



Looking Back - Moving Forward

Cades Cove

Opportunities Plan

Cades Cove in Great Smoky Mountains National Park

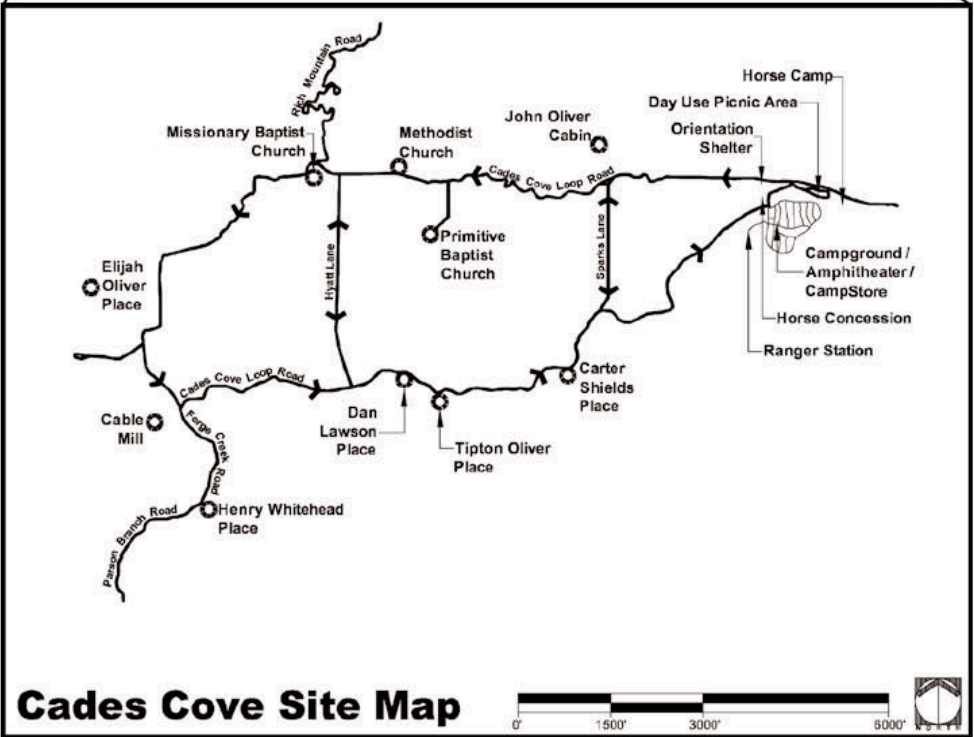
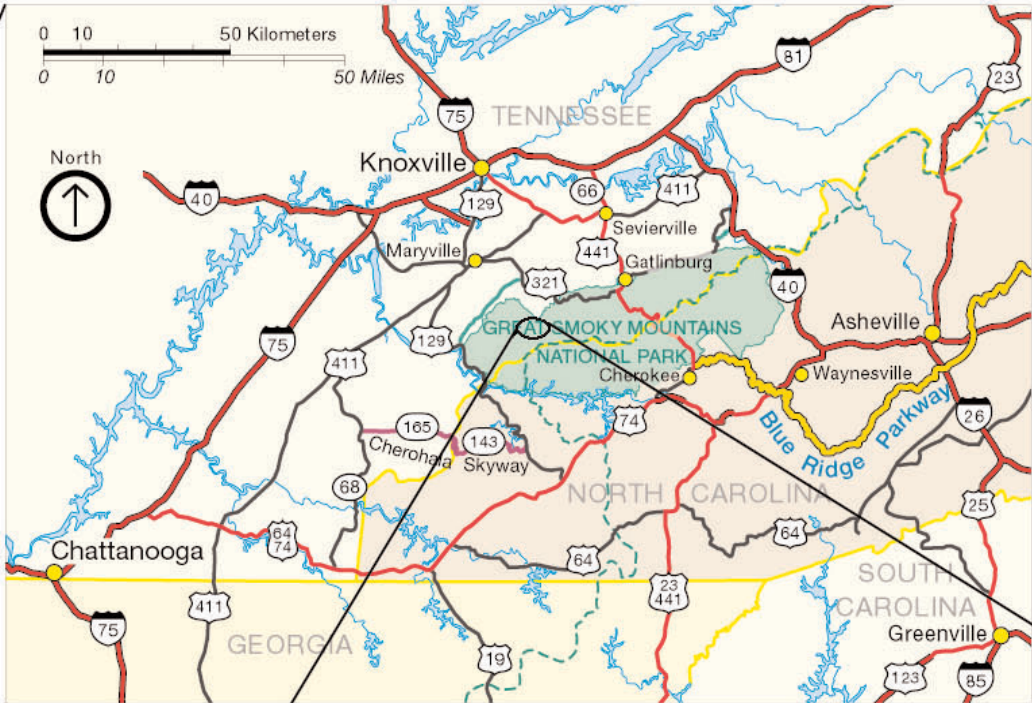
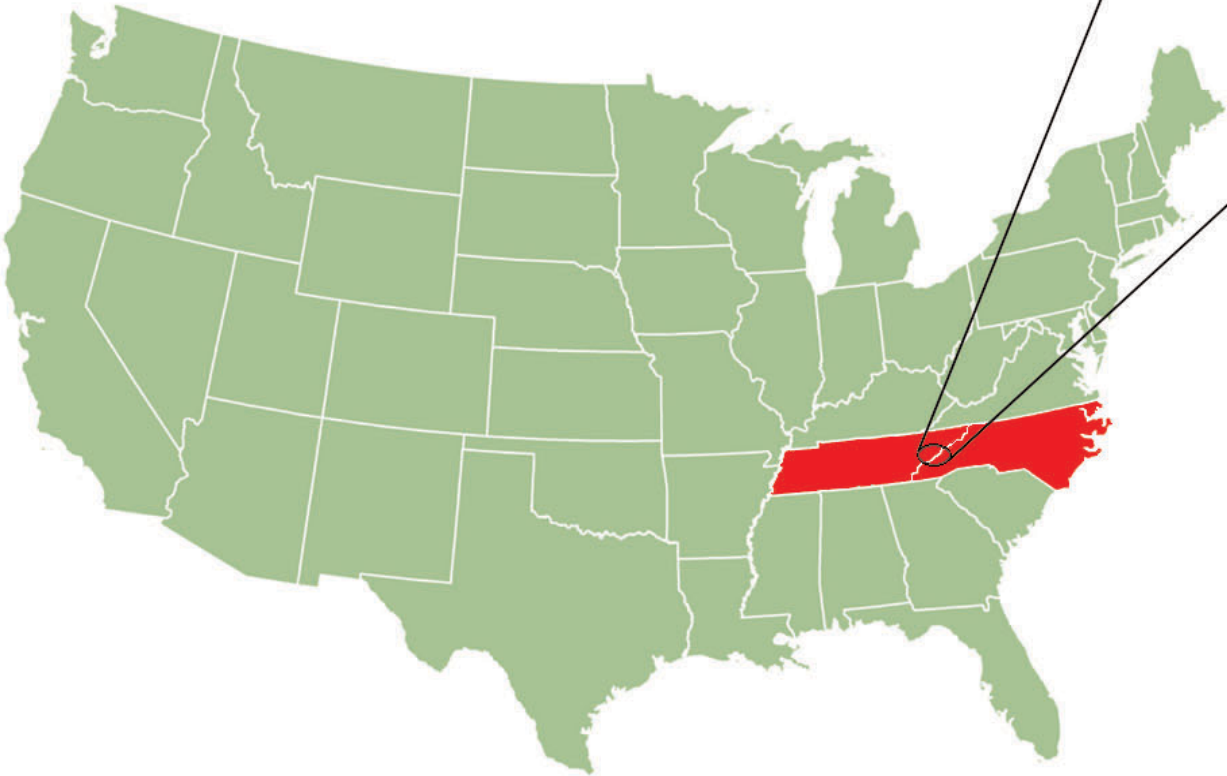
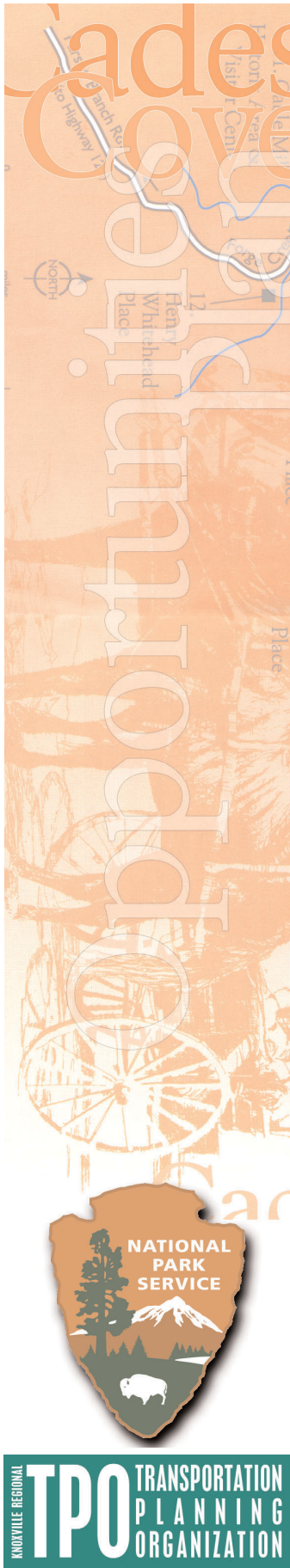


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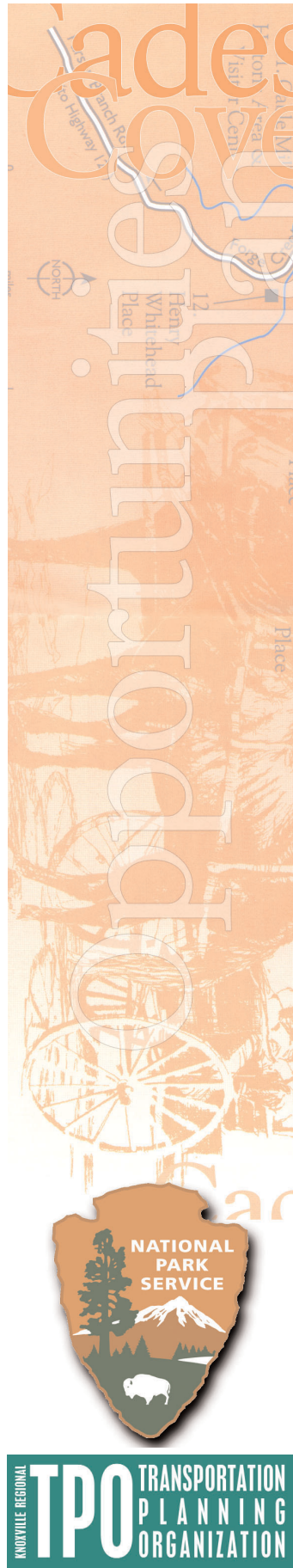
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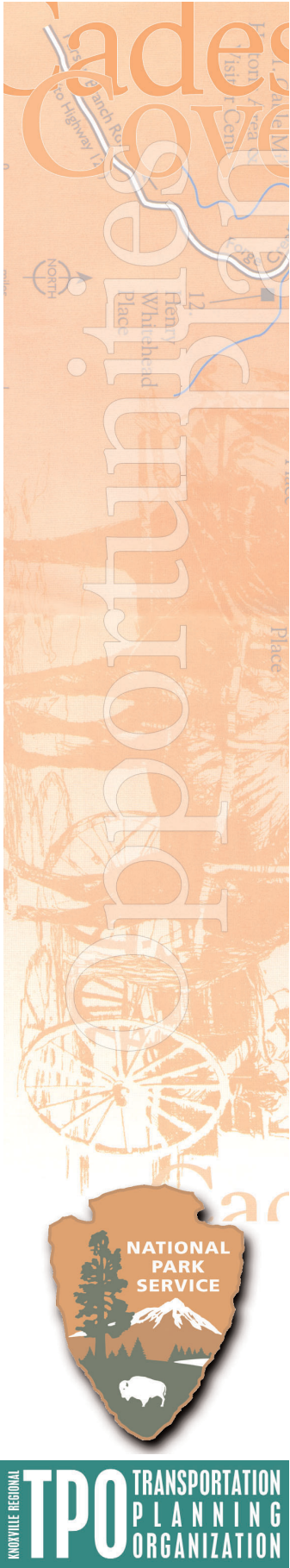
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Introduction

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Topics Discussed

- Introduction to Cades Cove
- The Plan
- Park Guidance
- Enabling Legislation
- General Management Plan
- Existing Conditions
- Opportunities and Constraints Mapping



Introduction

Within Great Smoky Mountains National Park lies a treasured setting known as Cades Cove. This relatively flat valley, surrounded by the mountains and ridges of the Appalachians, has a long history and plays a unique role within the Park. Once a hunting ground for Natives Americans, Euro-Americans from Tennessee, Virginia and North Carolina first came to Cades Cove in 1821. These settlers began clearing land and building homes, churches, schools and gristmills.

The level valley and rich, fertile soils made the cultivation of corn a primary agricultural activity of Cove families. The fields, forests and streams provided food sources such as bear, venison, quail, rabbit and fish. The farmers quickly learned the advantages of taking their cattle to the “grassy balds” (peaks well below the timberline that are “bald” except for grass and shrubs) on the mountaintops overlooking the Cove, opening up land in the valley for further cultivation.

Throughout the early 1800's, the population of Cades Cove boomed, increasing to 685 at one point. However, the hardships of subsistence farming and the lure of Western lands drew the population down to just 275 by 1860. New residents came, increasing the population to 708 in 1900.

Beginning in 1927, the states of Tennessee and North Carolina began purchasing land in the Cove and donating it to the federal government for use as a park. These efforts led to the official establishment of Great Smoky Mountains National Park in 1934. Through lease agreements with the National Park Service (NPS), people continued to reside in Cades Cove for many years after the official establishment of the Park. The last permanent resident passed away in 1999.

In some cases, the National Park Service chose to preserve the structures that had been occupied and used by Cades Cove residents. Today, the collection of late 19th century settlement architecture, along with the Cove’s abundant and easily visible wildlife attract millions of people to the Cove each year. The Cove was listed on the National Register of Historic



Cades Cove is a unique and treasured part of Great Smoky Mountains National Park

Places in 1977, in recognition of its collection of 30 structures at 10 sites (the largest such collection in the United States), which represents the early settlement and vernacular architecture of the Smoky Mountain region.

Many descendants of the Cove’s early inhabitants return several times a year to visit their ancestral home sites and family cemeteries. The Cove also receives visitors from across the United States (mostly from the Midwest and Southeast) as well as from overseas.ⁱ

Touring the Loop Road in a private vehicle is the primary recreational activity of most Cove visitors. Today, during peak periods, nearly 4,000 vehicles enter the Cove each day to travel the 11-mile Loop

Road that follows the contours of the Cove’s mountain valley terrain.

The primary vehicle access to the Cove is provided via Laurel Creek Road, a two-lane road that begins at the Wye intersection at Route 73 south of Townsend, Tennessee. Two lightly traveled gravel roads (Rich Mountain Road and Forge Creek/Parson Branch Road) serve as exit-only routes from the Cove.

In addition to automobile touring, camping, picnicking, horseback riding, hayrides, bicycling and hiking are popular activities in the Park. The Cove’s campground, picnic area, campstore, amphitheater, Park maintenance facilities and bicycle and horse concessions are located south of Laurel Creek Road and east of the entrance to the Loop Road in the “developed” area of the Cove. Concentrating these facilities outside the Loop Road has helped to

ⁱ Great Smoky Mountains National Park Cades Cove Visitor Use Study by Operations Research Consulting Associates, July 1999

maintain the Cove’s historic, natural and cultural integrity.

At the entrance to the Loop Road, an open-air visitor contact station provides limited orientation information. The shelter is often un-staffed, and is underutilized as a visitor contact point. It lacks adequate size to host in-depth interpretation or exhibits, has no restroom facilities, and is not clearly identifiable as an orientation point.

As visitors depart the shelter and travel the Loop Road, they can view historic homesites and churches, many of which are open to the public. A series of formal pull-offs (parking areas) and scenic vistas give visitors the opportunity to view wildlife and panoramic scenery.



A combination of natural beauty and historic and cultural resources attract thousands of vehicles per day to Cades Cove

On the western end of the Cove is the Cable Mill area. This area includes an original gristmill and bookstore as well as several historic buildings that were moved from other locations in the Park. This location provides the only restrooms on the Loop Road. As visitors leave the Cable Mill area to complete the Loop Road tour, they find additional settlement sites, cemeteries, a nature trail and other pull-off areas near scenic vistas.

The Plan

The success of the Cove as a visitor destination also carries a cost. Already high levels of visitation are expected to rise even higher in coming years, making it more difficult to provide visitors with a high quality experience. Maintaining and protecting

natural and cultural resources with current staff and infrastructure while managing this level of visitation has become a challenge.

The Cades Cove Development Concept and Transportation Management Plan (referred to in the planning process as the “Cades Cove Opportunities Plan” and in this document as the “Opportunities Plan”) was undertaken as a means to develop a long-range management vision to protect the Cove’s natural and cultural resources and ensure that visitors will continue to have a quality experience.

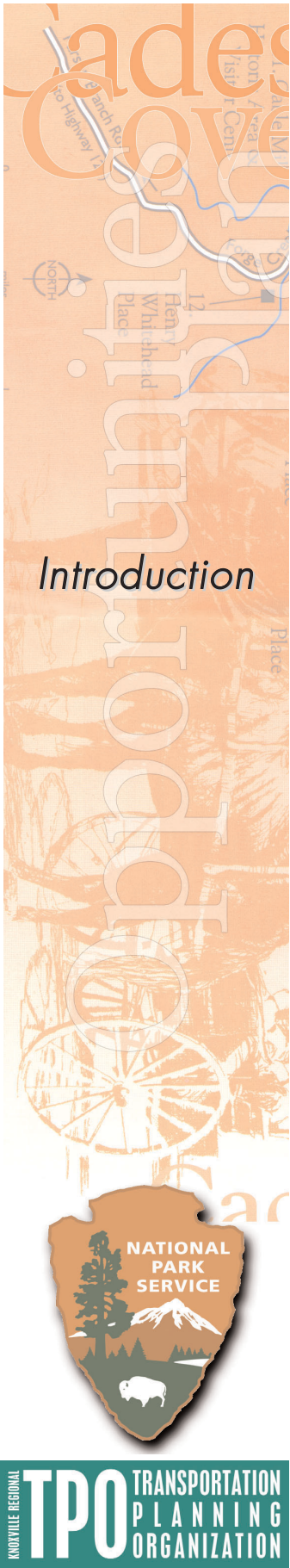
This long-range vision will provide a program of management strategies to improve visitor experience, preserve and restore resources, provide adequate facilities and infrastructure capacity, and increase the level of information/education that visitors receive. Moreover, this plan provides a holistic approach to the development of alternatives that address the issues within the Cove.

The National Park Service (NPS) and the Knoxville Regional Transportation Planning Organization (TPO) worked together in lead roles to complete this project. A consulting team provided expertise and guidance throughout the process, in addition to developing public meeting materials, presentations, maps and project resource assessment materials.

The public also played an important role in the development of the Opportunities Plan. Early in the process, it became clear that the issues and concerns affecting the Cove went beyond mere traffic congestion. The development of a holistic management plan for the Cove, required the project team to review and document the Cove’s resources, visitation patterns and education/interpretive programs as well as the enabling legislation for the entire Park.

As information on issues and concerns was identified, it was categorized into a set of themes that guided the development of the Opportunities Plan:

Resources: The natural and cultural resources of Cades Cove are being damaged by increased visitation. These impacts are seen in erosion from





Roads in Cades Cove are in need of maintenance

automobile. This trend is reflected in Cades Cove, where visitation has again increased since 2001.

As visitation has increased, facilities and staffing levels for resource education, law enforcement and maintenance have not kept pace. Many visitor and operational facilities are at capacity or no longer meet standards. Park staffing recently has dipped below 1982 levels. These factors have made it difficult for rangers and VIPs (Volunteers in the Park) to provide adequate visitor contact services.

Previous Studies

The consultant team reviewed several previous studies to understand the breadth of issues facing Cades Cove. The key findings from these studies are summarized below:

Access Issues at Cades Cove

This report summarized the findings of a NPS-sponsored planning charrette in May 1998 held in conjunction with the Great Smoky Mountains Alliance of Communities.

The report documents the important values of the Cove and identifies several issues that threaten these values. These issues include:

- **Visitor use:** Recent years have seen increasing visitation, traffic congestion, competing visitor use needs, increased orientation and visitor

service needs, and the demand for visitor recreational facilities.

- **The condition of park roads:** Visitation and vehicular traffic have left many roads in the Cove in need of repair. However, the constant levels of visitation have made it difficult to make these repairs without interfering with visitor experience.
- **Cultural Resources:** Increased visitor use has highlighted the need to adopt a preservation philosophy, protect historic roads, and mitigate use impacts.
- **Natural Resources:** High levels of visitation have damaged natural resources in the Cove and in gateway communities.

The report also identifies three possible strategies to control visitor access to the Cove. They include:

- **Information systems** to inform visitors of conditions in the Cove through signage, Intelligent Transportation Systems (ITS), radio broadcasts, and the internet.
- **Alternative access concepts**, including the use of shuttle buses, a rail system, or other modes.
- **Access management strategies**, including a reservation system, gate control and a use fee during peak periods.

The report details what would need to be done to implement each strategy and explores the possible implications for natural and cultural resources, the experience of visitors, and impacts on the local community. The report notes that much more detailed study is needed to address these issues, but it represents a first attempt to identify issues as well as ideas to improve the Cove.

Cades Cove Visitor Use Study

This report details the visitor survey and other data collected for the NPS during the summer and fall of 1998 by the ORCA consulting firm. The survey was conducted over three days in August and two days in October 1998 to assess visitors' impressions. A total of 118 surveys were completed in August and 192 in October.

The study also includes parked vehicle counts at major destinations, daily and hourly traffic counts, and visitor counts at major Cove destinations. Some notable conclusions include:

- None of the major public areas were very crowded during the study period, suggesting that congestion in the Cove is primarily limited to the Loop Road.
- Approximately 69 percent of visitors said "traffic" was the element of their visit that they least enjoyed. Other problems included crowds, rain, the lack of wildlife and a lack of restrooms.
- Visitor counts indicated that, at any one time, 60 to 65 percent of visitors were in a vehicle. Only one-third of visitors were touring on foot, after having stopped their vehicle at an attraction.
- The average estimated length of stay was 3.0 hours in August and 3.1 hours in October.
- Visitors were tolerant of the traffic, even if they did not like it.
- Approximately 30 percent supported a reservation system; 40 percent supported a shuttle system; and 18 percent supported a shuttle from Townsend.
- Based on data collected as part of this limited survey of Cades Cove visitors, the report states that "a transportation system cannot be financially justified as a means of improving the visitors' experience to Cades Cove. The only possible reason that a system could be justified are: a) resource protection (if the existing



High visitation in Cades Cove causes frequent traffic backups



Technology Assessment Report

The report describes several different types of transportation technologies and the potential impacts of each technology on the Cove, including impacts on:

- Thirteen transportation modes were identified as warranting screening. Four (shuttle, electric shuttle, PRT and gondola), were eliminated due to fatal flaws such as capacity or design constraints. The remaining nine were evaluated against the following criteria:

- **Operational issues:** Vehicle design characteristics and associated impacts.
- **Infrastructure requirements:** Vehicles, maintenance facilities, parking requirements.

Not having to drive would allow visitors to concentrate entirely on the Cove's attractions and activities and not on traffic. They also would be able to travel from attraction to attraction without having to find a parking space at each.

The high level of visitor demand will present challenges for any transportation system. The technology also must be able to meet future demand and be flexible enough to work well when demand is high.

Another consideration is the effect of off-season demand on the technology. The technology most appropriate for the peak periods in summer and fall may not be best in off-peak periods when demand is substantially lower.

The selected transportation technology must be designed to minimize harmful impacts on the Cove's environmental, natural and cultural resources and provide environmental benefits to the maximum extent feasible.

The infrastructure required for different types of technologies varies widely. Not only does each technology have operational requirements (roadways, tracks, etc.), but each technology also has notable requirements for operational support and maintenance facilities.

A staging area would be needed for any of the transit technologies. Visitors would park their vehicle and board the transit system in this area.

The costs associated with the transportation technologies vary. And these costs must be considered, not only for the technology itself, but for support facilities as well.

If a staging area is located in a gateway community, the impact of the technology will have a direct effect on it. Thus, traffic and parking impacts of a staging area must be considered, as well as associated effects on the community.

None of the technologies alone will be able to solve all of the Cove's problems. Therefore, a mix of technologies will be needed to improve visitor experience in the Cove.

Developing a long-range management vision through the Opportunities Plan process required that traffic congestion, parking problems, resource, infrastructure and other issues in the Cove be examined. This work was done in a series of reports summarizing visitation rates, visitor experience, natural resources, cultural resources and buildings and infrastructure.

This section summarizes the key findings from five existing conditions reports that were compiled as a primer to the development of alternatives. Each report referenced in this section is included in the appendices.

Visitor and Transportation Forecast Report

| See Appendix B for full report |

The Visitation and Transportation Forecast Report documents existing vehicle and visitor patterns, volumes and trends, and forecasts visitation data for the years 2007, 2012 and 2022.

Traffic in Cades Cove has increased steadily through the years. This increase has led to congestion and longer travel times along the Loop Road. Not surprisingly, the most congested traffic periods are the peak visitor periods in summer and fall. During peak periods (every day during the summer and on fall weekends), visitor volumes are heavy from late morning until the late afternoon.

An analysis of traffic counts, as well as the results of a 1998 traffic survey, indicate that motorists take about three hours to travel the entire Loop Road.

This data also suggested that the number of vehicles involved in traffic backups increased dramatically when more than 800 vehicles were on the Loop Road. To minimize the potential for backups forming, the number of vehicles entering the Cove would have to be maintained at 3,000 to 3,500 per day, or about 330 per hour.

Driver behavior also contributes to traffic congestion. The excellent views of wildlife available along the Loop Road often prompt motorists to stop in the road instead of pulling over to park. Vehicles that get stuck behind a stopped vehicle can get blocked into these “wildlife jams” that contribute to congested driving conditions.

Key Traffic Trends

- Cades Cove attracted 643,400 vehicles in 2002.
- Daily traffic volumes vary by season and by day.
- During July 2000, weekend daily traffic averaged about 4,100 vehicles, while the fall peak period averaged about 4,450 vehicles daily on weekends.
- Daily weekday vehicle counts were approximately 3,100 at the summer peak but were much lower in October.

- The one-lane road is inadequate for such high traffic volumes when frequent wildlife sightings, bears in particular, cause motorists to stop without pulling over.

Vehicle Mix along the Loop Road (1998) ii

- 95.0% automobiles
- 0.7% recreation vehicles (RVs)
- 0.3% motorcycles
- 4.0% bicycles

Visitation and Traffic Growth

Future volumes of visitors and vehicles were projected using historic growth rates. Seventeen years of historic data were used for this analysis. The methodology allowed data from each month to be analyzed individually to determine when typical use levels support making changes in management to reduce congestion.

According to these data, visitation is highest in July and October and lowest in January, February, March, November and December.

Transportation Issues and Concerns

Roadways within national parks generally function differently than the roadways outside of these parks. Roads in national parks are designed with great sensitivity to the landscape and often are routed to avoid damaging resources. Consequently, many park roads do not provide the shortest route between points “A” and “B.”

The Loop Road follows this pattern. It was established partially by the settlement community and partially by the National Park Service and winds along the edge of the wooded mountainside, crossing several small streams along the way.

The road and its shoulders (where they exist) are narrow and are not consistent with current NPS road design standards. A series of pull-off areas have been paved for visitor parking at historic structures and scenic vistas.

ii Operations Research Consulting Associates, 1998.

The road is not designed to safely accommodate the multiple modes of transportation and vehicle types — pedestrians, bicycles, cars, motor homes and buses — that use the road today. This shared use forces vehicles to slow down as they pass other vehicles, bicyclists and pedestrians and contributes to traffic congestion. Other transportation management issues are outlined below:

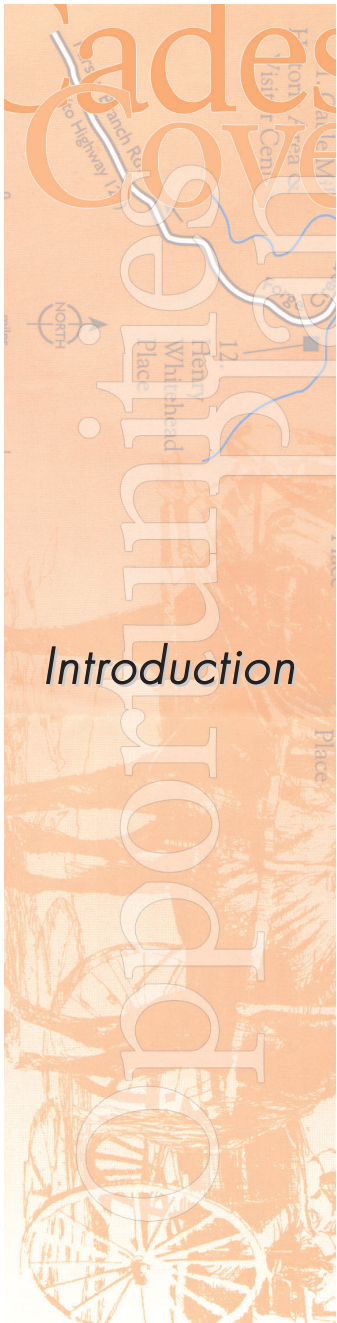
- Vehicles that pull over along the Loop Road often remain at least partially in the roadway and require slow, careful navigation by motorists passing from behind.
- Vehicles parked alongside the road damage the vegetation.
- There are four intersections at the termini of each of the cut-off lanes. Through traffic on the Loop Road does not stop, but it may have to slow for vehicles turning into or out of these lanes.
- Many motorists drive more slowly than in normal traffic conditions to scan for wildlife.
- Many motorists drive slowly to see the views along the road. Slowing down to check for parking or to view the structures also decreases the average travel speed.

Parking


Most paved parking lots operate with excess capacity during peak periods. Some parking areas, however, do not have adequate spaces. These




Wildlife (such as the bear in the tree in this photograph) are a major visitor attraction, and also a source of traffic congestion.



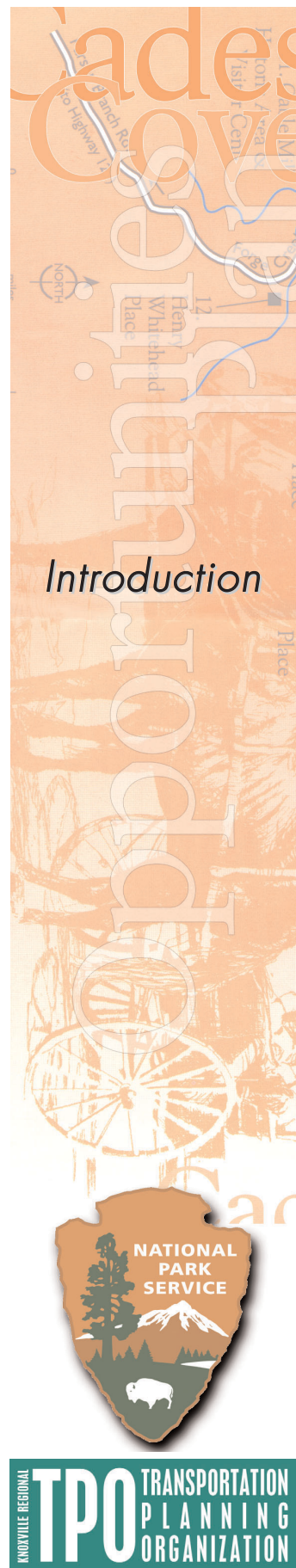
Introduction



NATIONAL PARK SERVICE



TPO TRANSPORTATION PLANNING ORGANIZATION



include the lots at Abrams Falls and Elijah Oliver Place, the campstore parking area and John Oliver Place. When these lots are full, motorists tend to park in adjacent areas along the road or in areas not designated for parking.

Another parking issue exists during the time when the Loop Road is open only to bicycles and pedestrians. The parking lot at the beginning of the Loop Road is usually full when the road is closed to motorized vehicles on Wednesdays and Saturdays from sunrise to 10 a.m. in May through September. Visitors who arrive with their bicycles or walk along the Loop Road during these times often park in the picnic area, campstore, horse concession area, at the entrance parking lot and along the edge of Laurel Creek Road, reducing the number of available spaces in these areas. These areas also become congested when vehicles queue at the entrance to the Loop Road, a line that can extend 400 feet while motorists are waiting for the bicycle/pedestrian-only hours to end. The lack of a defined overflow parking lot contributes to this problem.

Visitor Experience Report

| See Appendix C for full report |

Cades Cove is a part of the Great Smoky Mountains National Park and, as such, the development of plans and programs related to visitation and education must be consistent with those of the Park as a whole. Therefore, this Visitor Experience report recognizes the NPS's guidance through legislation, General Management Plan policy and the Park's Comprehensive Resource Education Plan among other guidance a basis for the visitor experience recommendations in Cades Cove.

Interpretive Themes for Cades Cove

The existing interpretive themes for the Great Smoky Mountains National Park are applicable within Cades Cove. These overall Park themes are the focus of both resource education and interpretive programs that NPS staff and volunteers develop and implement. In Cades Cove, these overall Park themes are augmented by the

resources, character and history that are specific to the Cove.

Diversity and Abundance: Great Smoky Mountains National Park is a sanctuary for a remarkably diverse array of native plants and animals. In contrast to most of the Eastern United States, much of the Park is a relatively undisturbed ecosystem that includes species with endemic gene pools that provide opportunities for scientific research and education. In this way, these natural systems can be considered a barometer of change for the local, regional, national and global environments.

From the open Cove floor to Gregory Bald (elevation 4949 feet), the Cove includes many native species and habitats. The Cove contains an array of springs, seeps, ponds, falls, sinkholes and wetlands associated with the karst geology that forms the Cove floor. Several plant and animal species are supported by the diversity in Cades Cove.

Continuum of Human Activity: Through an array of preserved historic structures, cultural landscapes, cemeteries, archeological sites, museum objects and archival documents, Great Smoky Mountains National Park offers a unique opportunity to appreciate the panorama of Southern Appalachian history and culture. The Park is also the keeper of such intangible resources as folklore, literature and music.

These treasures help to tell the stories of Native American and Euro-American peoples and enable us to connect one generation to another. Human influences on the land now within the Park have changed greatly over time. Before Euro-American settlement, Native Americans used the mountains for subsistence. Later settlers cleared land for farms and to graze livestock. In the early 20th Century, timber companies logged about three-quarters of the land. By the time the Park was authorized in the 1920s, preservation and recreation values had superseded such exploitation and development. The changing land ethic embodied in the history of Great Smoky Mountains National Park is central to understanding not only local and regional history but also the growth of a national environmental awareness.

The evolving patterns of settlement are evident in Cades Cove. Early in the Park management of Cades Cove, decisions were made to preserve the best examples of 'pioneer log construction' and to preserve the appealing nature of the Cades Cove open areas or meadows. Visitors have often stated that the cabins, churches, barns, cemeteries and open areas are important to their experience of Cades Cove. These features are highly visible remnants of the settlement period and early Park management.

Refuge of Scenic Beauty: The Park's 800 square miles of mountain ridges, deep-cleft valleys, unspoiled streams, endemic life forms and unique cultural components provide visitors with profound visual and sensory pleasure. The Park provides opportunities for increasingly urbanized people to experience sanctuary, wilderness, solitude and respite from the impacts of a modern technological society.

Cades Cove is a refuge of scenic beauty, offering some of the best scenic qualities to be found in Great Smoky Mountains National Park in one location. Mountain ridges rise above open meadows, log cabins nestle in amongst towering trees, and wildlife abounds in the Cove. Visitors have commented that they visit Cades Cove because it is a place to commune with nature and seek peace and solitude. Others say that traffic, congestion and pollution from automobiles detract from their experience. These comments demonstrate how, during non-peak visitation periods, Cades Cove provides visitors with a strong visual experience. In contrast, during peak periods, public comments indicate that this quality experience has diminished as visitation levels have steadily increased.

Primary Theme

No one interpretive theme necessarily has precedence over the other interpretive themes in Cades Cove. However, the NPS decided early on to retain evidence of the Cove's cultural history and today Cades Cove is managed as a historic district, in line with its listing in the National Register of Historic Places. As a historic district, interpretation of the cultural heritage of the Cove is important to

the visitor experience. The elements of this historic district include the historic structures along the Loop Road, archeological resources and landscape characteristics that evoke both pre-Park and Early NPS development periods. Treatment of these cultural elements must be balanced with the treatment of the Cove’s equally important natural resources. This management balance needs to portray the historic scene as accurately as is practical.

Existing Conditions

The work of resource education and interpretation fall upon a relatively small number of NPS staff and volunteers. The Cove’s high visitation levels and limited budget for resource education have combined to overwhelm the staff responsible for resource education. In fact, data indicate that only 1 of every 100 visitors to Cades Cove has any direct contact with resource education staff.

Visitor Contact Facilities

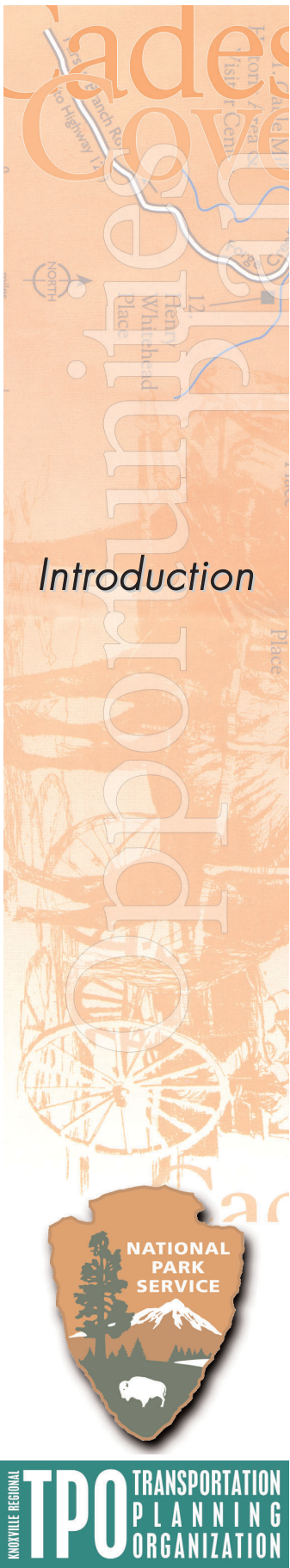
The primary focus for resource education and interpretation in Cades Cove is at the visitor contact points along the Loop Road. Table 1 outlines the functions and effectiveness of each of these contact areas. The existing “roving ranger” programs attempt to reach visitors at several places: the open air visitor contact shelter at the beginning of the Loop Road, in the Cable Mill area, at the Ranger Station in the developed portion of the Cove near the campground and in the amphitheater and on ‘ranger led’ hay rides.

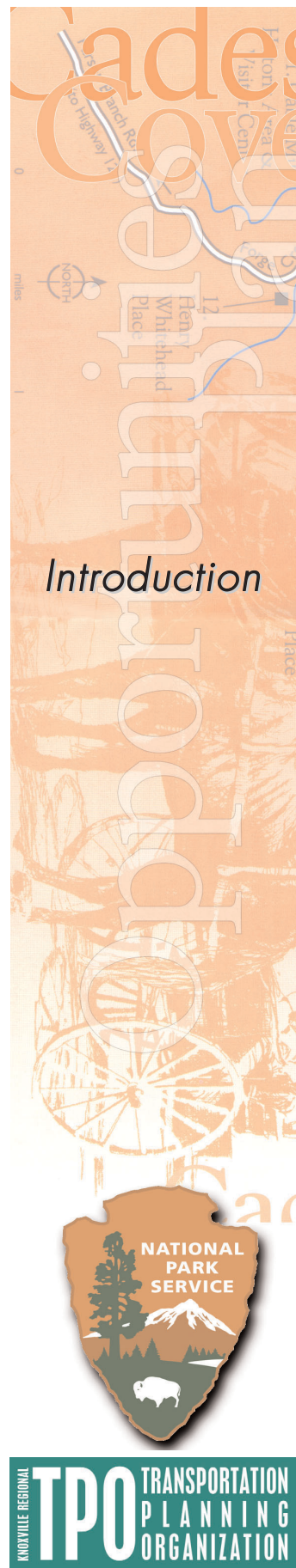
Visitor Experience

Public Input: Each stage of the Opportunities Plan process provided for extensive public input. The comments received were grouped into categories including those of visitation, resources, resource education and facilities/safety.

The number of comments related to resource education in Cades Cove was relatively small in comparison to the total comments received. Nevertheless, the comments received offered valuable suggestions including suggesting that visitor education should play a role in resolving

Table 1: Visitor Contact Facilities		
Contact Area	Use	Existing Conditions
Open Air Visitor Contact Shelter	<ul style="list-style-type: none">• Four interpretive displays on Cades Cove• Auto Tour booklet• Information provided by volunteers during peak visitation periods	Staff Rating: Facility is inadequate to meet visitor demand <ul style="list-style-type: none">• Visitors often do not see the facility due to its small size and location. The size and type of facility make it inappropriate for permanent staff or placing interpretive material at the shelter.• There are no restrooms.
Cades Cove Historic Structures and Cemetery	<ul style="list-style-type: none">• 31 historic structures and several cemeteries that are open to visitors• Includes cabins, farm buildings, houses, and churches	Staff Rating: Structures and cemeteries are considered “very good” opportunities for interpretation and education, but there is a need for additional interpretive services, such as: <ul style="list-style-type: none">• Ranger/VIP talks• Demonstrations• School programs• Publications
Cable Mill Area	<ul style="list-style-type: none">• Resource education• Demonstrations• Sales• Exhibits• Interpretive exhibit/outdoor museum• Bookstore with museum exhibits• Other historic structures	Staff Rating: Inadequate facility to meet visitor demand. The gristmill is considered an excellent opportunity for visitors to interact with staff. <ul style="list-style-type: none">• Staffed by Great Smoky Mountains Association employees, NPS volunteers, and occasionally with National Park resource education staff.• The level of staffing is inadequate to provide interpretation and education to Cades Cove visitors.• Operating gristmill is in need of continuous maintenance and repair.• This area provides limited visitor information and orientation services.
Ranger Station	<ul style="list-style-type: none">• Coordination of law enforcement activity within the Cades Cove District	Staff Rating: Not Available <ul style="list-style-type: none">• The primary function of this facility is not to provide information. However, the facility is highly visible, and visitors stop at or are directed to the ranger station for information.• Campground information and bulletin board provide limited visitor information.
Amphitheater/ Campfire Circles	<ul style="list-style-type: none">• Campground programs	Staff Rating: Excellent programs <ul style="list-style-type: none">• The facilities are in need of repair or replacement.• Programs are presented by National Park Rangers in the evenings.
Horse Concession Area	<ul style="list-style-type: none">• Rent horses (guided trail ride)• Horse and carriage guided tour• Hay ride	Staff Rating: Not Available <ul style="list-style-type: none">• The primary function of this facility is not to provide information.• Provides an alternate means for the visitor to experience Cades Cove.• Minimal concession provided. Interpretation is available on the trail ride, carriage ride and hay ride. Some hay rides incorporate a “ranger led” program.
Camp Store	<ul style="list-style-type: none">• Concession operated facility, providing supplies, snacks, and drinks to campers and visitors. Includes bicycle rental.	Staff Rating: Not Available <ul style="list-style-type: none">• The primary function of this facility is not to provide information.• Bicycle rental provides an alternate means for the visitor to experience Cades Cove.• During peak visitation periods the store area may be overwhelmed, making it difficult to provide information to visitors.
Townsend Visitor Center	<ul style="list-style-type: none">• Visitor Information• Sales• Bookstore	Staff Rating: Not Available <ul style="list-style-type: none">• Provides information about the Park and items for sale to the public.• Operated by the Townsend Chamber of Commerce.• Located outside the park on State Route 321 in Townsend.• Bookstore operated by GRSMA staff.
Note: Staff ratings taken from the GRSM Comprehensive Resource Education Plan and are not available for all contact areas.		





Introduction

congestion or traffic issues. Visitors need to know what they are seeing in Cades Cove and be educated about the rules for touring the Loop Road before beginning their tour of the Cove. The role of the visitor contact station in visitor education was also discussed in public meetings and comment forms. It was noted that the facility was too small and that many visitors drive by not even knowing it is there.

Other comments related to visitor experience or visitation topics reflected that users prefer to view the Cove at their own pace. Under current conditions that pace is often dictated by the slowest driver in the line of vehicles ahead of them.

Visitor Experience and the Alternatives: Each of the draft action alternatives developed for the Opportunities Plan would affect how visitors experience the Cove and present opportunities for visitor education and interpretive exhibits. Each of the alternatives allow for visitors to continue to enjoy the wide range of visitor activities currently enjoyed in the Cove such as viewing wildlife, visiting historic structures, hiking and enjoying a solitary moment. The Cove would continue to offer a range of visitor experience opportunities ranging from areas where contact with other visitors can be expected to areas where there are opportunities for solitude.

Each action alternative offers opportunities for improving visitor contact and information at the start of the Loop Road. Differences between the action alternatives can be found in the scale of visitor contact proposed and the services provided there.

Each action alternative would bring some change to how visitors access the Cove during peak season ranging from providing more travel and traffic information to the visitor to providing transit. Visitors prefer to experience the Cove at their own pace and these access options will have implications to this ability. As noted, currently the pace visitors experience the Cove at is often dictated by other visitors. This would not change under the no action alternative or under Alternative One. Under Alternative Two (communication), more traffic and travel information would be available to the visitor. This would allow them to decide if conditions in the

Cove met their desired pace. Under Alternative Three (reservation) access, to the Cove would be managed to more evenly distribute visitation throughout the days of the week and hours of the day and within the capacity of the Cove to accommodate this visitation. Through this management, travel conditions would be more predictable. Both Alternatives Four and Five include transit during the peak season (voluntary in Alternative Four and mandatory in Alternative Five). The frequency of service and ability to get on and off at multiple stops along the Loop Road would make it possible for visitors to see the Cove at their desired pace.

This visitor experience report only begins to describe the desired visitor experience for Cades Cove. Capacity studies are used to describe desired range of visitor experiences and resource conditions. As this planning process progresses a range of visitor experiences and resource conditions and management zoning to accommodate this range will be more fully described.

In all cases, opportunities exist for improving the visitor experience. These include increasing the number of people involved in resource education, improving the interpretive materials around the Cove, managing motor vehicle congestion, providing exhibit materials at the visitor centers and providing additional educational programs. The implementation of any of the alternatives will require continued maintenance of existing programs and facilities and the development of new partnerships to achieve these project goals.

Natural Resources Conditions Report

| See Appendix D full report |

The Natural Resources Conditions Report summarizes the Cove's existing resources, assesses the effects that visitors have on the Cove's natural resources and identifies the impacts that merit further study. The report also includes findings from the resource management plans for Great Smoky Mountains National Park as well as the Draft Land Management Plan for Cades Cove, prepared in December 1999. The following sections summarize the condition of natural resources in the Cove:

Geology

In geologic terms, Cades Cove is a "fenster," or window in the rocks. It is a valley where the older rock has eroded away, exposing younger limestone dolomite rock. In addition to the unique limestone foundation of the Cove, there are other geologic features including sink holes and rock outcroppings.

Vegetation

Fescue grass, a non-native plant introduced in the 1950's, dominates the approximately 2,500 acres of open meadow in the Cove. Other areas have native grasses, canebrakes and tree stands (wood lots). Forested mountains surround the Cove and support a diverse backdrop of vegetation.

Water Resources

Thirty-four streams and tributaries enter the Cove from the surrounding mountains and crisscross the valley floor. The primary water course is Abrams Creek. In the years since large-scale agricultural uses and cattle grazing were removed from the Cove, NPS resource staff has noted that the Cove's water quality has improved.

Concerns related to other sources of water pollution, including sediment and other pollutants being washed into streams from eroded roadways, trails (horse and hiking), and walking paths within Cades Cove, have remained.

Wildlife

One of the most popular visitor activities within Cades Cove is wildlife viewing. The Cove provides panoramic vistas of the open meadows, habitat for black bear, deer, a variety of birds, small mammals and aquatic life.

Threatened and Endangered Species

Cades Cove is also home to 25 species of plants, animals, and other organisms that are rated by the National Park Service as either critically imperiled or imperiled within the Park. "Critically imperiled" indicates that five or fewer of the species are known

to exist in the Park. “Imperiled” indicates that six to 20 of the species occur within the Park.

Air Quality

The Park is one of 49 national parks designated Class I by Congress. This designation, authorized under the Clean Air Act, means that the highest standards of air quality apply. The NPS has been monitoring air quality in the Park since 1980, using its own monitoring station. Data collected during this period indicates that forests, soils, surface waters and visibility in the Smoky Mountains have been adversely affected by air pollution.

The national standard for ozone was exceeded in the Park on 52 days in 1999, 31 days in 2000, 31 days in 2001 and 43 days in 2002. Moreover, the Park’s ozone levels are among the highest in the East. The Park has the highest sulfur and nitrogen levels of any monitored national park, generating acid rain, acid clouds and nitrogen overload. The Park also is subject to air pollution from both stationary and non-point (vehicular) sources that have been affecting the Park for many years.

The counties in Tennessee and North Carolina in which the Park is located are classified as “attainment” for all the National Ambient Air Quality Standards (NAAQS). However, this area will be designated as non-attainment in April 2004. To postpone this designation, seven counties in East Tennessee, including Knox, Blount and Sevier, have signed an Early Action Compact that commits them to implement a variety of strategies to reduce ozone-causing emissions. Also, Haywood County, North Carolina, which includes some of the Park, is part of the Asheville Early Action Compact area, where similar actions are being undertaken. The Park is participating in these processes.

Exotic Vegetation

The primary exotic vegetation in the Cove is the Tall Fescue (*Festuca pratensis*) and *Sericea Lespedeza* (*Lespedeza cuneata*). Exotic plant species threaten both natural and cultural resources because exotic plants provide little nutrition for wildlife. Tall Fescue often contains the toxic fungi ergotamine and ergovaline that cause illness and lower

conception rates in domestic and wild animals. These exotic grasses, planted in the 1950's and 60's, are also not consistent with the historic period. The NPS is striving to reduce or eliminate these exotic species because of their invasive and aggressive tendencies. However, non-invasive species that contribute to the historic scene should be preserved. An example of this are the daffodils associated with the homesites in Cades Cove.

Field Management

The current field management direction seeks to find a means of transitioning from the large-scale agricultural uses that came to dominate the Cove during the 1950's, 60's and 70's to sustainable management practices that are more consistent with the settlement era of the Cove.ⁱⁱⁱ

The Opportunities Plan incorporates the recommendations and strategies outlined in the Draft Land Management Plan for Cades Cove. This plan proposed several management actions aimed at maintaining open pastures and meadows, as shown in Figure 2, and promoting a diversity of plant and animal habitat. The draft plan’s recommendations for land management include:

- Establishing guidelines, accountability and directives for the management of historic fields and landscapes in the Cades Cove Cultural District.
- Establishing a connection between the settlement era (1850's to 1920's) and the need to improve the natural habitat of the Cove.
- Managing the historic landscape with methods that do not detract from the historic scene and are in concert with wildlife and other resources.
- Managing portions of the Cove fields in smaller (10-12 acre) components.
- Establishing prescriptions for maintaining fields at an acceptable historic, aesthetic and environmental level.
- Experimenting with cost-effective alternatives for vista maintenance and management

ⁱⁱⁱ This pattern of management is not as static it might appear. The fields that are mowed and burned change from year to year. The NPS handles mowing and burning, and grazing is done through horse concession, by NPS horses and hay leases.

- Reestablishing the historic appearance of fencerows, field edges, field sizes and streams where environmentally permissible and in concert with visitor observation areas.
- Using historic farm roads, driveways and historic traces for pedestrian and bicycle access into the center of the Cove.
- Restoring wetlands and canebrakes in strategic locations.
- Allowing visitors to use the fields for hiking, picnicking and other pedestrian travel that is not historically distracting or environmentally damaging.
- Encouraging wildlife observation as a key visitor pastime while connecting it to the history of the Park.
- Removing invasive, exotic (non-native) plant and animal species and restoring native plant communities where possible without compromising cultural landscape objectives.

Cultural Resources Report

| See Appendix E for full report |

The Cultural Resource Conditions Report was developed as a tool to help understand the Cades Cove landscape. It provided preliminary guidance in determining which cultural resources were sensitive. One key point the report makes is that almost all of the Cove’s landscape is sensitive to change.

The report’s findings were used in the development of alternatives. One recommendation of the Cultural Resources Conditions Report was to complete a Cultural Landscape Report (CLR). The CLR, completed in early 2004, expands upon the findings of the Cultural Resource Conditions Report. The CLR will be used to further inform the alternative development process for Cades Cove.

Eras of human habitation

There has been a wide range of human occupation of the Cove from 8000 BC to the present. Several periods of human occupation have been defined, including:

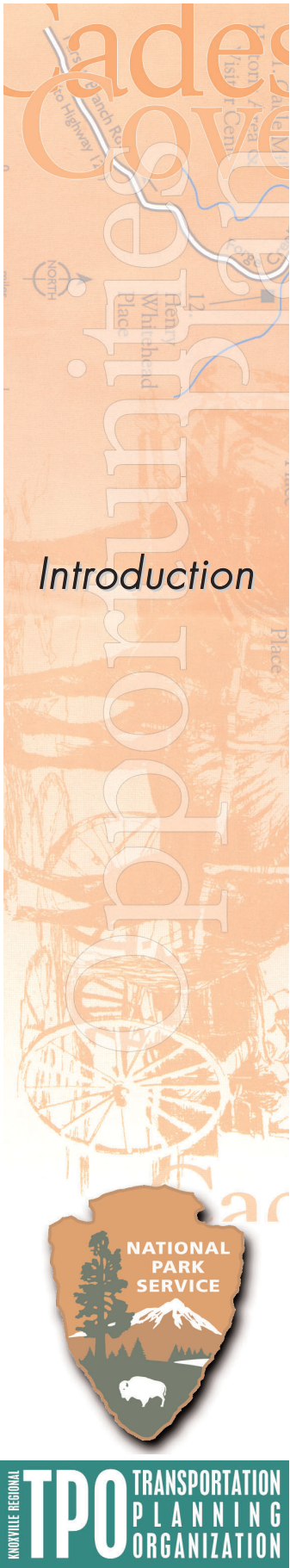


Figure 2: Canebrake and Meadow Restoration

This map illustrates the locations of canebrake and meadow restoration projects within the Cades Cove area. The map features a network of roads, including Rich Mountain Rd., Cades Cove Loop Rd., Hyatt Lane, Sparks Lane, Cable Mill Rd., and Forge Creek Rd. Key landmarks such as the Primitive Baptist Church, Cable Mill, and Abrams Falls are also marked. Restoration sites are indicated by symbols: black circles for canebrakes and black triangles for meadow restorations. Specific sites labeled include the Demonstration Field, Significant Canebrake Stand, and Meadow Restoration. A legend in the bottom right corner defines the symbols used for Canebreaks and Meadow Restorations.

Canebreaks

Meadow Restorations

- American Indian Occupation (8000-200 BC)
- Historic Cherokee/Qualla Occupation (1450-1818)
- Early white settlers (1818-1861)
- Civil War (1861-1865)
- Logging (1880-1930s)
- Park Establishment and Land Acquisition (1923-1934)
- Early NPS Occupation and Development (1934-1950)
- Mission 66 (1950-1970)
- Modern NPS Occupation and Development (1970-present)

The “era of significance,” as defined in the 1998 draft Cultural Landscape Inventory, is from 1818 to 1942.

Guidance in the Development of Alternatives

The following elements of the Cultural Resource Conditions Report are typically examined when evaluating cultural landscapes:

Natural systems: Heavy automobile traffic is a significant threat to the integrity of the Cove's natural resources. Many miles of fencing have been erected to keep people from driving into fields. Exhaust from the large volume of automobiles continues to threaten natural resources. These activities, and others, threaten to compromise the Cove's natural systems. Therefore, the Cove's ecology should be a primary factor in determining the feasibility of design alternatives.

Circulation: Design alternatives should follow historic circulation patterns and maintain a variety of routes and uses. Additional pedestrian- and bike-only activity could follow historic traces, maintain historic land uses, and reduce motor vehicle traffic in the Cove, as well as preserve the spatial characteristics of the circulation elements themselves (i.e., not widen

Loop Road or change surface characteristics of Hyatt and Sparks lanes, etc.).

Spatial patterns: The campground and picnic areas were planned before 1942 and completed in the second phase of the Cove development period that overlaps with the Mission 66 period (Mission 66 was a 10-year developmental program for the National Parks that was in force from 1956 to 1966). The initiative involved the construction of roads, camping and picnic areas, sanitary facilities, housing and visitor centers in parks across the United States. Infrastructure and facilities constructed during the Mission 66 period should be evaluated to determine their effect on development completed before 1942 in these areas.

The Cultural Resources Summary Report also identified elements that are or may be sensitive to change. This information was used during the planning process to guide the conceptual design of transportation and visitor management facilities. The following items were noted:

Buildings and Structures:

The structures built during the Mission 66 period should be reviewed as part of a Cultural Landscape Report (CLR). The few remaining barns are in varying states of disrepair and should be reviewed as part of the CLR. The Cove's exhibit buildings remain in fair to good shape.

Small-scale features: Most small-scale features such as fencing, utilities and facilities associated with visitor services are likely not sensitive.

Vegetation: Only the ornamental vegetation associated with cabins and building sites is likely to be sensitive to change.

Land use: The only remaining historically significant land use practices in the Cove are associated with the exhibit sites, where they serve as tourist attractions and recreation areas. Except for minimal haying practices and grazing by concession horses, no agricultural land uses remain.

Topography: Design alternatives should respect natural topographic features and the inability of

settlers and the NPS to drastically alter land forms because of equipment and technology restraints.

Views: It is impossible to separate views from natural systems, circulation, land use and other features. Land use practices are an intricate aspect of the Cove experience and continue to affect Cove resources. While many historic land use practices have been discontinued, the significance of future land use and management decisions should not be underestimated. The influence of such practices should be taken into consideration within the design alternatives.

Buildings and Infrastructure Report

| See Appendix F for full report |

The Buildings and Infrastructure Report details the existing conditions of roads, bridges, “non-resource” buildings/structures, utility systems and landscape amenities within the Cove. The report provides information about the age, function and capacity of these facilities. Some key elements from the report that were used to quantify some of the issues and concerns in Cades Cove were:

Roadway Conditions

The Loop Road is in poor condition and requires resurfacing. A pavement assessment completed by the Federal Highway Administration in June 2000 found poor roadway conditions. Demand often exceeds the roadway capacity and the nearly constant flow of visitor traffic makes routine maintenance difficult.

Campstore/Amphitheater

The campstore area is made up of two buildings. One is a retail store that sells food and camping supplies. A second, located just east of the store, is used for firewood storage, vending machines and bicycle rental. Bicycles available for rent are stored between these buildings and are covered with tarps.

The store is privately operated through a concession agreement with NPS. The amphitheater is a small open-air pavilion used by the NPS for education and

interpretation purposes. The amphitheater is attached to the campstore under an A-frame roof, with restrooms located between these two uses.

During the planning process, it was determined that the uses in this area are generally inadequate. The amphitheater is too close to the roadway; the restrooms are too small; the retail and counter space at the campstore is undersized; and the bicycle storage would be improved with all-weather protection.

Resource Education Office

This structure was designed as a residence for NPS staff, but it is now used as office space for resource education programs. This space is currently crowded and poorly configured for office use.

All Taxa Biodiversity Inventory

This residential structure is adjacent to the resource education building and houses the All Taxa Biodiversity Inventory (ATBI) personnel working in the Park. The ATBI research effort seeks to complete a comprehensive inventory of all life forms in Great Smoky Mountains National Park. The project taps the expertise of taxonomists, data specialists, botanists, biologists, econologists and other scientists. The objective of the program is to help teachers, students, scientists and other citizens learn about nature and report their findings on the Web. The organization began its work in the Park in 1997.

The ATBI building is similar in age, size and function to the resource education building and is generally too small for its current activities.



The John Oliver cabin in Cades Cove

Ranger Station

This building, constructed in 1984, is located across the road from the campstore parking lot and serves as an office for the campground and ranger station. This space serves the needs of a small enforcement staff of seven rangers but is already crowded and cannot accommodate all ranger station functions that are required in new facilities.

Maintenance Facility

This facility is across the road from the ‘C’ Loop of the Cades Cove campground. It is made up of several buildings, including administrative offices, vehicle maintenance shops and storage.

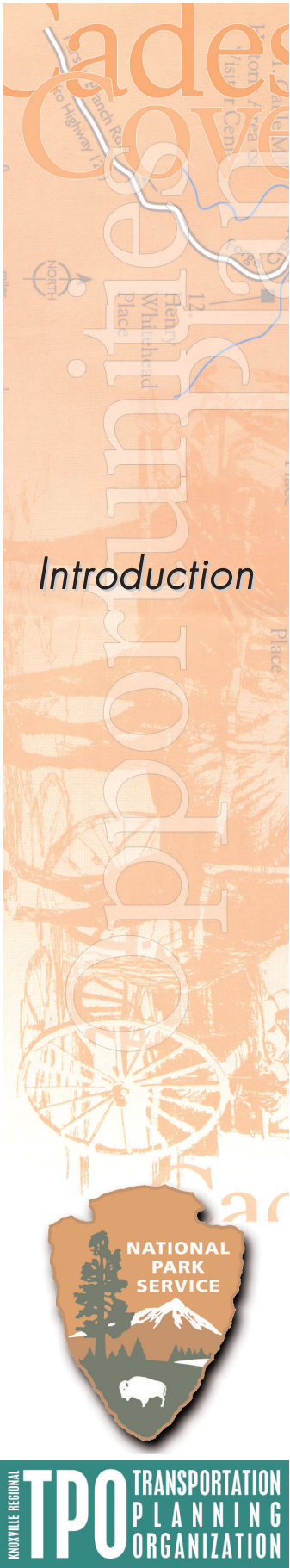
The maintenance area includes fuel storage and pumping facilities and material storage areas. The facility is located in close proximity to the campground and, consequently, creates noise spillover problems for the camping area. In the event of an overnight storm, the road maintenance crew is unable to access equipment and tools for clearing roads.

Horse Operations

The horse concession area comprises an administrative office, barns and a comfort station. There are plans to replace all of the horse concession barns in the Park, including these at Cades Cove, with barns that meet current NPS standards for equestrian care. One issue identified during the planning process concerns the day-use parking area adjacent to the horse concession. This parking lot is used by for day-use horse trailer parking but is also used by other visitors leaving inadequate space for trailers.

Picnic Area

Two acres of picnic area have been designated in the study area, representing 60 picnic sites, two of which are ADA accessible. During peak visitor times the picnic areas are frequently full. Two comfort stations (restrooms) are located in the picnic area. An area of conflict exists between picnickers and equestrians. This is due to the location of the access



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trail to backcountry trails, which requires riders to go through the picnic area.

Campground

The three-acre campground located east of the ranger station has 161 individual campsites and four group campsites, one with a pavilion. It is divided into three sections, each having access off the access road for the campstore and ranger station. There is no electrical service to the campsites and no shower facilities.

Campsites, which must be reserved, are limited to six people and two vehicles. Six comfort stations are located in the campground. Issues identified during the planning process include the need for additional parking in the campground and noise from the maintenance yard detracts from the camping experience. Five campsites are ADA accessible.

Horse Camp

The Anthony Creek Horse Camp is adjacent to the Anthony Creek trail and is accessed through the picnic area. The horse camp includes three campsites, tie-up and feeding stations for horses and portable toilets. There are few other amenities, as well as a lack of drinking water for the campers. In addition, a frequently-used trail runs directly through the center of the camp.

Visitor Orientation Shelter

The visitor orientation shelter is located at the beginning of the Loop Road. The shelter is a small (12' by 12') open air structure constructed of short stone walls and posts supporting a sloped roof. The shelter features interpretive displays on the geology, wildlife and settlement of the Cove.

During peak periods, NPS staff, volunteers and Great Smoky Mountains Association staff are stationed at the shelter to provide area information, answer questions and provide educational materials. This facility is small and often overlooked by visitors. The facility is too small to provide adequate interpretation or display areas, and restrooms are not available.

Restrooms

The most common facility issue that visitors cite is an insufficient number and location of restrooms. There are no restrooms available at the entrance to the Loop Road and the only restrooms along the Loop Road are in the Cable Mill area, which is located at the halfway point of the 11-mile road. Restrooms are available at the campground, campstore, picnic grounds and horse concession area; however, visitors coming to drive the Loop Road often do not know these facilities are available. Visitors urinating and defecating in historic structures and fields is a significant issue in Cades Cove.

Cable Mill Area

The Cable Mill area is located near the halfway point of the Loop Road. It includes restrooms, a bookstore, a functioning gristmill, several historical buildings, a self-guided walking tour, outdoor ranger-led education programs and seasonal Old Timers Day festivities. The restrooms often become overcrowded during peak periods.

Telephone and Electric Service

Electric and phone utilities are underground in limited areas of the Cove. No electric service is provided to the campsites or picnic areas. The Cable Mill area Visitor Center has electricity via two propane-powered generators (total of 80,000 kilowatts). These generators serve the current demand; however, capacity for future growth is not available.

In general, the utility infrastructure is inadequate to serve visitor and NPS needs. Water, electricity and telephone facilities are lacking along the Loop Road and other areas. A lack of visitor access to emergency communication and limited cellular coverage create a situation in which an emergency condition in the Cove may be further degraded.

Water Service

Water storage is provided at two locations in the study area: the Cove entrance and in the Cable Mill area. Each is located at the head of the underground water distribution system, which is fed

by groundwater. Water is stored in three 35,000-gallon above ground tanks serving the developed portion of the Cove and another tank with a looped underground distribution system serves the comfort station in the Cable Mill area. Water quality is monitored regularly and has been found safe for drinking. Expansion of the restroom facilities and other water uses would require increasing the capacity of the tank in the Cable Mill area.

Sewage Treatment

Treatment of sewage also is handled through two facilities in the study area. A sewage treatment facility located near the horse barn provides primary, secondary, and tertiary treatment of effluent. Sewage treatment is provided to the campground, picnic area, campstore, ranger station, residences, administrative offices and horse concession area.

The ability of the treatment plant to handle additional development in Cades Cove is constrained. The age of the settling ponds has become an issue; they are more than 30 years old and their capacity has been restricted due to sedimentation. Additionally, sewage treatment facilities at the Cove entrance are at capacity and are not adequate to accommodate growing visitor demand. Additional analysis will be required to determine how the facility can best serve future development.

The Cable Mill area restrooms are served by a septic system behind the building. During the peak periods, the system approaches capacity, requiring the tank to be pumped out weekly (by a commercial



The visitor orientation shelter is considered inadequate.

contractor). The current septic field system prohibits the ability to add restrooms to this area.

Landscape Features

The Cove has a wide range of landscape features, including post and wire fences erected primarily to keep private vehicles from being driven into the fields. The wire fence requires constant maintenance because visitors bend the wire or push posts over to get into the fields. Another style of fencing in the study area is the worm or snake fencing at exhibit sites. This fence is made from rough-hewn logs and is used to accent historic sites.

Interpretive Signs

A limited number of interpretive signs are located in the study area. They are located at the following points:

- Visitor Orientation Shelter
- Oliver Cabin
- Main Viewing Area
- Cable Mill Area
- Self Guided Cades Cove Nature Trail

One limitation with the interpretive signage is the exterior exhibits are not designed to display in-depth interpretive information. Additional exterior interpretive exhibits, information and traffic control signs at appropriate locations throughout the Cove should be developed in conjunction with staff-led interpretive programs.

Trailheads

Fourteen trailhead access points are scattered throughout the study area. Four of these trailheads are accessed from Laurel Creek Road. Ten trailheads are located along the Loop Road, as well as along Forge Creek Road in the Cable Mill area and Parson Branch Road.

Opportunities and Constraints Mapping

Using data from the National Park Service, the project team developed a series of maps to catalog the Cove’s

roads and transportation system, utilities, natural resources, hydrology (streams and ponds) and woodland areas. These are the major components of the Cove and reflect opportunities for preservation or interpretation but may restrict or constrain the ability to implement plans that might solve some of Cove’s problems. Some of these maps are included here.

The road and trail network of Cades Cove is illustrated in Figure 3. Light dashed lines represent existing trails and heavy dashed lines represent historic farm traces that are not currently in use but may be useful developing alternatives.

Figures 4 and 5 illustrate the extent of underground utilities in the Cove. Figure 4 shows sewer, water, and electricity service in the campground, picnic area, and NPS facilities in this area. The square on the left side of the figure represents the sewage treatment plant and lagoon. Figure 5 shows two dashed lines that run from a water storage tank and generator off Parsons Branch Road to provide minimal service to the restrooms and bookstore at



Additional interpretive signage would enhance visitor experience

the Cable Mill area. Sewage treatment is handled through the septic field and tanks located behind the comfort station (restrooms) at the Cable Mill area. These two maps reflect the extent of utilities in Cades Cove.

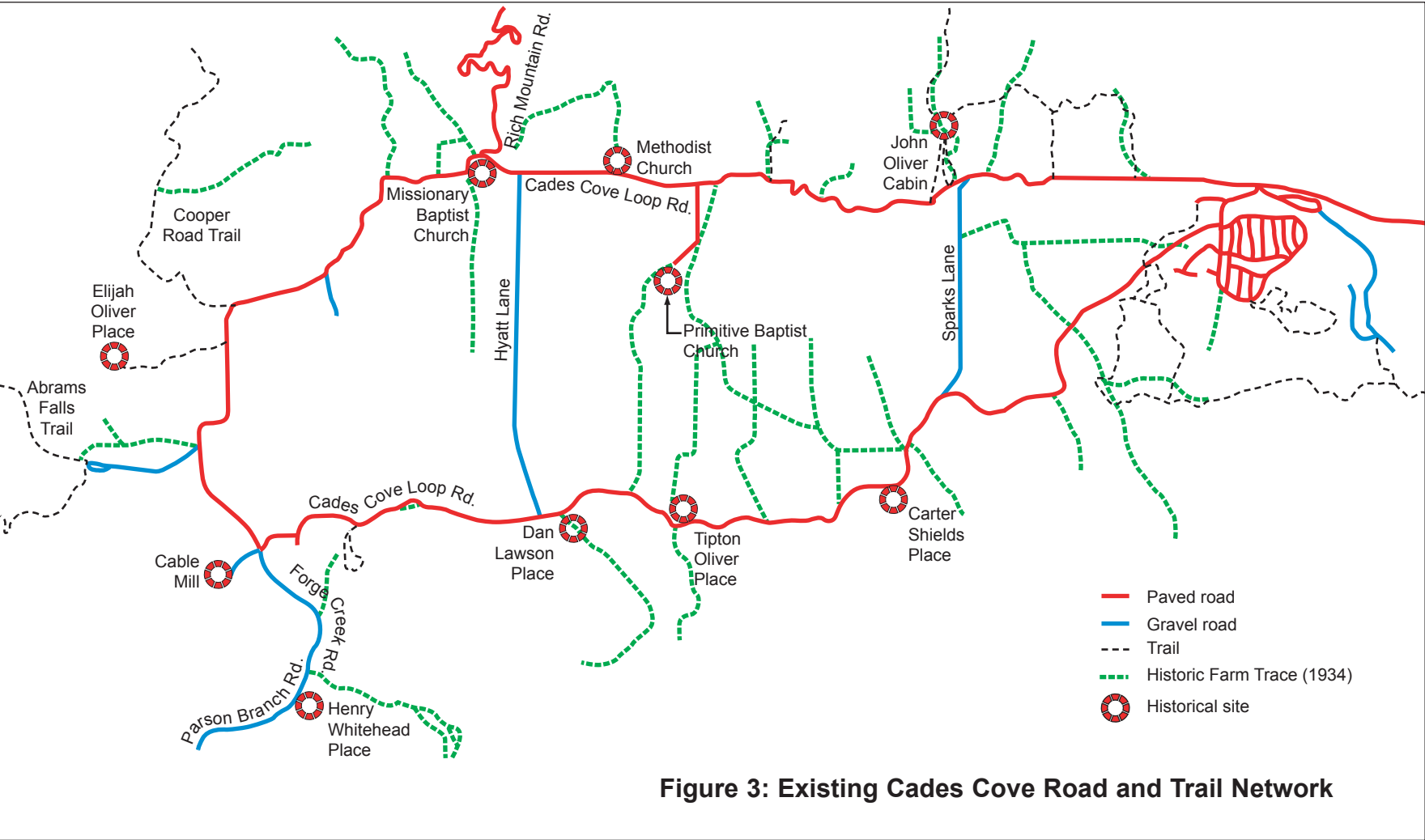


Figure 3: Existing Cades Cove Road and Trail Network

Cades Cove

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NATIONAL PARK SERVICE

TPO TRANSPORTATION PLANNING ORGANIZATION

Figure 6: Existing Watercourses in Cades Cove

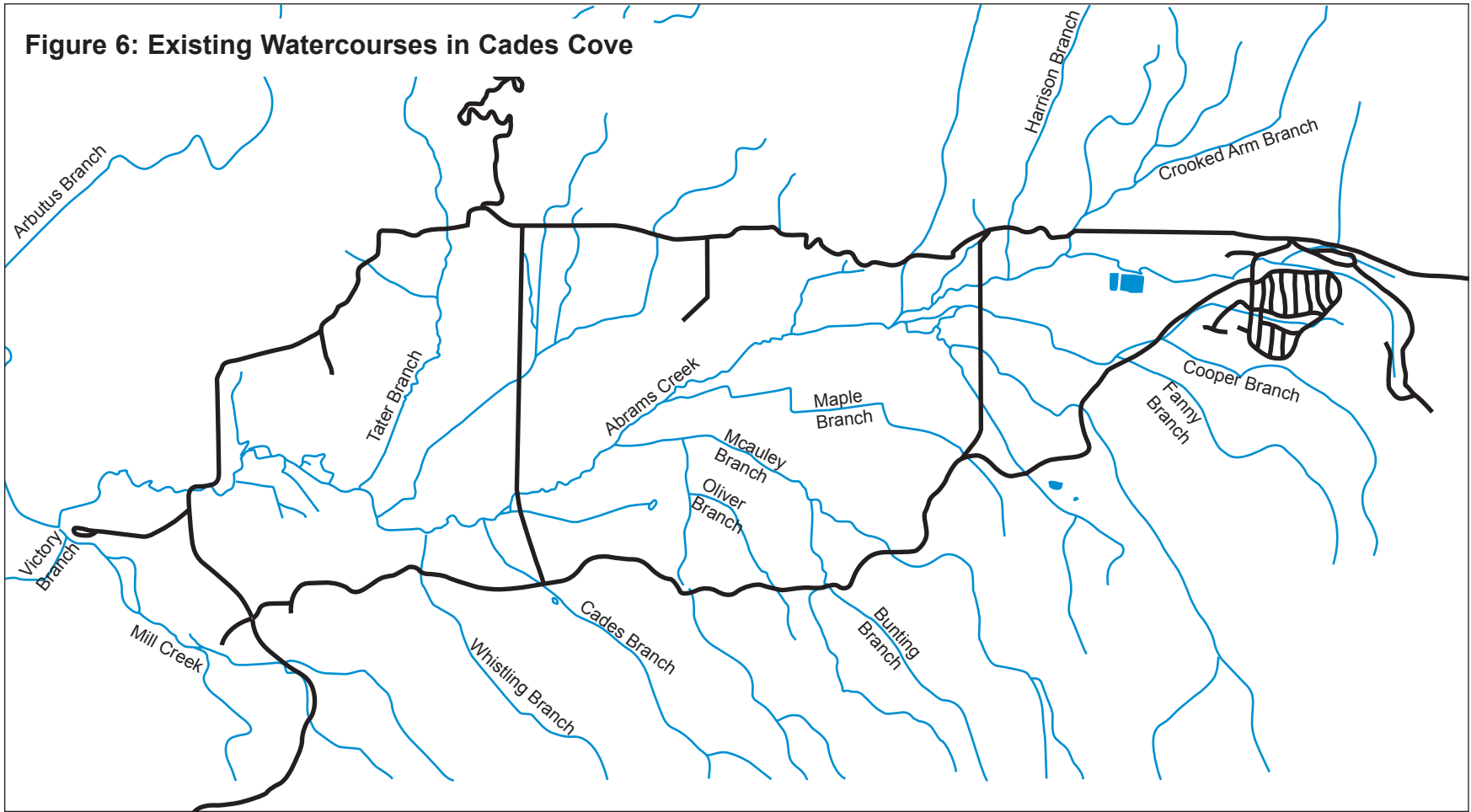
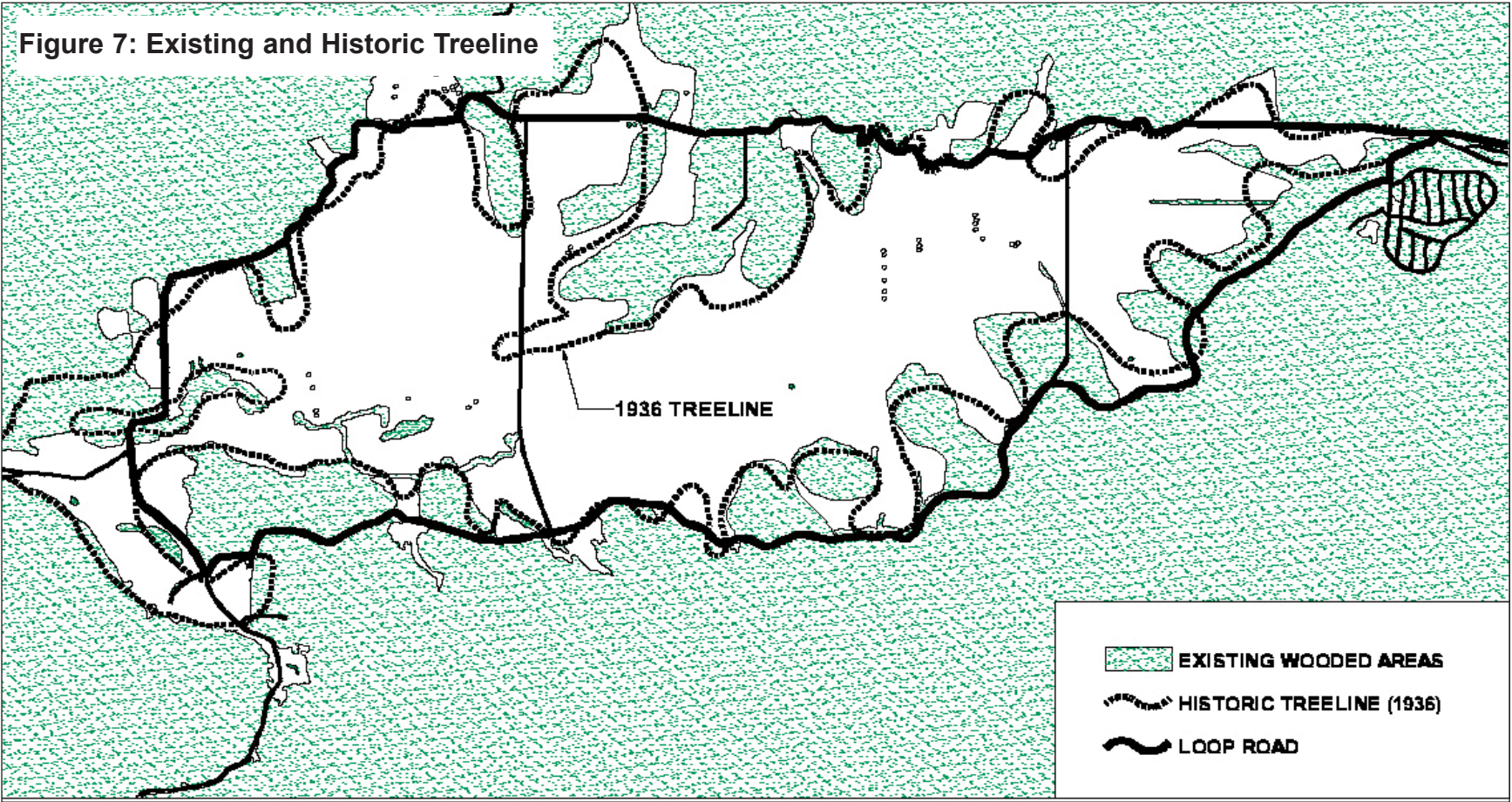


Figure 7: Existing and Historic Treeline



Source: Soil Conservation Service, 1936