4.1.

4.1 Impact Topics Considered, But Dismissed From Further Analysis

The following is a discussion of several impact topics that have been analyzed and considered with regard to potential effects resulting from either of the alternative actions. The relationships of these topics are summarized as part of the impacts analysis based on a factual, objective review of potential effects that alternatives might have, or the lack thereof. The impact topics are discussed below, but will not be carried forward into the detailed analysis in this Draft EA. There will not be any changes to these effect topics resulting from the opening of a new visitor center or the retention of the current visitor center.

Air Resources - The Clean Air Act of 1973 (as amended) and associated NPS policies require the NPS to protect air quality in Parks and other holdings. The intent of this effect topic is to assess actions that may improve and protect air quality for human health and ecosystem benefits, or that may have an adverse effect. In general, this topic analyzes far reaching and local influences on air quality, many of which are out of the control of the NPS. For example, GSMNP is downwind from large urban and industrial areas in states to the north and west, and prevailing winds often carry potential pollutants that are deposited in the area. Acid precipitation is a major influence on stream water quality at the Park, and could cause excessive nutrient enrichment in soils, and affect sensitive vegetation. GSMNP is designated a Class I area per the Clean Air Act of 1973, which provides the highest level of air-quality protection. The visitor center would not generate any pollution that would adversely affect human health and environmental resources. A negligible amount of exhaust from automobiles would be expected regardless of which alternative is analyzed given the area still serves as a visitor center regardless under both alternatives. The alternatives being examined do not have an effect, either beneficial or adverse, on air quality and will not be carried forward into the detailed analysis.

Geology (Geomorphology and Soils)- GSMNP is host to a variety of outstanding geological features with unusual intrinsic value. Many of these geological features are regularly viewed and studied by a wide range of visitors, educators, and scientists and are considered a valuable

natural resource. None of the alternatives being considered alter geologic features and resources at the Park. Soils will only be disturbed in the short-term in association with construction. Therefore, geological resources will not be carried forward into the detailed analysis portion of this Draft EA.

Floodplains - Floodplain or flood-prone areas include those low-lying areas that are flooded during 100 year storm events. These areas are generally mapped by the Federal Emergency Management Agency and those maps are made available to the general public. Local and some state governments implement the federal floodplain protection regulations, which at a minimum regulate construction of dwellings and other structures in the floodplain. The term "floodplain" is more specifically defined as the area that can be expected to be submerged during a 100-year flood (often referred to as the "regulatory flood"). The 100-year flood serves as the "base" flood for purposes of floodplain management measures (i.e., the regulatory floodplain). The "flood profile elevation" is an associated term that refers to the water level elevation at any point along a stream during a 100-year flood event. None of the alternatives being considered involve the filling or alterations of the 100-year floodplain areas. Given that the alternatives proposed will not affect floodplain values, this topic will not be carried forward into the detailed analysis and a Statement of Findings is not required.

Wild and Scenic Rivers - Wild and scenic rivers are designated by the federal mandate and are provided with advance protection at the federal, state, and local levels. Wild and scenic rivers have not been designated within GSMNP boundaries; therefore, this topic will not be carried forward into the detailed analysis.

Transportation – GSMNP does not have a public transportation system that operates and the construction of a visitor center does not require or include any transportation services. Visitors utilize their own vehicles, and park in designated areas. The proposed alternatives will not affect transportation, and as such will not be carried forward into the detailed analysis.

Indian Trust Resources - Indian trust resources include those resources not on Native American owned property, but rather on DOI administered lands that are held in trust on behalf of Native American tribes. Secretarial Order 3175 requires that any anticipated impacts to Native American trust resources from a proposed project or action by DOI agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to Native American and Alaska Native tribes. GSMNP as a public holding is not considered a Native American trust resource and there are not any such designated resources at the Park. The proposed alternatives do not conflict with any American Indian interests. Therefore, this topic will not be carried forward into the detailed analysis.

Prime or Unique Farmland - The Natural Resource Conservation Service (2000) Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables. defined as soil that produces specialty crops such as fruits, vegetables, and nuts. The soil types in the GSMNP area provide limited support for prime farmland and unique farmland based on these definitions. Areas of agricultural use on GSMNP

do not exist and as such the proposed alternatives do not involve alterations to any land-use or soil. Therefore, prime or unique farmland will not be carried forward as an impact topic.

Lightscape - In accordance with NPS Management Policies, 2001 (2001), the NPS strives to preserve natural ambient lightscales, which are resources and values that exist in the absence of human caused light. Any actions related to development of the visitor center at the Park would not be expected to result in any changes to the existing lightscape conditions. Therefore, this topic will not be carried forward into the detailed analysis.

Soundscape Management - In accordance with NPS Management Policies, 2001 (2000) and NPS Director's Order 47: Sound Preservation and Noise Management (2001c), an important part of the NPS mission is preservation of natural soundscapes associated with Parks. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in Park units, together with the physical capacity for transmitting natural sounds. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units, as well as potentially throughout each Park unit, are generally greater in developed areas and less in undeveloped areas. The alternatives under consideration would not create additional noise. Therefore, this topic will not be carried forward into the detailed analysis.

Environmental Justice – According to the United States Environmental Protection Agency (USEPA), environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Actions related to the proposed alternative would not be expected to have health or environmental effects on minorities, low-income populations or communities as defined in the 1994 Executive Order 12898 or Title VI of the Civil Rights Act of 1964. Therefore, this topic will not be carried forward into the detailed analysis.

Economics and Socioeconomics- None of the alternatives described in this environmental assessment would have notable effects on local or regional economic activities. Construction activities would not contribute measurably to the local or regional economy.

Non-Federal Lands Within GSMNP - Private Residential and Commercial Properties and Municipal and State lands - Of the 522,000 acres within the Park boundaries, the NPS owns all terrestrial and submerged lands. Construction of a visitor center is not seen as an issue that affects landownership. The proposed alternatives will not hinder or alter in an adverse or beneficial way public and private access to any areas in the Park; therefore, this topic will not be advanced into the detailed analysis.

4.2 Environmental Impact Definitions

Type of Impact: Impacts are categorized in two different and contrasting types: adverse and beneficial. Adverse impacts are considered contrary to the goals, objectives, management policies, and practices of the NPS and the public interest or welfare. These impacts are of a kind likely to be damaging, harmful, or unfavorable to one or more of the various impact topics. Beneficial impacts are believed to promote favorable conditions for the impact topics. The following terms are used to discuss environmental consequences:

Negligible impact

An impact with a low level of detection

Minor impact

A slight, but detectable impact

Moderate impact

An impact that is readily apparent

Major impact

A severe adverse impact or exceptionally beneficial impact

Short term impacts

Impacts limited to the construction period

Long term impacts

Impacts continuing to occur or occurring beyond the construction period

Levels of Intensity: Levels of intensity refers to severity of the impact, whether it is negligible or major, or somewhere in between. The gradient of this grading system can be general or very detailed, but ultimately the assumptions and subjectivity of the system affect its sensitivity. A simple and subjective rating system is used in this Draft EA, which includes a rating scale of “no effect, negligible, minor, moderate, and major effects.” The authors of this Draft EA based the rating system score on studies completed, data and information obtained from scientific and administrative sources, discussions with relevant individuals, public comments, common sense, and professional opinion. For example, consideration was given as to whether or not an action affects any natural resource parameters. The definition of “no effect” would be the same for each of the general impact topics, natural resources, cultural resources etc. No effect would mean that no measurable effects could be recorded or surmised. Each of these gradient levels are further defined below.

For natural resource impacts including wildlife and vegetation:

Negligible: Impacts would be barely detectable, measurable, or observable.

Minor: Adverse Impacts would be detectable, but not expected to have an overall effect on the natural community. Impacts generally affect less than one-half acre vegetation or would not be expected to influence the population of any wildlife species, or may influence a small number of individual of a species. Beneficial impacts would enhance the ecology for a small number of individuals.

Moderate: Impacts would be clearly detectable, but could have short-term appreciable effects on the local ecology. Impacts may affect up to one-acre of vegetation, but would not threaten the continued existence of any natural community. Impacts would have short-term effects. Beneficial impacts would enhance the population of any species at the Park.

Major: Long-term or permanent, highly noticeable effects on the population of a species, natural community, community ecology, or natural processes. Impacts may affect over one-acre of vegetation or may affect the continued existence of any natural community or species.

Beneficial impacts would enhance the population of more than one species over the long-term.

For cultural resource impacts including cultural heritage:

Negligible: Impact to the resource is barely perceptible and not measurable and is confined to a very small local area. The Section 106 determination of effect would be no adverse effect.

Minor: Adverse impact – Impact(s) would not affect a character-defining pattern, behaviors of individuals, and features of the local heritage. The Section 106 determination of effect would be no adverse effect. Beneficial impacts would include maintaining and making slight improvements, having a positive influence on the use and behavior patterns of visitors on a small-scale, local level. The Section 106 determination of effect would be no adverse effect.

Moderate: Adverse impacts would alter a character-defining pattern or features of the local heritage, but would not diminish the integrity of the local heritage. The Section 106 determination of effect would be adverse effect. Beneficial impacts would include improving the character and features of the local heritage. The Section 106 determination of effect would be no adverse effect.

Major: Adverse impacts would alter a character-defining pattern or features of the local heritage and diminishing the integrity of the local heritage. The Section 106 determination of effect would be adverse effect. Beneficial impacts would include improving the character-defining patterns and features of the local heritage by including an increase in the number of people involved with heritage defining patterns. The Section 106 determination of effect would be no adverse effect.

Duration: Duration describes how long an impact would be expected to last. In this EA, impacts are described as either being short-term or long-term. Short-term is an impact that would last no more than two years. Long-term would be an impact that would last for more than two years.

Context: Context is the setting within which an impact is analyzed, such as the affected region or locality and the affected interests. In this EA, the intensity of impacts is evaluated within a local context, primarily considering effects Park area itself. The intensity of effects on cumulative impacts is evaluated in a regional context, and considers effects further in time and effects from other projects.

Direct and Indirect Impacts: Direct impacts include effects on the resource actually caused by the proposed action, generally at the immediate site of the action and at the time of the action. Direct impacts can extend into the future and are often permanent, but can be temporary. A direct effect is an effect that is caused by an action and occurs at the same time and place. An example of a direct impact would be the filling of a portion of a stream, which immediately causes habitat loss at that location.

Indirect impacts generally occur as a result of a “side-effect” of a direct impact, but occur later in time or further in distance than the action. An indirect impact could result from silt flowing downstream, creating turbid conditions, and adversely affecting water quality.

Cumulative Impacts: The CEQ regulations, which implement the NEPA (42 USC 4321 et seq.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable

future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and focus on a regional area well beyond the Park boundary.

Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the Park and the vicinity. These impacts are assessed on a regional basis. These projects include development within the region, long-term population trends, cultural and social changes.

4.3 Cultural Resource Analysis

Impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. These impact analyses also are intended to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 Code of Federal Regulations Part 800, Protection of Historic Properties), impacts on cultural resources were identified and evaluated by:

- Determining the area of potential effects;
- Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;
- Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and
- Considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must also be made for affected cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (36 Code of Federal Regulations Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

The Council on Environmental Quality (1978) regulations and Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making (NPS 2001a) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact because of mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse. A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 of the National Historic Preservation Act and is an assessment of the effect of implementing the

alternatives on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations. (See Appendix B)

4.4 Alternative A (No Action Alternative)

The short-term and long-term impacts of not re-establishing building a new visitor center (No Action) at Great Smoky Mountains National Park are determined to result in minor beneficial and negligible adverse effects.

4.4.1 Natural Resources

Impacts: In the short-term, the No Action alternative would have no apparent effect on the condition of Park vegetation, fish, wildlife or soils and in particular there would be no affect on the natural resources associated with the proposed building site. Over the long-term, the lack of adequate facilities for visitors would negatively impact the Park's ability to convey important resource stewardship information to the visitors and that might have minor adverse impact on the protection and preservation of resources in the Park. There are no federally listed threatened or endangered species that would be impacted from this alternative. The No Action alternative would not have any apparent effect on the condition of Park water resources.

Cumulative Impacts: The ability to protect and preserve natural resources in all areas of the Park would be slightly negatively impacted by the lack of adequate facilities to educate the visiting public on resource issues. The No Action Alternative would not cumulatively contribute in the short term to any water resources or other resource values. Cumulative impacts would not be expected under this alternative, as no site development would occur.

Conclusion: Under the No Action alternative, there would be no construction or building related to this alternative thus there would be no effect on vegetation, fish wildlife, or soils at the proposed building site. However, the inability to adequately protect and preserve the resources by conveying solid environmental education could have a minor adverse impact.

Impairment: There would be no impairment of the Park's natural resources.

4.4.2 Cultural Resources

As defined in the National Historic Preservation Act and its implementing regulations in 36 Code of Federal Regulations 800, historic properties are those buildings, landscapes, sites, districts, artifacts, and remains that are related to culturally significant places and events, and that are listed in or eligible for inclusion in the National Register of Historic Places. The significance of historic properties is judged by the property's ability to meet the following four criteria for inclusion in the National Register of Historic Places:

- Association with events that made a significant contribution to the patterns of our history;
- Association with the lives of persons significant in our past;
- Sites that embody characteristics of a type, period, or methods of construction or that represent the work of a master, possess high artistic value, or represent a distinguishable entity; or
- Have yielded or may be likely to yield, information important to prehistory or history.

Properties may be eligible for the National Register for contribution at the national, state, or local level. In order for a structure to be listed in the National Register, it must possess historic integrity of those features necessary to convey its significance, such as location, designs, setting, workmanship, materials, feeling, and association in accordance with National Register guidelines.

The National Park Service defines five categories of cultural resources: 1) archeological resources; 2) historic structures; 3) cultural landscapes; 4) ethnographic resources; and 5) museum collections. Each of these types of cultural resources were evaluated in this environmental assessment. Based on this evaluation, the Park finds that cultural resources will not be affected by this alternative.

Archeological Resources. This alternative would have no effect on archeological resources.

Historic Structures. Under this alternative, the Oconaluftee Visitor Center would continue to see a high volume of use by multiple user groups (general visiting public, Park staff, Great Smoky Mountains Association staff). This high level of use would have a minor adverse impact on this cultural resource; an impact managed through ongoing facility maintenance.

Cultural Landscapes. Under this alternative, the cultural landscape in the area of the Oconaluftee Visitor Center would continue to see a high volume of pedestrian and vehicular traffic. This high level of use and failure to address in-site circulation issues would have a negligible adverse impact on these cultural resources; an impact managed through ongoing facility maintenance.

Ethnographic Resources. This alternative would have no effect on ethnographic resources.

Museum Collection No museum objects would be affected by this alternative.

Cumulative Impacts: Under this alternative there would be no cumulative impacts.

Conclusion: The no action alternative would not have any impact on cultural resources beyond negligible adverse impacts to historic structures and cultural landscapes. These negligible adverse impacts are those managed through ongoing facility maintenance.

Impairment: Cultural resources will not be impaired under this alternative.

4.5 ALTERNATIVE B – Build Alternative (Environmentally Preferred and Preferred Alternative)

4.5.1 Natural Resources

Construction-related land disturbance would expose soils and sediments to possible erosion. Minor effects would be noted for terrestrial species. Effects would be detectable, although the effects would be short term, localized, small, and of little consequence to the overall viability of these resources. Direct effects to wildlife would include the loss of those animals that may be unable to move from the construction zone (e.g., soil invertebrates, amphibians, and reptiles) and the displacement of more mobile species (e.g., birds, mammals) to adjacent areas. Additionally, depending upon the time of year during which the land would be cleared and graded, nests and young could also be lost.

No federally listed threatened or endangered species or federally designated critical habitat has been recorded in the area. The proposed action would not affect a listed species or designated critical habitat.

Water resources evaluated under this alternative include freshwater aquatic resources such as wetlands and the Oconaluftee River. Construction of the facility and installation of additional road and Parking surfaces could negatively impact water quality, and affect the areas ability to protect from flooding. Each of these issues can in turn adversely affect aquatic ecosystems. Erosion from earthwork, discharge from septic systems, the creation of impervious surfaces, and discharges from other sources can have adverse effects on water quality and stormwater management. Fill placed in a flood prone area can contribute to flooding, while removal of fill can reduce flooding. The construction of Parking areas could direct pollution into waterways from gasoline and oils spilling from vehicles. However, it is recognized that all construction and planning associated with the development of the site will utilize Best Management Practices that will minimize harm to aquatic resources. Thus, effects on water resources would be detectable, although the effects would be short term, localized, and small and having little long-term consequence to the overall make-up of the area. Any water quality impacts (chemical, physical, or biological effects) would be well below water quality standards or criteria and within historical or desired water quality conditions. Surface water or groundwater features would not be expected to affect project implementation. If constructed according to the conceptual layout, only a small portion of the structure would encroach on the 500 year floodplain. Based on the facility use, the regulatory floodplain is the 100 year floodplain and therefore according to NPS DO 77-2, Floodplain Management and Wetland Protection, a Statement of Findings is not required for this proposed action. Thorough analysis of the development impacts on the 500 year floodplain from visitor center construction would be negligible and mitigated by removing 1,507 sf of structures from the flood plain (446 sf are in the 100 year flood zone, and entirely within the 500 year flood zone) in exchange for 1,260 sf of new development within the 500 year floodplain.

Mitigation: Because of the potential for soil disturbance, mitigation measures for soil erosion and sediment control are discussed here and would also serve to reduce water quality impacts from storm-water runoff and run-on during construction. As currently proposed, vegetative buffers would be maintained around construction areas as runoff filters and tree clearing would be limited. Once ground-disturbing activities have been completed, exposed soils would be re-vegetated via hydro-seeding and/or landscaped with indigenous vegetation wherever possible. Further, specific types of structural controls that could be used as appropriate during construction for storm-water management include: installing sediment fencing around the perimeter of construction locations and along the corridors of active construction areas to reduce runoff velocity and offsite sediment transport; installing diversion ditches or dikes upslope of construction areas to prevent run-on of storm water; construction of temporary sediment traps at natural discharge points from construction areas and upstream of channels and wetlands to capture storm-water runoff so that suspended solids can settle out; and placing staked hay bales along steep slopes to retain runoff to retard suspended sediment transport to sensitive areas. To reduce the potential for spills from impacting surface waters and wetlands, all vehicles and equipment used for construction purposes could be inspected for leaks before being allowed on the construction site to avoid inadvertent contamination. Implementation of materials handling and spill prevention plan could also help to ensure that any materials used or stockpiled during construction with the potential to contaminate storm-water runoff are properly stored, waste materials are properly handled and disposed, and that any spills are immediately contained with

spent liquids and any contaminated media properly disposed. To minimize impacts to wildlife, clearing operations can be limited during the breeding season would help reduce loss of young birds and nests, including those of migratory species.

Cumulative Impacts: No cumulative impacts are noted in association with this alternative. Impacts are short-term in nature and their disturbance there would not lead to cumulative effects.

Conclusion: Construction-related land disturbance would expose soils and sediments to possible erosion. There would also be the potential for sedimentation due to storm-water runoff from the construction area. Any effects on runoff quality would likely be localized around immediate points of disturbance or construction laydown areas. Maintenance of existing vegetation, use of vegetative buffer strips, and implementation of appropriate soil erosion and sediment control and spill prevention and waste management practices would ensure that any water quality impacts would be short term and negligible. No long-term water quality impacts would be expected after construction.

Impairment: Project activities and their effects would not contribute to the deterioration of key resources and the Park would continue to fulfill its purposes as set forth in enabling legislation and Park management plans. Thus, this alternative does not impair Park resources.

4.5.2 Cultural Resources

As defined in the National Historic Preservation Act and its implementing regulations in 36 Code of Federal Regulations 800, historic properties are those buildings, landscapes, sites, districts, artifacts, and remains that are related to culturally significant places and events, and that are listed in or eligible for inclusion in the National Register of Historic Places. The significance of historic properties is judged by the property's ability to meet the following four criteria for inclusion in the National Register of Historic Places:

- Association with events that made a significant contribution to the patterns of our history;
- Association with the lives of persons significant in our past;
- Sites that embody characteristics of a type, period, or methods of construction or that represent the work of a master, possess high artistic value, or represent a distinguishable entity; or
- Have yielded or may be likely to yield, information important to prehistory or history.

Properties may be eligible for the National Register for contribution at the national, state, or local level. In order for a structure to be listed in the National Register, it must possess historic integrity of those features necessary to convey its significance, such as location, designs, setting, workmanship, materials, feeling, and association in accordance with National Register guidelines.

The National Park Service defines five categories of cultural resources: 1) archeological resources; 2) historic structures; 3) cultural landscapes; 4) ethnographic resources; and 5) museum collections. Each of these types of cultural resources were evaluated in this environmental assessment. Based on this evaluation, the Park finds that cultural resources will not be affected by this alternative.

Archeological Resources.

Limited excavations were undertaken to determine the feasibility of constructing a new Visitor Center adjacent to the present Oconaluftee Visitor Center in the (GSMNP) and to determine the potential effect of proposed construction on archeological resources.

The field work consisted of mechanically stripping plowzone and fill dirt in an effort to document any undisturbed and potentially significant archaeological deposits. One cultural feature, that as part of the Oconaluftee Archaeological District should be treated as significant, was identified during the study and could be affected during construction activities. The feature is a large, circular (ca. 1.75 m diameter) anomaly filled with very dark loamy soil and rock. The feature has the appearance of the remnants of an old manhole that was abandoned prior to use and filled with rubble upon abandonment.

All efforts to be taken to preserve the single cultural feature during construction. Should it be necessary to remove the feature, it would be a moderate adverse effect. Mitigation would be done by the Park through removal of the feature through hand excavation to identify the context and content of the feature by shedding light on its age, associated materials, and possibly the specific activity or activities it might represent.

Historic Structures

Under this alternative, the current Oconaluftee Visitor Center would be used exclusively as a Park administrative facility, while a new facility would provide for other uses currently housed there. This would reduce the level of use and associated damage to the structure, while continued use would ensure continued maintenance. Removal of the functions of public restrooms and the Great Smoky Mountains Association Bookstore would allow conversion of those spaces to uses more consistent with the original building intent. The related new construction will be sited and designed to be compatible with the historic materials, features, size, scale and proportion, and massing of the Oconaluftee Visitor Center to protect the integrity of the property. Under this alternative, the Oconaluftee Visitor Center structure itself would experience minor beneficial impact, while the addition of a new facility would have no impact on historic structures.

Cultural Landscapes

Under this alternative, the landscape surrounding the current Oconaluftee Visitor Center would be altered to accommodate new visitor facilities, reconfigured Parking and vehicular entrance and egress. Other cultural landscape features including the retaining walls, terraces, drinking water fountains (stone) and the Parking area to the front of the current Oconaluftee Visitor Center would be unaltered.

Any landscape alterations would be designed to be compatible with the historic materials, features, size, scale and proportion, and massing of site to protect the integrity of Newfound Gap Road as a cultural landscape as well as landscape features associated with the current Oconaluftee Visitor Center. This alternative would have a minor adverse impact to the cultural landscape organization elements and character-defining features of the overall site.

Ethnographic Resources

No ethnographic resources would be affected by this alternative.

Museum Collection.

No museum objects would be affected by this alternative.

Cumulative Impacts: Under this alternative there would be no cumulative impacts.

Conclusion: Taken as a whole, cultural resources would not be adversely impacted by this alternative.

Impairment: Cultural resources will not be impaired under this alternative.

4.6 Determination of IMPAIRMENT TO PARK RESOURCES

Management Policies 2006 (NPS 2006) require analysis of potential effects to determine whether or not actions would impair national Park resources or values. The fundamental purpose of the national Park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve Park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect Park resources and values. These laws give the National Park Service the management discretion to allow impacts on Park resources and values when necessary and appropriate to fulfill the purposes of a Park, so long as the impact does not constitute impairment of the affected resources and values.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of Park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact to any Park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park or; key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park; or identified as a goal in the Park's General Management plan or other relevant NPS planning documents as being of significance.

The intent of this project: is to improve inadequate visitor service facilities at the Oconaluftee visitor center. The project will also meet the present and anticipated future needs of the visiting public and to facilitate the telling the story of the Park's significance.

Impairment Determination: The results presented above lead the NPS to determine that the preferred alternative of the proposed building of a visitor center would not result in any impairment to Great Smoky Mountains National Park resource values. This action would improve the enjoyment of Park resource values as defined by the Organic Act.

4.7 Summary of Impacts / Alternatives

The following chart summarizes and compares the likely results of implementing the No Action Alternative and the Preferred Alternative as they relate to the environment.

Figure 6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative A - No Action Alternative	Alternative B - Build Action
Natural Resources (Botanical, vegetation, wetlands, open fields, Vascular plants, Bryophytes, Lichens.)	<u>Short-term:</u> No effect. <u>Long-term:</u> Minor adverse impact. <u>Cumulative:</u> Slight negative impact.	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> Beneficial impact <u>Cumulative:</u> No effect
Terrestrial and aquatic wildlife resources (Mammals, birds, reptiles, amphibians, butterflies, moths, flying insects, soil invertebrates, other taxa.)	<u>Short-term:</u> No effect <u>Long-term:</u> Minor adverse impact. <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> Beneficial impact <u>Cumulative:</u> No effect.
Threatened and Endangered Species	<u>Short-term:</u> No effect <u>Long-term:</u> Minor adverse impact. <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Water Resources	<u>Short-term:</u> No effect <u>Long-term:</u> Minor adverse impact. <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Geology	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Soils	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Air Quality	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Meteorology	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Noise	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Archeological Resources	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> Minor adverse impact <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> No effect
Historic Structures	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Negligible adverse impact <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> Minor beneficial effect <u>Cumulative:</u> No effect
Cultural Landscape	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Negligible adverse impact <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> No effect
Ethnographic Resources	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
Museum Collection	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> Beneficial impact <u>Cumulative:</u> No effect

5.0 CONSULTATION AND COORDINATION

5.1 Public Involvement and Coordination

5.1.1 Agency Involvement

In accordance with the National Environmental Policy Act (NEPA) and Section 5.5 of Director's Order #12, coordination and public involvement in the planning of the proposed visitor center improvements was initiated early in the process. It is the Park's objective to work with the: visiting public, tribal, state, federal, and local governments, and private organizations to address any concerns they may have.

An agency scoping letter was mailed in May of 2007 to agencies listed below. Agency response letters are included in Appendix (Agencies marked with an asterisk provided a response):

- Advisory Council of Historic Preservation*
- Appalachian National Scenic Trail
- Blue Ridge Parkway
- Cherokee Nation of Oklahoma
- Eastern Band of Cherokee Indians
- Eastern Federal Lands Highway Division
- Keetowah Band*
- National Park Service, Southeast Regional Office
- North Carolina Department of Administration (State Clearing House)*
- North Carolina State Historic Preservation Office*
- Tennessee Valley Authority
- US Army Corps of Engineers
- US Environmental Protection Agency
- US Fish and Wildlife Service*
- US Forest Service

Two agencies responded to the letter without any objection to the project. They were the: United Keetowah Band of Cherokee Indians in Oklahoma in a letter dated June 1, 2007. Also the Advisory Council on Historic Preservation in a letter dated June 19, 2007. Two other agencies required project information as it became available. They were the U.S. Fish and Wildlife Service in a letter dated July 12, 2007; and the North Carolina State Historic Preservation office in a letter dated July 27, 2007.

5.1.2 Public Involvement

Public involvement started early in the process. The first outreach to the public was a mailing of 190 postcards on June 29, 2007, to various government, conservation and interest groups. The postcards gave a brief description of the project and invited people to attend a public scoping meeting.

The Park issued a press release on July 5, 2007. The press released was heard on local radio stations and news articles were printed in the following newspapers: Smoky Mountain Times, Knoxville News Sentinel and the Maryville Daily Times.

On July 8, posters were installed at the location of the proposed visitor facilities. The posters described the archeological investigation were to occur July 9-13, as well as invited people to attend the public meeting on July 19, 2007. The posters remained on the site until early September.

A public meeting was held on the evening of July 19, 2007, at the existing Oconaluftee Visitor Center. The meeting was conducted by representatives from the National Park Service. Information included display boards showing the project study area, the purpose and need of the project and topics to be addressed in the Environmental Assessment. Approximately 30 to 40 people attended the public meeting, of which 17 wrote their name on the sign in sheet. A total of four comment sheets were received that evening as well. Attendees included members of the press, representatives from Congressman Schuler's office, and the general public. Eight Park staff were available to answer questions from the public. From the conversations Park staff had with people, the majority favored improving visitor facilities. A project information sheet was made available to attendees that provided information for each proposed alternative as well as how to submit comments and view the project on the internet. Some of the comments received at the public meeting include:

- "Larger center very crowded."
- "Need larger bathrooms closer to Parking lot."
- "At least try to not use multitudes of wood perhaps more stone."
- "Leave things as they are."
- "Enhance the Native American history of the area and provide visitors with more information about the Park."

Four comments were submitted at the July 19, 2007 public meeting. The project graphics and description were placed on Planning, Environmental and Public Comment (PEPC), the NPS planning website (<http://Parkplanning.nps.gov/>). Three comments came through PEPC.

Listed below are individuals and organizations that were sent postcards sent on June 29, 2007. It is anticipated that they have either interest in the study area and or proposed buildings.

A Walk in the Woods
Appalachian Trail Conservancy
Audubon Society
Blue Ridge National Heritage Area
Blue Ridge Trail Riders
Carolina Mountain Club
Cherokee Chamber of Commerce
Cherokee Forest Voices
Citizens for the Economic Future of Swain County
Discover Life in America
Foothills Land Conservancy
Foundation for Global Sustainability
Friends of the Smokies
Gatlinburg Gateway Foundation
Great Smoky Mountains Association
Great Smoky Mountains Institute At Tremont
Haywood County Chamber of Commerce
Haywood County Tourism Development

Honorable Bob Corker, U.S. Senate
Honorable Bobby Cagle, Jr., Mayor, City of Robbinsville
Honorable David Davis, U.S. Congress
Honorable Elizabeth Dole, U.S. Senate
Honorable Heath Schuler, U.S. Congress
Honorable Henry Foy, Mayor, City of Waynesville
Honorable Joe Sam Queen, N.C. Senate
Honorable John J. Duncan, U.S. Congress
Honorable John Snow, N.C. Senate
Honorable Lamar Alexander, U.S. Senate
Honorable Lincoln Davis, U.S. Congress
Honorable Mike Easley, Governor of North Carolina
Honorable Phil Bredesen, Governor of Tennessee
Honorable R. Phillip Haire, N.C. House of Representatives
Honorable Raymond Rapp, N.C. House of Representatives
Honorable Richard Burr, U.S. Senate
Honorable Roger McElroy, Mayor, Town of Maggie Valley
Honorable T.L. Jones, Mayor, Town of Bryson City
Honorable Zach Wamp, U.S. Congress
Ijams Nature Center
Izaak Walton League
League of Women Voters
Maggie Valley Chamber of Commerce
Metropolitan Planning Commission
Mr. Kevin King, County Manager, Swain County
Mr. Larry Ammons, Chairman, Haywood County
Mr. Michell Hicks, Principal Chief, Eastern Band of Cherokee Indians
Ms. Sandra Smith, County Manager, Graham County
Ms. Susan Whitaker, Commissioner, N.C. Dept. of Tourism
National Parks Conservation Association
North Carolina Park, Parkways, and Forest Development Council
Pittman Center Planning Commission
Sierra Club
Smoky Mountains Trail Riders
Smoky Mountains Hiking Club
Southern Alliance for Clean Energy
Southern Appalachian Forest Coalition
Southern Appalachian Man and Biosphere
Southern Environmental Law Center
Southwings
Swain County Chamber of Commerce
Tennessee Citizens for Wilderness Planning
Tennessee Clan Water Network
Tennessee Environmental Council
Tennessee Park Commission
The Wilderness Society
Trout Unlimited
Western North Carolina Alliance
World Wildlife Fund

6.0 RELATIONSHIP TO OTHER PLANNING EFFORTS

The 1982 General Management Plan (GMP) for the Great Smoky Mountains National Park serves as a guide for meeting the objectives established for the Park and as a public statement of the National Park Service management intentions. The proposed action is compliant with the 1982 General Management Plan.

Between the years of 1986 and 1990, the National Park Service (NPS) wrote a Development Concept Plan/Environment Assessment (DCP/EA) for a new visitor center in the Oconaluftee area of the Park. At that time, the DCP/EA explored two alternatives for constructing a new visitor center. Concept A, was to expand the existing visitor center. Concept B was to construct a new visitor center at the Park boundary with Cherokee. The preferred alternative was Concept A. Due to lack of funding the project was not implemented.

7.0 COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS

National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) requires consideration of the environmental effects of proposed federal actions. NEPA also ensures that environmental information is available to public officials and members of the public before decisions are made and before actions are taken. This Environmental Assessment provides a description of the build alternative, as well as for the no action alternative, and summarizes potential environmental consequences of the alternatives. A public review period will be held.

Endangered Species Act of 1973

Section 7 of the Endangered Species Act directs all federal agencies to further the purposes of the act. Federal agencies are required to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. The NPS has coordinated with the U.S. Fish and Wildlife Service on this project and they have responded with a letter with the following recommendations: Survey for endangered species, protect wetland/stream and install erosion control. (see appendix B).

Clean Water Act

The proposed actions will have no effects on water quality. No construction activities or activities that would result in release of sediment or contaminants to the environment are planned under either alternative proposed and thus would not need to comply with the requirements of sections 401 and 404 of the Clean Water Act and other applicable federal, state and local regulations.

Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands)

Executive Orders 11988 and 11990 direct federal agencies to enhance floodplain and wetlands value, to avoid development in flood plains and wetlands whenever possible, and to minimize adverse impacts if development cannot be avoided. The preferred alternative, building a visitor center, does not fall within the regulatory Floodplain (100 year). In addition, while there is a small wetland on site, all impacts to wetlands have been averted through design considerations

and therefore a Statement of Findings is not required for Floodplains or Wetlands under Executive Orders 11988 and 11990.

Section 106 of the National Historic Preservation Act of 1966, as Amended

Section 106 of the National Historic Preservation Act requires that an assessment be conducted of any project, activity, or program that could change the character or use of properties listed in or eligible for listing in the National Register of Historic Places. None of the alternatives would have an impact on any properties listed in or determined eligible for listing in the National Register of Historic Places according to the Cultural Resource Coordinator.

Archeological Resources Protection Act of 1979

The Archeological Resources Protection Act requires that archeological resources be identified and that proper permits be obtained prior to excavating any resources. The NPS has conducted the necessary survey work to ensure that no archeological resources will be impacted by this project.

Comprehensive Environmental Response, Compensation and Liability Act

The Comprehensive Environmental Response, Compensation and Liability Act established regulations regarding the assessment, remediation, and liability for remediation of hazardous substances that have caused contamination. No areas within the Park have been designated as a National Priority List site, nor found to contain any hazardous materials.

Clean Air Act

The Clean Air Act establishes regulations regarding disclosure, control, and abatement of air pollutants. The alteration in use of the areas associated with the project is not expected to have a significant impact on regional air quality. Therefore, the alternatives are compatible with the requirements of the Clean Air Act.

Toxic Substances Control Act

The Toxic Substances Control Act establishes regulations regarding proper management and disposal of polychlorinated biphenyls (PCBs) and other hazardous chemicals. The proposed project will not involve the use of any hazardous materials.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act establishes regulations regarding the generation, transportation, storage, treatment, and disposal of hazardous waste. No hazardous materials are to be used as part of the proposed project.

Americans with Disabilities Act of 1990

The Americans with Disabilities Act (ADA) establishes federal guidelines that define requirements for disabled access to Parking facilities, pathways, and buildings. The ADA is applicable because development is planned in association with design and building of the

proposed visitor center. Design will fully address accessibility and provide facilities that are ADA compliant.

8.0 LIST OF PREPARERS

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9.0 BIBLIOGRAPHY

Bernard, E.C., 2002a, Survey of Soil Invertebrates, Yellow Face Mountain Site, University of Tennessee, Knoxville, TN, August 31.

Bernard, E.C., 2002b, Comprehensive Survey of Soil Invertebrates, Summary Report, University of Tennessee, Knoxville, TN, January 31.

Bernard, E.C., 2002c, Professor, University of Tennessee, Knoxville, TN, personal communication to J. Robertson, Natural Resources Specialist, Wetland and Natural Resource Consultants, Inc., Waynesville, NC, Additional Data on Soil Invertebrates (Pauropoda, Diplopoda, Spiders) of the Ravensford Site, July 31.

Bernard, E.C., 2002d, Professor, University of Tennessee, Knoxville, TN, personal communication to J. Robertson, Natural Resources Specialist, Wetland and Natural Resource Consultants, Inc., Waynesville, NC, Additional Data on Soil Invertebrates (Symphyla) of the Ravensford Site, August 2.

Brown, D.W., 2001, U.S. Department of the Interior, National Park Service, Asheville, NC, personal communication (memorandum) to the Regional Director, Southeast Region, List of Potential Lands for BIA Exchange with GSMNP, August 21.

Caldwell, R.S., and J.E. Copeland, 2001, Report of Findings Concerning Mollusk Studies of the Ravensford Site, Lincoln Memorial University, Harrogate, TN, November 17.

DePriest, P.T., 2001, Lichen Inventory for Proposed Big Cove Land Exchange, Great Smoky Mountains National Park, North Carolina, Department of Systematic Biology – Botany, National Museum of Natural History, Smithsonian Institution, Washington, DC, December 27.

Dourson, D., 2001, “Land Snails of the Great Smoky Mountains National Park,” ATBI Quarterly Newsletter, Winter, accessed at www.discoverlife.org/pa/pu/.

DeFoe, D., 2000, Bird Survey of Ravensford, Biologist, Great Smoky Mountains National Park, Gatlinburg, TN, June 21.

DOC (U.S. Department of Commerce), 2002, U.S. Census Bureau, “American FactFinder, United States Census 2000,” accessed at <http://factfinder.census.gov/servlet/BasicFactsServlet> in December.

DOI (U.S. Department of the Interior), 1982a, Final Environmental Impact Statement for the General Management Plan, Great Smoky Mountains National Park/North Carolina – Tennessee, National Park Service, Denver Service Center, CO.

DOI (U.S. Department of the Interior), 1982b, General Management Plan, Great Smoky Mountains National Park/North Carolina – Tennessee, National Park Service, Denver Service Center, CO.

Domingue, E.A., 2002, Avian Survey of the Yellowface Tract, Proposed Land Exchange Site, Jackson County, North Carolina, Outdoor Adventures, Sevierville, TN, August 4.

EBCI (Eastern Band of Cherokee Indians), 2001a, The Cherokee Code of the Eastern Band of the Cherokee Nation, Chapter 113E, Water Quality Code for Surface Waters, Subsection 113E–8, Designation of Uses, codified through Res. No. 20, enacted Oct. 10, 2001 (Supplement No. 2), accessed at http://www.municode.com/Resources/online_codes.asp on March 21, 2002.

EBCI (Eastern Band of Cherokee Indians), 2002, “Cherokee, The Official Homepage of the Cherokee Indian Reservation,” accessed at <http://www.cherokee-nc.com/main.htm> on March 29.

Environmental Laboratory, 1987, Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

EPA (U.S. Environmental Protection Agency), 1974, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, EPA-550/9-74-004, Washington, DC, March.

EPA (U.S. Environmental Protection Agency), 2002a, Air Data – Monitor Values Report, North Carolina Air Quality Monitors for Carbon Monoxide, Particulate Matter, Nitrogen Dioxide, Sulfur Dioxide, Ozone, and Lead – 2001, accessed at <http://oaspub.epa.gov/airsdata/>.

EPA (U.S. Environmental Protection Agency), 2002b, Air Data – Monitor Values Report, Tennessee Air Quality Monitors for Carbon Monoxide, Particulate Matter, Nitrogen Dioxide, Sulfur Dioxide, Ozone, and Lead – 2001, accessed at <http://oaspub.epa.gov/airsdata/>.

ESC (Employment Security Commission of North Carolina), 2003, “Civilian Labor Force Estimates,” Swain County, Jackson County, and North Carolina, accessed at <http://eslmi98.esc.state.nc.us/ThematicLAUS/clfasp/CLFSAAYResults.asp> in January.

Environment and Natural Resources, Raleigh, NC, accessed at <http://ils.unc.edu/Parkproject/nhp/info.htm>.

FEMA (Federal Emergency Management Agency), 1989a, Flood Insurance Rate Map, Swain County, North Carolina (Unincorporated Areas), Panel 134 of 275, Community-Panel no. 370227 0134C, National Flood Insurance Program, December 15.

FEMA (Federal Emergency Management Agency), 1989b, Flood Insurance Study, Swain County, North Carolina (Unincorporated Areas), Community Number 370227, December 15.

Gale Research Company, 1985, Climates of the States, vol. 2, 3rd ed., National Oceanic and Atmospheric Administration, Detroit, MI.

Gramann, James. "FY 2005 Economic Benefits of National Parks." Study. Texas A&M University, 2006

GSMNHA (Great Smoky Mountains Natural History Association), 2000, Geology, Great Smoky Mountains National Park, in cooperation with the U.S. Geological Survey and the National Park Service.

GSMNHA (Great Smoky Mountains Natural History Association), 2002, "Great Smoky Mountains National Park, Amphibia and Reptilia Checklist," Gatlinburg, TN, accessed at http://www.discoverlife.org/nh/cl/GSMNP/amphibia_GSMNP.html on May 16

Horvath, Elizabeth

Archeological Investigations Conducted for the Oconaluftee Water and Sewer Lines, Great Smoky Mountains National Park, Swain County, North Carolina. Southeast Archeological Center. National Park Service. Tallahassee, Florida.

JCCC (Jackson County Chamber of Commerce and Travel & Tourism Authority), 2002, "Jackson County Chamber of Commerce: Our Towns," accessed at <http://www.nc-mountains.com/Towns.html> on March 27.

Keel, B.C., P.A. Webb, T. Benyshek, and D.S. Leigh, 2002, Archeological Overview of the Ravensford Tract, Oconaluftee Archeological District, Great Smoky Mountains National Park, National Park Service Southeast Archeological Center, Tallahassee, FL, TRC Garrow Associates, Durham, NC, and University of Georgia Department of Geography, Athens GA, February.

Kreusch, Erik S.

Report of Archeological Investigations for the Installation of an Electric Line to Service the Oconaluftee Variable Messaging Sign, RECA 03-29. Great Smoky Mountains National Park Cultural Resource Office. On File GSMNP Archives.

Lawon, Pete. "A New Visitor Center's Time Has Come." Smoky Mountains Times 12 July 2007

Linzey, D.W., 1995, Mammals of Great Smoky Mountains National Park, The McDonald and Woodward Publishing Company, Blacksburg, VA.

Linzey, D.W., 2002, Significant Mammal Findings in the Ravensford Area, Great Smoky Mountains National Park, Wytheville Community College, Wytheville, VA, January 22.

Linzey, D., C. Brecht, and J. Pickering, 2002, Mammals (of the Great Smoky Mountains National Park), Wytheville Community College Wytheville, VA, and University of Georgia, Athens, GA, accessed at <http://www.discoverlife.org/nh/tx/Vertebrata/Mammalia/>.

McMaster, W.M., and E.F. Hubbard, 1970, Water Resources of the Great Smoky Mountains National Park, Tennessee and North Carolina, Hydrologic Investigations Atlas HA-420, U.S. Department of the Interior, U.S. Geological Survey, Washington, DC.

Morse, J.C., R.C. Harrington, and D.R. Jones, 2002, Aquatic Insects of Raven Fork, Great Smoky Mountains National Park, Swain County, North Carolina, USA, Clemson University, Clemson, SC, January 24.

NCGS (North Carolina Geological Survey), 1985, Geologic Map of North Carolina, Department of Natural Resources and Community Development, Division of Land Resources.

NPS (National Park Service), 2001b, Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-Making, Washington, DC, January 8.

NCDENR (North Carolina Department of Environment and Natural Resources), 2002a, North Carolina Administrative Code, Title 15A – Environment and Natural Resources, Subchapter 2B – Surface Water Standards: Monitoring, Section .0300, Assignment of Stream Classifications, accessed at <http://h2o.enr.state.nc.us/admin/rules> (page updated March 5, 2002) on April 11.

NCDENR (North Carolina Department Of Environment And Natural Resources), 2002b, North Carolina Administrative Code, Title 15A – Environment And Natural Resources, Subchapter 2B – Surface Water Standards: Monitoring, Section .0200, Classifications and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina, accessed at <http://h2o.enr.state.nc.us/admin/rules> (page updated March 5, 2002) on April 11.

NCNHP (North Carolina Natural Heritage Program), 2002a, “Element Occurrence Search Page” (Swain and Jackson Counties), North Carolina Department of Environment and Natural Resources, Raleigh, NC, accessed at <http://www.ncsParks.net/nhp/county.html>.

NCNHP (North Carolina Natural Heritage Program), 2001, “Natural Heritage Program List of the Rare Animal Species of North Carolina, 2001,” North Carolina Department of Environment and Natural Resources, Raleigh, NC, accessed at <http://ils.unc.edu/Parkproject/nhp/info.htm>.

NCNHP (North Carolina Natural Heritage Program), 2002a, “Element Occurrence Search Page” (Swain and Jackson Counties), North Carolina Department of Environment and Natural Resources, Raleigh, NC, accessed at <http://www.ncsParks.net/nhp/county.html> on August 22.

NCNHP (North Carolina Natural Heritage Program), 2002b, “Natural Heritage Program List of the Rare Plants of North Carolina,” North Carolina Department of Environment and Natural Resources, Raleigh, NC, accessed at <http://ils.unc.edu/Parkproject/nhp/info.htm>.

NPS (National Park Service), 2002g, “Wild and Scenic Rivers – By State, River Mileage Classifications for Components of the National Wild & Scenic Rivers System January 2000,” accessed at <http://www.nps.gov/rivers/wildriverslist.html> (page updated January 14, 2002) on April 13.

NCDC (National Climactic Data Center), 2001a, Local Climatological Data – Annual Summary with Comparative Data – Asheville, North Carolina.

NCDC (National Climactic Data Center), 2001b, Local Climatological Data – Annual Summary with Comparative Data – Knoxville, Tennessee.

NCDC (National Climactic Data Center), 2002, “NCDC Storm Events - Tennessee,” accessed at <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>.

NCDENR (North Carolina Department of Environment and Natural Resources), 1999, North Carolina Administrative Code, “Ambient Air Quality Standards,” Section 2D.0400.

NCDENR (North Carolina Department of Environment and Natural Resources), 2003, Air Quality Subsystem Quick Look Report, (North Carolina PM2.5 2001 data), accessed at <http://daq.state.nc.us/monitor/data>.

NC DOT (North Carolina Department of Transportation), 2000, 2000 Annual Average Daily Traffic, Swain County, North Carolina (map).

NOAA (National Oceanic and Atmospheric Administration), 2001, Comparative Climatic Data for the United States through 2000, National Climactic Data Center, Asheville, NC.

NPS (National Park Service), 2000d, “List of High Ozone in Park Units – 2000 Season,” accessed at <http://www2.nature.nps.gov/ard/gas/exceed2000.htm>.

NPS, USDOJ. 2001c. Director’s Order 47: Sound Preservation and Noise Management. Washington, DC

NPS (National Park Service), 2000e, “List of High Ozone in Park Units – 2001 Season,” accessed at <http://www2.nature.nps.gov/ard/gas/exceed2001.htm>.

NPS (National Park Service), 2000f, “List of High Ozone in Park Units – 2002 Season,” accessed at <http://www2.nature.nps.gov/ard/gas/exceed.htm>.

NPS (National Park Service), 2002f, Clearing the Air at Great Smoky Mountains National Park, accessed at <http://www2.nature.nps.gov/ard/Parks/GSMNP/litctac.htm>.

NPS (National Park Service), 2000g, Director’s Order #47: Soundscape Preservation and Noise Management, accessed at <http://www.nps.gov/policy/>.

NPS (National Park Service), 2001a, Management Policies 2001, U.S. Department of the Interior, National Park Service, accessed at <http://data2.itc.nps.gov/npspolicy/index.cfm> in December 2002.

ORNL (Oak Ridge National Laboratory), 1999, Foothills Parkway Section 8B Final Environmental Report, Vol. 1, prepared for the National Park Service, Denver Federal Center and The Great Smoky Mountains National Park, Oak Ridge, TN, July.

Reeves, W., 2002, Great Smoky Mountains Ravens Ford Collection Site Final Report (Primitive Invertebrates), Department of Entomology, Clemson University, Clemson, SC, January.

- Reid, J.W., 2001, Copepod Crustaceans from the Lower Oconaluftee River Valley, Great Smoky Mountains National Park, Virginia Museum of Natural History, Martinsville, VA, June.
- Robinson, G.R., Jr., F.G. Lesure, J.I. Marlowe, II, N.K. Foley, and S.H. Clark, 1992, Bedrock Geology and Mineral Resources of the Knoxville 1° x 2° Quadrangle, Tennessee, North Carolina, and South Carolina, U.S. Geological Survey Bulletin 1979, U.S. Department of the Interior.
- Rock, J., 2002, Vascular Plant Survey of the Ravensford Tract, Great Smoky Mountains National Park, Twin Creeks Natural Resources Center, Gatlinburg, TN, February 20.
- Schafale, M.P., and A.S. Weakley, 1990, Classification of the Natural Communities of North Carolina, Third Approximation, North Carolina Natural Heritage Program, Raleigh, NC.
- Simbeck, D.J., 1990, Distribution of the Fishes of the Great Smoky Mountains National Park, Master of Science Thesis, The University of Tennessee, Knoxville, TN, December.
- Smith, D.K., and P.G. Davison, 2001, Bryophyte Inventory of Big Cove, Great Smoky Mountains National Park, North Carolina, University of Tennessee, Knoxville, TN, and the University of Northern Alabama, Florence, AL, November 1.
- Schneible, Gerhard. "Park Seeks To Expand Oconaluftee Visitor Center." The Daily Times 10 July 2007
- Scholtens, B., 2002, Summary Report on Pyralidae (micro-moths) of the Ravensford Area, College of Charleston, Charleston, SC, July.
- Sullivan, J.B., and L.C. Deutschmann, 2002, Lepidopteran Studies: The Ravensford Site, April through October 2001, Beaufort, NC, February 10.
- TRC (TRC Garrow Associates, Inc.), 2002, Final Report, Cultural and Historical Resource Investigations of the Ravensford Land Exchange Tract, Great Smoky Mountains National Park, Swain County, North Carolina, volume I, Project No. 29137, TRC Garrow Associates, Inc., Durham, NC, June.
- USDA NRCS (United States Department of Agriculture, Natural Resources Conservation Service), 1997, Soil Survey of Jackson County, North Carolina, June.
- USDA NRCS (United States Department of Agriculture, Natural Resources Conservation Service), 2000, "Important Farmlands of North Carolina," June, accessed at <http://www.nc.nrcs.usda.gov/ResConditions&Trends/soils.htm> on March 25, 2002.
- USDOT (U.S. Department of Transportation), 1995, Highway Traffic Noise Analysis and Abatement Policy and Guidance, Washington, DC, June.
- USFWS (U.S. Fish and Wildlife Service), 1979, Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS-79/31, Washington, DC, December.
- USFWS (U.S. Fish and Wildlife Service), 1995a, National Wetlands Inventory, Smokemont, N.C., Region IV, Atlanta, GA.

USGS (United States Geological Survey), 1997, Ground Water Atlas of the United States, Segment 11, Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia, Hydrologic Investigations Atlas 730-L, U.S. Department of the Interior, U.S. Geological Survey, Reston, VA, accessed at <http://capp.water.usgs.gov/gwa/gwa.html>.

USFWS (U.S. Fish and Wildlife Service), 1995a, National Wetlands Inventory, Smokemont, N.C., Region IV, Atlanta, GA.

U.S. Fish and Wildlife Service, 2007.

Wagner, D., 2000, "Moth & Butterfly Bio-Blitz Yields Amazing Results," ATBI Quarterly Newsletter, Fall, accessed at www.discoverlife.org/pa/pu/.

Wetzel, M.J., 2001, Aquatic Oligochaeta (Annelida, Clitellata) of the Ravensford Wetland Areas in Great Smoky Mountains National Park, North Carolina, Illinois Natural History Survey, Center for Biodiversity, Champaign, IL, September 24.

Whitehead, Paul N. "Park Official Seek New Facility." Knoxville News Sentinel 9 July 2007.

Wiegmann, B.M., 2002, Ravensford Site – Flying Insect Survey, Report of Findings, North Carolina State University, Raleigh, NC, February 1.

Wilson, Clay. "Public Gives Input On Park Visitor Center Plan." Smoky Mountain Times 26 July 2007.

WNRC and Nutter & Associates (Wetland and Natural Resource Consultants, Inc. and Nutter & Associates, Inc.), 2002, Hydrology/Wetland Report for the Great Smoky Mountains National Park Ravensford Site, Swain County, North Carolina, Waynesville, NC, August.

Wild, Kenneth S., Jr. and Tina Bassett
Report on the Archeological Investigations Conducted for the Oconaluftee River Trail, Great Smoky Mountains National Park. Southeast Archeological Center. Tallahassee, Florida.