# Environmental Assessment

Multimodal Transportation Plan February 2014 National Park Service U.S. Department of the Interior



Bryce Canyon National Park Utah



# ENVIRONMENTAL ASSESSMENT

### Multimodal Transportation Plan

National Park Service



# Bryce Canyon National Park Utah

### Multimodal Transportation Plan

### **Environmental Assessment**

#### SUMMARY

The National Park Service is considering implementing a Multimodal Transportation Plan at Bryce Canyon National Park. Increases in visitation at the park are leading to transportation system capacity issues and congestion at parking areas and viewpoints. The park shuttle does not currently have the capacity to help provide a multimodal transportation system that would effectively reduce congestion and related safety issues. During peak season, all primary parking areas are at or over capacity for at least several hours a day. When a parking lot is at or over capacity, the effects are numerous: drivers idling as they wait for parking spots, drivers parking along roadsides and damaging resources, conflicts between vehicles and pedestrians with resultant safety issues. Park rangers are being pulled from their primary duties in order to direct traffic and there is an overall degradation in the visitor experience.

The purpose of the proposed plan is to provide the park with both short- and long-term strategies to improve the overall transportation system by reducing congestion and safety concerns on roadways, in parking lots, on the shuttle, and at key visitor destinations. The plan would include a five-year program of near-term projects, performance measures, and asset management techniques so that park staff can monitor strategic transportation investments over the next five years and adjust as needed. The park would continue monitoring throughout the life of the proposed Multimodal Transportation Plan, which would help the park work with and adjust general traffic flows, including shuttle service hours and season of operation. Plan flexibility would allow future managers the ability to adaptively manage the park's transportation system in order to protect park resources and improve the visitor experience. The plan would focus on addressing these transportation issues in the "hot spots" identified by park staff, stakeholders, and transportation professionals.

This environmental assessment examines four alternatives: the No-action Alternative (Continue Current Approach Alternative), the Greatest Parking Supply Alternative, the Highest Visitor Demand Management Alternative, and the Adaptive Travel Management Alternative, which is the park's Preferred Alternative. To prevent and minimize potential adverse impacts associated with the action alternatives, mitigation measures and best management practices would be implemented during the construction and post-construction activities under the transportation plan.

The Continue Current Approach Alternative would continue the park's present strategy of maintenance and repairs and implementation of previously approved plans. The park would operate and maintain its current transportation system, including the shuttle system with minor improvements as needed and as funding allows. To the extent possible, the current transportation network would be operated and maintained to acceptable standards. The park would continue to maintain, and rehabilitate park roads and parking lots in an incremental fashion as the budget allows.

Under the Greatest Parking Supply Alternative, the park would expand infrastructure, primarily enlarging parking lots that have higher use to improve vehicle access and movement through the park with less traffic congestion around key parking lots. This alternative would potentially add up to 625 parking spaces (an increase of almost 70%) and have the most emphasis on capital

construction projects. This alternative would, provide visitors with only the most basic information about planning their visit to the park.

Adaptive Management would focus primarily on increasing the availability of parking spaces in the park.

With the Highest Visitor Demand Management Alternative, the park would increase the number of parking spaces by as many as 400 (an increase of almost 45 %), limit other transportation facility expansion, and limit vehicle access within the park thereby reducing social trailing and vehicle emissions to help protect natural and cultural resources and visitor experience. Under the Greatest Management of Visitor Demand Alternative, the park would manage travel demand to a greater extent than the other alternatives by mandating that all visitors, during peak season or peak hours, access the Bryce Amphitheater overlooks and facilities either by an expanded park shuttle system or by bicycle and pedestrian facilities. During these times private autos would be prohibited from accessing the Bryce Amphitheater overlooks and facilities. The park would attempt to improve visitor mobility, reduce congestion and improve safety throughout the park by providing (creating) the most efficient visitor circulation patterns via alternate modes of travel.

These goals would be accomplished after testing restrictions on private vehicles at the most heavily congested areas in the park, and adaptive management would focus primarily on visitor demand.

With the Adaptive Travel Management Alternative (Preferred Alternative) the park would restrict private vehicles at the Bryce Point / Inspiration Point and Fairyland Point areas, expand shuttle service, increase the number of parking spaces by as many as 440 (an increase of almost 49%), improve existing transportation hubs and / or construct new hubs to facilitate easy transfer between transportation modes. The pilot techniques would be part of the adaptive management approach and would then determine if full or modified restrictions are implemented. This alternative would also provide visitors with the broadest range of information to better plan their visit to the park. The park would attempt to reduce congestion and enhance visitors' experience of the park by providing a wider range of access and circulation choices.

These goals would be accomplished by focusing adaptive management on the greatest range of transportation options.

This environmental assessment has been prepared in compliance with the National Environmental Policy Act to provide the decision-making framework that (1) analyzes a reasonable range of alternatives to meet objectives of the proposal, (2) evaluates potential issues and impacts on Bryce Canyon National Park's resources and values, and (3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics included in this document because the resultant impacts may be greater than minor effects include air quality, greenhouse gas emissions, and climate change; soundscapes; night sky; vegetation; special status species; cultural landscapes; ethnographic resources; recreation resources; visitor use and experience; gateway communities; park operations; and socioeconomics. All other resource topics were dismissed because the plan would result in negligible or minor effects on those resources. No major effects are anticipated as a result of this plan.

The proposed plan would be implemented in phases, and effects to historic properties remain unknown; therefore, National Historic Preservation Act compliance would be addressed by a Programmatic Agreement between the park and the Utah State Historic Preservation Office. The Programmatic Agreement includes stipulations for the continued identification of historic properties, including Ethnographic Resources and Traditional Uses and for the evaluation of those properties according to the National Register of Historic Places eligibility criteria.

Public scoping was conducted to assist with the development of this environmental assessment. The public provided comments on alternative transportation, shuttle service, parking, disturbances to and conflicts with natural resources, trails, bicycle and pedestrian access, circulation and congestion, roadway and pedestrian safety, wayfinding and visitor information, staffing, finances and operation, and regional coordination and planning. The park considered these issues in the evaluation of effects.

#### **Public Comment**

If you wish to comment on the environmental assessment, you may post comments online at <u>http://parkplanning.nps.gov/brca</u> or mail comments to: Multimodal Transportation Plan EA, Superintendent, Bryce Canyon National Park, P.O. Box 640201, Bryce Canyon, Utah 84764-0201.

This environmental assessment will be on public review for 32 days. Before including your address, phone number, e-mail address or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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#### PURPOSE AND NEED

#### **INTRODUCTION**

The National Park Service (NPS) is proposing a Multimodal Transportation Plan for Bryce Canyon National Park to address the most pressing traffic, parking, resource protection, and visitor access issues in the park. The plan would focus on addressing these transportation issues in the geographic locations or "hot spots" identified by park staff and stakeholders. These hot spots include the following and are depicted in red and orange on Figure 1:

- Entrance station, visitor center, and overflow parking lot
- Sunrise Point
- Sunset Point
- Bryce Point
- Bryce Canyon Lodge
- Bryce Canyon City / Shuttle Staging Area (outside the plan area)

The plan area for the Multimodal Transportation Plan is the area where improvements to the multimodal transportation system within the park are being considered and areas where potential infrastructure changes or changes in ground operations or circulation would require implementation, management, and maintenance by the park. For example, while Bryce Canyon City / shuttle staging area is considered a transportation hot spot for a number of reasons, this plan cannot recommend direct improvements to this area because it is outside the boundary of the park. The Multimodal Transportation Plan and environmental assessment (EA) have been developed in close cooperation with key stakeholders, however, and take into account the integral relationship this area has with the park's transportation system. This EA for the transportation plan evaluates four alternatives for the plan area—the No-action Alternative and three action alternatives.

This EA was prepared to evaluate potential environmental, socioeconomic, and cultural resource effects from the four alternatives for the plan area. This EA was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 Code of Federal Regulations (CFR) Parts 1500–1508, and NPS Director's Order (DO) 12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making. This EA would determine whether significant impacts would occur as a result of the proposed project and if an environmental impact statement or finding of no significant impact would be required.

The documents related to the National Historic Preservation Act (NHPA), in accordance with the Advisory Council on Historic Preservation's (ACHP) regulations implementing section 106 (36 CFR Part 800), are being completed as a separate submittal to the Utah State Historic Preservation Office (SHPO). This submittal includes a NHPA Section 106 Agreement Document (Programmatic Agreement) that describes the cultural resources in detail and outlines recommendations to protect the cultural and historic resources of the park. NPS has determined that a Programmatic Agreement is the appropriate mechanism to complete Section 106 consultation, because the project would be phased and effects on historic properties are long term and unknown.

Implementation of the Programmatic Agreement would provide for continued Section 106 consultation between the NPS and SHPO and stipulate the continued identification and assessment of effect for historic properties and any needed mitigation.

Bryce Canyon National Park was originally established as a national monument in 1923 to protect the spectacular geologic structures known as hoodoos and other natural and cultural resources. In 1924, Bryce Canyon National Monument was declared Utah National Park. An act of Congress doubled the amount of protected land (now 35,835 acres), and Bryce Canyon National Park was officially designated on February 25, 1928.

Bryce Canyon National Park is on the western edge of the Colorado Plateau in portions of Garfield and Kane counties in Utah (Figure 2). The park lies on the southeast escarpment of the Paunsaugunt Plateau where the plateau breaks abruptly to the east and south in a series of steep walls and slopes. There are numerous natural amphitheaters cut into the Pink Cliffs formation on this eastern side of the plateau, with great contrast between the colorful lowlands along the eastern flank of the park and timbered hillsides and tablelands to the west. Elevations range from 6,580 feet to 9,115 feet above sea level. The climate is characterized by cold snowy winters and cool summers with episodic monsoonal moisture in July and August.

Most of the land surrounding Bryce Canyon National Park is managed by the U.S. Forest Service as part of the Powell Ranger District of Dixie National Forest. The Bureau of Land Management, Grand Staircase–Escalante National Monument manages land along the northern and northeastern park boundaries. Remaining land in the area is owned by the state of Utah and private landowners. Bryce Canyon National Park has been working in partnership with the U.S. Forest Service, Utah Department of Transportation, Garfield County, and Bryce Canyon City during the preparation of the proposed Bryce Canyon National Park Multimodal Transportation Plan.

#### BACKGROUND

The increasing number of vehicles entering Bryce Canyon National Park bring with them increasing pressure on the park's transportation system and infrastructure. The park recorded its first one million visitors in 1992 and since that time has recorded only five years of visitation under one million. Park visitation exceeded 1.2 million in 1996, 2009, and 2010, and the park has seen a continuous increase in annual visitation from 2005 to 2010. In addition, shoulder season (the months adjacent to peak season) use is rising, and the park is challenged with managing this change in visitor demand. During the past 5 years, the park has seen over 50,000 visitors in March, but many visitor services do not fully cover the shoulder season (i.e., March and April, October and November). These increases in visitation are leading to shuttle capacity issues and congestion at parking areas and viewpoints. The shuttle does not currently have the capacity to help provide a multimodal transportation system that effectively reduces congestion. During peak season, all primary parking areas are at or over capacity for at least several hours a day. Bryce Point and Sunset Point parking lots have the longest parking shortages, which often last through most of the day. The park can accommodate an average of 2,500 cars on peak days with its 900 parking spaces. When a parking lot is at or over capacity, the effects are numerous: drivers idling as they wait for parking spots, drivers parking along roadsides and damaging habitat, conflicts between vehicles and pedestrians leading to safety concerns, park rangers being pulled from their primary duties in order to direct traffic, and an overall degradation in the visitor experience. In addition,



## FIGURE 1 Transportation Hot Spots

Bryce Canyon National Park Multimodal Transportation Plan

United States Department of the Interior / National Park Service February 2014





# FIGURE 2 Bryce Canyon National Park and Vicinity

Bryce Canyon National Park Multimodal Transportation Plan



United States Department of the Interior / National Park Service February 2014 visitors entering the park in recreational vehicles (RVs) / trailers can create a disproportionate impact on the transportation system, particularly parking (URS 2012).

#### **Transportation Planning**

The park's primary roadway infrastructure system was built in the 1930s. Since that time, the park has enhanced the transportation system with improvements to the alignment of the main park road, expanded parking, the addition of entrance kiosks, and the addition of the Bryce Canyon shuttle. The current transportation network includes roadways, trails, shuttle routes, and other transportation infrastructure such as the entrance station and parking lots.

The park launched an alternative transportation (shuttle) system in 2000 to address congestion, visitor experience, and resource protection. Despite the success of the shuttle system, it can be at or over capacity during peak visitation periods. When parking areas are full or shuttles are over capacity, visitors' experiences accessing and traveling within the park are being negatively impacted. Park resources are also impacted by inappropriate parking and vehicle and visitor congestion. In 2009, congestion-related delays closed the visitor center parking lot on 40 different days (for 15- to 30-minute intervals) due to parking capacity limits. Law enforcement rangers regularly direct traffic at the main parking areas during such periods of congestion.

The park's 1987 General Management Plan is no longer adequate to address the full range of transportation issues now facing park management. Conditions have changed dramatically since then, and the General Management Plan does not provide sufficiently detailed direction for managing the park's transportation system according to current and projected conditions and up-to-date approaches.

The park is developing the Multimodal Transportation Plan as a 20-year plan that would allow the park to use an adaptive management approach for addressing transportation challenges.

#### PURPOSE AND NEED

The NPS has never conducted an integrated transportation planning study for Bryce Canyon National Park that addresses the entire transportation system within the park. The park needs to plan for and address heavy congestion, safety and visitor use related to public transportation, private vehicles, tour buses, pedestrians, and bicycles in an integrated context. An integrated transportation plan is also critical to the continued successful operation of the park shuttle service, as it will help identify future locations for intermodal connections (e.g., parking to transit, trails to parking, bicycle connections). For all of these reasons, the park needs a comprehensive and strategic framework for improving, maintaining, and operating its complex transportation system.

Bryce Canyon National Park requires a durable vision and adaptable framework for meeting its transportation needs considering the current and forecasted volume of visitation and related motor vehicle use, in concert with internal and external partners. A long-term, multimodal, system management approach to planning would help the park implement solutions that do not solve one problem only to create or exacerbate another. The purpose of the proposed transportation plan is to provide the park with both short- and long-term implementation strategies, including a five-year program of near-term projects, performance measures, and asset management techniques, so that park staff can monitor strategic transportation investments over the next five years and beyond. The park would continue monitoring throughout the life of the proposed transportation plan, which would also help the park work with and adjust general

traffic flows, including shuttle service hours and season of operation. Flexibility of the plan would allow future managers the ability to adaptively manage the park's transportation system in order to protect park resources and improve the visitor experience. The proposed transportation plan has the following five specific goals:

- 1. Asset Management: Manage individual transportation assets (e.g., parking lots, road, shuttle bus shelters, trails) efficiently to maintain the transportation system as a whole at or above a safe, acceptable condition.
- 2. Mobility, Access, and Connectivity: Provide seamless transportation connections within the park and to the shuttle staging area in the gateway community with multimodal connections and manage visitor use by leveraging partnership and outreach opportunities.
- 3. Visitor Experience: Enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources.
- 4. Resource Protection: Minimize impacts to the park's natural and cultural resources from transportation activities. Address existing and future transportation system-related effects on wildlife related to habitat fragmentation / connectivity and wildlife vehicle strikes, particularly for the federally threatened endangered Utah prairie dog, and minimize adverse effects on wildlife associated with the park transportation system.
- 5. Sustainable Operations: Develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible.

#### **RELATIONSHIP TO OTHER PLANS AND POLICIES**

This plan has been developed in a manner consistent with NPS legal mandates and management policies. The Bryce Canyon National Park General Management Plan (1987) provides broad direction for management of the park and identifies actions to improve the quality of visitor experience, as well as improve management and protection of resources. The proposed plan analyzed in this document was reviewed for conformance with the General Management Plan. The proposed plan is also consistent with the goals and objectives of the 2006 NPS Management Policies, which emphasize the need for park units to manage visitor use with resource conservation. In addition, the proposed plan has been reviewed for conformance with the following laws, planning directives, decision documents, and plans:

- NPS Organic Act
- NPS Director's Orders
- Bryce Canyon National Park Enabling Legislation
- Bryce Canyon National Park Asset Management Plan
- Bryce Canyon National Park Wildlife Viewing Pullouts EA
- Bryce Canyon National Park Foundation Statement

- Scenic Byway 12 Corridor Management Plan
- Bryce Canyon National Park Superintendent's Jurisdictional Compendium

#### SCOPING

Scoping is a process to identify the resources that may be affected by a project proposal and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. As required by NEPA, NPS conducted scoping for this plan with park staff; the public; associated Native American tribes; and federal, state, and local agencies. These scoping activities and the comments provided are summarized below. More specific information on meeting locations, dates, and outcomes; the methods for contacting these groups; and the responses of individuals and groups is detailed in Consultation and Coordination.

External scoping was initiated with the distribution of a notice to inform the public of the proposal to develop a multimodal transportation plan for the park and to generate input on the preparation of this EA. The notice was mailed to approximately 129 contacts including local government offices, some chambers of commerce, and a few non-profits. Newspapers included the Southern Ute News and Desert News in Richfield, Utah. Letters were also mailed to representatives of 23 park-affiliated tribes. Two tribes have provided comments requesting continued consultation for any action that may adversely affect prehistoric cultural resources in the park and about inadvertent discoveries. The Hopi tribe also requested copies of the cultural resources survey report and proposed treatment plans for review and comment.

The project team received public input during the 30-day public scoping period between November 15 and December 15, 2011, during which a public open house was held in Bryce Canyon City. The issues raised during this scoping period ranged from very general issues, such as congested conditions within the park, to very specific issues, such as a lack of incentive for visitors to use the shuttle. Input received during this period was categorized and used to inform the discussion and analysis of existing conditions, transportation issues, and the development of alternatives (NPS 2012a).

After the project team completed the development of alternatives, the park hosted a public open house on April 16, 2013, to provide an update on the Multimodal Transportation Plan alternatives and gather public input. The park issued a press release on April 4, 2013, inviting the public to participate in this part of the planning process. The press release was issued to cooperating agencies and other park partners, the local newspaper, and the NPS Planning, Environment, and Public Comment (PEPC) website at http://parkplanning.nps.gov/brca. The park invited the public to provide comments at the meeting and via the PEPC website. The public comment period for this open house ended May 15, 2013. The public comments received during this period included the benefits encouraging public transportation, a desire for the park to minimize disturbances to natural resources, and the importance of communicating future decisions about transportation in the park.

All public scoping comments received by the park have been considered in the scoping stage of the planning process. More information about external scoping, as well as information on agency and tribal consultation, may be found in the Consultation and Coordination section of this EA.

#### IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS

Specific impact topics were developed through internal scoping with the park and the cooperating agencies for discussion focus and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and Executive Orders; 2006 NPS Management Policies; and NPS knowledge of limited or easily impacted resources. Impact topics that are carried forward for further analysis in this EA are listed in Table 1 along with the reasons for retaining the topic for further analysis.

Impact Topic	Reasons for Retaining Impact Topic
Air Quality	Construction activities could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the park. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and local and would likely dissipate rapidly. If there is an extensive expansion of the shuttle system, the resulting vehicle exhaust and emissions could possibly exceed minor impacts on local air quality. If driving restrictions are selected or alternative fuels are used for the shuttle system, there could be a beneficial impact on local air quality. Any of the alternatives could result in a temporary degradation of local air quality.
Soundscapes	Sounds resulting from construction activities would occur in what can be considered a developed area of the park. Existing sounds in this area are most often generated from vehicular traffic (visitors and employees entering / leaving the park), people, climate controls on the buildings, some wildlife such as birds, and wind. During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees. Visitors accessing the backcountry would travel away from any construction noise on the way to their destination, and visitors would be accustomed to some traffic noise from the existing road. The temporary and localized nature of construction activity would not result in a chronic impact on the solitude and tranquility associated with the park. In areas with new and reconfigured parking lots, additional parking spaces would result in an increase in noise (e.g., vehicles entering and exiting parking areas, shuttles, car doors, visitor-related noise). This increase in noise in and surrounding new and expanded parking areas would result in long-term minor to moderate adverse impacts on the local soundscape.
Night Sky	Construction and maintenance activities related to the proposed Multimodal Transportation Plan could potentially require minimal temporary lighting for those activities leading to negligible impacts on night sky. These activities would not change the existing lightscape or result in additional light sources within the park.
Vegetation	Implementing the proposed plan would likely affect vegetation resources within and adjacent to the plan area through vegetation removal and revegetation. These proposed construction and improvement activities would result in disturbance to vegetation in previously undisturbed areas and in previously disturbed but revegetated areas. Effects on individual native plants and plant populations due to the proposed construction and improvements would be short term, minor adverse, and local. Revegetation measures would be implemented to mitigate impacts to vegetation communities in areas disturbed during construction that would not be needed for visitor improvements.

TABLE 1. IMPACT TOPICS RETAINED FOR	FURTHER ANALYSIS
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Special Status Species	Enderally listed, proposed, and condidate species that may inhabit the park include
Special Status Species	Federally listed, proposed, and candidate species that may inhabit the park include California condor ( <i>Gymnogyps californianus</i> ), southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> ), western yellow-billed cuckoo ( <i>Coccyzus americanus</i> <i>occidentalis</i> ), and Utah prairie dog ( <i>Cynomys parvidens</i> ). Of these species, the Utah prairie dog is the only species known to inhabit the park. The remaining three federally listed species have been observed in Bryce Canyon National Park but observations have been limited. There are nine species listed by the state of Utah, as well as two raptors listed as sensitive, and migratory birds known to occur within the park. There are no known populations of rare plants within the proposed action areas. The Utah prairie dog is the only Special Status Species carried forward for further analysis; the remaining three federally listed species, the nine state- listed species, and rare plants have been dismissed from further analysis. The Utah prairie dog is the only federally listed or sensitive species that is known to inhabit and breed in the areas of proposed improvements. Under the proposed plan, a reduction in vehicles in the park may result in minor beneficial effects on Utah prairie dogs and special status species due to reduced visitor traffic along roadways from expanded shuttle service. Reduced traffic would result in the reduction of potential injury or death of prairie dogs from collisions. Construction of the proposed visitor center parking lot expansion, as well as of the proposed new parking lot across from the historic service station and expanded parking at Sunset Point may adversely affect prairie dogs. Proposed changes to the visitor center area would occur within both previously disturbed and undisturbed areas. Special status species may also be adversely affected by construction activities in the area across from the existing service station. For the federally listed threatened Utah prairie dog, Endangered Species Act Section 7 consultation determination of
	Plan would be "may affect and likely to adversely affect."
Cultural Landscapes	Expanding the General Store lot could have a short-term negligible impact on Bryce Inn (currently called General Store), since there would be a temporary disruption of the historic scene and feeling within the cultural landscape during construction. Construction and maintenance associated with parking area improvements would be a temporary disruption of the historic scene and feeling within the Bryce Canyon Lodge Historic District cultural landscape during construction. The reconfiguring and restriping of the Lodge parking lot does not represent a change in the existing land use.
Ethnographic Resources	No specific ethnographic resources have been identified by affiliated tribes within the park, and no ethnographic resource issues were raised during public scoping. However, ethnographic resources likely include vegetation, wildlife, geological features, and park lands in general where ancestral activities, as well as current tribal practices, have occurred. Although no impacts on significant ethnographic resources are expected, the potential exists for impacts to exceed minor in degree, because there is lack of information about these resources in the park; therefore, ethnographic resources are addressed as an impact topic in this EA. Construction and maintenance activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be
	restored. These activities would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs
Recreation Resources	Testing of vehicle restrictions and construction activities could adversely affect recreation opportunities under the proposed Multimodal Transportation Plan, including visitor access, vehicle touring, hiking, camping, and wildlife / bird-watching. In addition, parking, trail, and visitor center access may be temporarily disrupted during construction activities.

Visitor Use and Experience	As with Recreation Resources, testing of vehicle restrictions and construction activities resulting from implementing the proposed Multimodal Transportation Plan could adversely affect visitor use and experience, particularly during construction activities. Implementing the proposed plan would change park access and could impact visitor use and experience.
Gateway Communities	Proposed plan alternatives include staging (parking) areas within Bryce Canyon City, which relies heavily on the tourism generated by the park. Any changes in visitation patterns, visitation numbers, or ways that visitors enter the park could affect gateway communities.
Park Operations	The proposed plan would likely have a noticeable effect on park operations. Developing a shuttle plaza at the visitor center, constructing new parking areas and multimodal hubs, and improving pedestrian access to the park shuttle service would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to development / maintenance costs and operation costs of shuttle adjustments. These improvements would reduce staff time needed to address circulation and parking issues during peak visitation. A change in financial balance between revenue sources and operating costs would also occur.
Socioeconomics	Construction and maintenance spending associated with the proposed improvements would provide a temporary stimulus to the local or regional economy. Wages, overhead expenses, material costs, and profits would last only as long as the construction period. Implementing the proposed transportation plan would produce minimal increases in employment opportunities in surrounding communities.

#### IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

In this section of the EA, NPS provides a limited evaluation and explanation as to why some impact topics are not evaluated in more detail. Impact topics are dismissed from further evaluation in this EA if:

- they do not exist in the analysis area, or
- they would not be affected by the proposal, or the likelihood of impacts are not reasonably expected, or
- through the application of mitigation measures, there would be no measurable effects from the proposal, and there is little controversy on the subject or reasons to otherwise include the topic.

The NPS defines measurable impacts as moderate or greater effects. It equates no measurable effects as minor or less effects. No measurable effect is used by the NPS in determining if a categorical exclusion applies or if impact topics may be dismissed from further evaluation in an EA or environmental impact statement. The use of "no measurable effects" in this EA pertains to whether the NPS dismisses an impact topic from further detailed evaluation in the EA. The reason the NPS uses "no measurable effects" to determine whether impact topics are dismissed from further evaluation is to concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail in accordance with Council on Environmental Quality (CEQ) regulations at 1500.1(b).

The following issues have been considered but dismissed from detailed analysis. Issues dismissed from detailed analysis are not addressed further in this document. A brief rationale for dismissing specific topics from further consideration is provided for each impact topic.

#### Greenhouse Gases and Climate Change

The NPS has formed a partnership with the U.S. Environmental Protection Agency to collaborate on controlling greenhouse gases (GHGs), which have been linked to climate change. This program is called the Climate Friendly Parks Program, which provides management tools and resources to address, promote, and establish climate-sensitive practices. The program approach involves measuring existing emissions, developing strategies to mitigate emissions and adapt to impacts, sharing information, and educating the public about measures they can use to lessen their effect on climate change.

Climate change refers to the shifts in Earth's long-term (decades to millennia) weather patterns as a result of changes to the concentrations of GHGs in Earth's atmosphere. A GHG is a gas that traps heat when emitted into Earth's atmosphere. Although climatologists are unsure about the long-term results of global climate change, it is clear that the planet is experiencing a warming trend that affects ocean currents, sea levels, polar sea ice, and global weather patterns. Although these changes will likely affect weather patterns in the park, it would be speculative to predict local changes in temperature, precipitation, or other weather changes, in part because there are many variables that are not fully understood and there may be variables not currently defined.

The park monitors GHG emissions from park operations, visitors, and concessionaires (URS 2012). GHGs would be emitted from private vehicles, the shuttle system, and truck and equipment exhaust in the park and in the area surrounding the park under all plan alternatives. Automobile exhaust and the emissions from diesel generators contribute only minor amounts of pollutants and greenhouse gas emissions, however, and would have a negligible effect on climate change. Therefore, this topic is dismissed from further analysis in this EA.

#### **Geological Resources**

According to the 2006 NPS Management Policies, the NPS will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2006a). These policies also state that the NPS will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

In general, the top of the Paunsaugunt Plateau is covered with gravelly loam-type soils derived from the weathering of limestone parent material. These shallow, well-drained soils are typically low in nutrients and moisture availability. A substantial portion of the park is classified as badlands, or rock outcrops rather than as developed soils. The geological formations within the park are the primary attraction to visitors.

The activities under all alternatives would be in areas that do not contain significant topographic or geologic features. In addition, many of the activities under each alternative would occur in previously disturbed areas or would create no new disturbance. No trails would be moved, and no extensive expansion of parking areas would occur. Impacts from any of the alternatives may result in minor, temporary, and permanent adverse effects on geological resources. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

#### Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 Protection of Wetlands requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within waters of the United States. The NPS policies for wetlands as stated in 2006 Management Policies and DO 77-1 Wetlands Protection strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with DO 77-1 Wetlands Protection, proposed actions that have the potential to adversely impact wetlands must be addressed in a statement of findings for wetlands.

Bryce Canyon National Park has limited wetland areas due to the generally dry conditions; however, small wetland communities are found in areas near drainages or in depressions near seeps and springs. These communities are highly dependent on runoff and local groundwater conditions. A wetland delineation was performed to gather field data at potential jurisdictional waters in the plan survey area. Methods for delineating wetlands followed guidelines set forth by the U.S. Army Corps of Engineers, including the Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region. Methods for delineating wetlands also included the NPS Procedural Manual 77-1: Wetland Protection. Dave's Hollow and the Mixing Circle junction meadow were observed to be wetlands according to both U.S. Army Corps of Engineers and NPS definitions (RECON Environmental 2013).

NPS policy directs parks to revise projects that would impact wetland resources. Maps of jurisdictional wetlands and non-jurisdictional drainage basins delineated in the plan survey area were used to overlay with proposed improvement areas (parking and other infrastructure improvements) under each action alternative. The only area of overlap was 1,500 feet (0.03 acre) of a non-jurisdictional drainage basin in the Inspiration Point and Bryce Point intersection area. This area of overlap would not result in impacts to jurisdictional wetlands or other wetland resources. The analysis showed that all delineated wetlands would be avoided through project design under the action alternatives, and impacts on wetland areas would not be likely under any of the alternatives. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA. The NPS has determined that a statement of findings for wetlands will not be prepared for the proposed plan.

#### Floodplains

Executive Order 11988, Floodplain Management, requires all federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. The NPS under 2006 Management Policies and DO 77-2 Floodplain Management will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to DO 77-2 Floodplain Management, certain construction within a 100-year floodplain requires preparation of a statement of findings for floodplains.

Flood maps do not exist for the park; however, the following discussion is based on information from the wetland delineation and known flood areas of the park. The plan area is not known to be susceptible to severe flooding; however, if portions of the plan area were within a 100-year floodplain, there would be no threats to public health and safety or the potential for property damage due to the implementation of the action alternatives. None of the alternatives would involve major filling or modification of the ground surface such that people or structures would be exposed to flooding. The alternatives would not adversely affect the functions of a floodplain or increase flood risk. The activities associated with the alternatives would not violate National Flood Insurance Program requirements or result in changes that would increase an existing floodway or the flood elevation level associated with the 100-year flood event.

Implementing any of the alternatives would not result in permanent effects on floodplains. Temporary effects from proposed parking and roadway improvements or development would be minor or less and flood areas would be avoided. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

Introduction of Native and Nonnative Species

Nonnative plants exist throughout the park, but are concentrated along the road corridor and areas heavily impacted by park operations, visitor use, and horse / mule corrals and trails. Common invasive species include whitetop (*Cardaria draba*), yellow salsify (*Tragopogon dubius*), yellow sweet-clover (*Melilotus officinalis*), black medic (*Medicago lupulina*), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), and several species of knapweed and thistle. Proposed development and expansion activities under each alternative would occur within both undisturbed and previously disturbed areas. Approximately 20 to 25 acres (depending on the alternative) would be developed. Based on vegetation community mapping of the park, few if any invasive species occur in the areas proposed for development and expansion. No trails would be moved, and no extensive expansion of parking areas would occur. Impacts from any of the alternatives would result in minor and temporary adverse effects from potential spread of nonnative plants. Best management practices and mitigation measures, pre-construction requirements for vehicles, and monitoring (as detailed below under "Mitigation Measures") would minimize potential spread of nonnative plants. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

#### Wildlife or Wildlife Habitat

According to the 2006 Management Policies, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2006a).

A variety of wildlife is supported by the diverse vegetation communities in Bryce Canyon National Park. Four amphibian species, 11 reptile species, 59 mammal species, and 175 bird species have been documented in the park. In addition, there are many species of birds and some mammal species are animals which are migratory and not year-round residents in the park (NPS 2010a).

*Migratory birds.* Protection under the Migratory Bird Treaty Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition, this act serves to protect environmental conditions for migratory birds from pollution or other ecosystem degradations. A

variety of migratory birds occur in the park. Raptor species have been observed using meadow habitat as foraging grounds and possibly nest in trees along the edge of meadows.

Proposed activities under each alternative would occur primarily within paved or previously disturbed areas, with minimal development proposed within undisturbed areas. Proposed activities would occur in areas that contain little to no water, minimal vegetation, and in generally flat areas with no major geologic features. The presence of humans, human-related activities, and structures have removed or displaced much of the native wildlife habitat in the hotspot areas, which has limited the number and variety of wildlife inhabiting these areas. Species such as ravens (*Corvus* sp.) and golden-mantled ground squirrel (*Spermophilus lateralis*), however, may be attracted to areas with increased parking and visitors and could experience long-term impacts due to habituation and food begging. Some smaller wildlife such as rodents, reptiles, and amphibians and their habitat would be displaced or eliminated during construction of new parking or the expansion of existing parking. Disturbed areas would be revegetated and rehabilitated following development activities, which would result in a negligible to minor adverse impact on the wildlife and wildlife habitat in the immediate area of construction.

During construction, noise would also increase, which may disturb wildlife in the general area. Construction-related noise would be temporary, and existing sound conditions would resume following construction activities. Therefore, the temporary noise from construction would have a negligible to minor adverse effect on wildlife. Best management practices and mitigation measures (as detailed below in "Mitigation Measures") would minimize potential impacts on wildlife. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

#### **Historic Structures**

NPS DO-28 Cultural Resource Management Guideline defines "historic properties" as any site, district, building, structure, or object eligible or listed in the National Register of Historic Places (NRHP), which is the nation's inventory of historic places and the national repository of documentation on property types and their significance. The term "historic structures" refers to constructed works that are architecturally designed or engineered to serve a human activity. These may include buildings, roads, trails, bridges, irrigation ditches, or earthen berms, to name a few. Historic districts are groups of buildings, properties, or sites that have been designated as historically or architecturally significant. As noted above, historic districts have been carried forward for further analysis as part of the Cultural Landscapes topic. Historic structures are discussed further below.

The Bryce Canyon Lodge and Deluxe Cabins are in the best condition of what remains of the entire Bryce Lodge Complex, and are a National Historic Landmark. The complex, built by the Union Pacific Railroad during 1924 to 1927, is an excellent example of the type of architecture encouraged by the NPS. The period of significance for Bryce Canyon Lodge Complex is 1924 through 1944, an era characterized by the development of visitor facilities by the concessioner and the NPS.

Activities proposed under each alternative would occur within paved or previously disturbed areas, with minimal development proposed within undisturbed areas. Activities proposed at the Bryce Canyon Lodge would involve reconfiguring the existing paved parking lot; no new disturbance would occur. During parking lot reconfiguration, there may be temporary disruption of the historic scene, but activities would not directly affect any historic structures. Activities proposed under the alternatives would not represent a change to the existing land use or

structure types such that overall integrity of the historic structures at the park would be degraded. The eligibility of the historic structures at the park for listing in the NRHP would not be in jeopardy.

This topic is dismissed from further analysis in this EA, because no historic structures or historic features would be impacted by any of the alternatives. NPS has also consulted with Utah SHPO and affiliated tribes. A separate NHPA Section 106 compliance process will result in a Programmatic Agreement. The Programmatic Agreement would outline measures to mitigate effects on historic properties, including historic structures, should any effects be identified as the plan is implemented.

#### **Archeological Resources**

In addition to the NHPA and the NPS 2006 Management Policies, DO-28A Archeology affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the National Park System. As one of the principal stewards of America's heritage, the NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the National Park System reflect a commitment to the conservation of archeological resources as elements of our national heritage.

The Bryce Canyon 2000–2002 Archeological Inventory Survey was the first large-scale, intensive archeological survey conducted in the park (Wenker 2004). This resulted in a comprehensive and detailed view of the archeological resources on nearly 11,000 acres on the Paunsaugunt Plateau.

Previously documented archeological sites were reviewed and it appears that the parking lots proposed at Fairyland Loop Road turnoff and at the Lodge Loop / General Store Loop intersection have archeological sites that could be impacted by the construction activities unless future design efforts can avoid these sites. The park and Utah SHPO have entered into a Programmatic Agreement to comply with the NHPA Section 106, and appropriate steps would be taken to protect any previously documented or inadvertently discovered historic properties. Further protections would be taken as part of best management practices and mitigation measures (as outlined below in "Mitigation Measures") to protect historic properties in all areas of disturbance; therefore Archeological Resources was dismissed as an impact topic in this EA.

#### **Paleontological Resources**

According to 2006 NPS Management Policies, paleontological resources (fossils), including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific research. Paleontological resources have been found within the park, primarily within the geological formations below the rim. Significant fossils have been recovered that have provided a basis to date the Cretaceous rock sequence in the park (NPS 1996).

Should currently unidentified paleontological resources be discovered during implementation of the Multimodal Transportation Plan, work in that location would stop until the resources are properly evaluated and avoided, if necessary. Because none of the alternatives would disturb any known paleontological sites, and because the potential exists for the discovery of paleontological resources during any ground-disturbing activities, the effect on these resources is expected to be

minor. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

#### Wilderness

The 1964 Wilderness Act defined wilderness as "an area where the earth and its community of life are untrammeled by man." Although there is no designated wilderness within or near the park, 22,325 acres (62%) of the park have been recommended as wilderness. While not yet legislatively designated, this recommended wilderness (which was proposed in 1974) is managed as wilderness in accordance with NPS Management Policies (2006a).

Proposed activities under all alternatives would not occur within designated recommended wilderness. Impacts could occur to recommended wilderness, however, particularly in areas near viewpoints. Increased shuttle use and potential expansion of the shuttle may cause increased use of the backcountry, causing a decreased ability to find solitude in recommended wilderness. Increased shuttle use and potential expansion of the shuttle may cause increased use of the backcountry trails, causing a decreased ability to find solitude in recommended wilderness. Construction activities would not directly encroach upon any of the recommended wilderness areas within the park, although there would be an indirect impact from noise disturbance related to those activities. Noise disturbance during construction will be addressed under Soundscapes. Impacts from the no-action and action alternatives to recommended wilderness and wilderness visitors would be temporary and minor. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

#### Visual Resources / Scenic Resources

The primary visual attractions within the park are its scenic vistas found at a number of high panoramic viewpoints throughout the park. From these viewpoints, visitors can see over a hundred miles beyond the park boundary on clear days. Visitors also can enjoy the changes in the scenic character of the landscape and hoodoo formations from above or below the rim. The visual quality of the park's scenic resources is a significant factor in a visitor's experience. Visibility is generally best during winter and poorest during summer. Impairment to visibility is generally caused by the haze and smog from regionally produced particulates.

The majority of plan implementation activities under all alternatives would occur above the rim and would not impair the scenic vistas at the viewpoints. Transportation plan alternatives have been designed to avoid the park's visual resources / scenic resources. Localized effects on visual / scenic resources would likely occur in the foreground during construction activities and the scenic quality would be restored after construction is complete. Background vistas would not be affected. Construction activities may result in temporary and minor effects on the landscape character, but overall scenic quality would not change. These effects would be minor in degree and any impacts would be avoided or minimized through design features. Because minor or less effects are considered as no measurable effects, this topic is dismissed from further analysis in this EA.

Resource, including Energy, Conservation Potential, Sustainability

The NPS strives to incorporate the principles of sustainable design and development into all facilities and park operations. Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short- and long-term environmental

impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques. Value analysis and value engineering, including life-cycle cost analysis, has also been performed to examine energy, environmental, and economic implications of proposed management decisions and development. The NPS also encourages suppliers, permittees, and contractors to follow sustainable practices. Consequently, any adverse impacts relating to energy use, availability, or conservation would be negligible. Therefore, energy requirements and conservation potential were dismissed from further consideration.

#### Prime and Unique Farmlands

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects on prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service, and is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to resource assessments for Garfield and Kane counties, the park does not contain prime or unique farmlands (Natural Resources Conservation Service 2005); therefore, this topic is dismissed from further analysis in this EA.

#### Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts on American Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal American 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 American Indian and Alaska Native tribes.

There are no American Indian trust resources located at Bryce Canyon National Park. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of American Indians due to their status as Indians. Because there are no American Indian trust resources, this topic is dismissed from further analysis in this EA.

#### **Environmental Justice**

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Minority populations are Black / African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-Caucasian persons. Low-income populations are defined as persons living below the poverty level based on their total income. The Environmental Protection Agency defines a community with potential Environmental Justice populations as one that has a greater percentage of minority or low-income populations than an identified reference community. The standard for identifying minority populations is either 1) the minority population of the affected area exceeds 50%, or 2) the minority population percentage of the affected area is "meaningfully greater" than the minority population percentage in the general population or other appropriate unit of geographic analysis, such as a reference community. Poverty and minority rates within the communities considered for socioeconomics in Garfield and Kane counties were reviewed. Based on census data (2013a), the City of Panguitch lowincome community would be considered for Environmental Justice concerns. Panguitch has a poverty level of 20%, as compared to 14.2% for Garfield County and 11.4% for the state of Utah (U.S. Census Bureau 2013a).

Because the park and any new transportation amenities and facilities would be available for use by all visitors and park staff regardless of race or income, and because the construction workforces would not be hired based on their race or income, none of the alternatives would have disproportionate effects on minorities or low income populations or communities, including the community of Panguitch. Because there would be no disproportionate effects, Environmental Justice is dismissed from further analysis in this EA.

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#### ALTERNATIVES

This chapter describes the range of alternatives considered to address the transportation challenges described in "Purpose and Need." A No-action Alternative is considered, as required by law, to establish a baseline against which the effects from the action alternatives will be compared. In this EA, the No-action Alternative is called the Continue Current Approach Alternative. The action alternatives also considered during the development of the Multimodal Transportation Plan and carried forward for further analysis are the Greatest Parking Supply Alternative, the Highest Visitor Demand Management Alternative, and the Adaptive Travel Management Alternative, which is the Preferred Alternative. Each of the alternatives addresses five key elements: travel demand management, education and visitor information, shuttle, roadway and parking, and monitoring / adaptive management. Several components of the Multimodal Transportation Plan are common to all of the action alternatives. Those components are described under the section titled, "Improvement Strategies Common to All Action Alternatives."

The Continue Current Approach Alternative, or the No-action Alternative, would involve continuing the present level of management, operations, and maintenance in the park. The Greatest Parking Supply Alternative would attempt to accommodate increases in visitor demand by expanding parking lots with limited regard to techniques to manage time-sensitive or seasonal demand and would do little to promote alternative modes of transportation, such as walking, biking, or taking a shuttle or tour bus. The Highest Visitor Demand Management Alternative would manage strain on the transportation system by limiting private vehicles in the park at certain times and in certain areas and encourage or require alternative means of travel, such as a mandatory shuttle system around Bryce Amphitheater, expanded shuttle service to Rainbow Point, and improved bicycle and pedestrian connections. The Adaptive Travel Management Alternative, the Preferred Alternative, incorporates elements of each action alternative, but places a stronger emphasis on adaptive management and incremental changes over time, as needed. The Preferred Alternative would provide park managers maximum flexibility to improve and manage all aspects of the transportation system.

The Preferred Alternative presents the NPS's preferred management action and defines the rationale for the action in terms of park goals, such as resource protection and management, visitor and operational use, cost, and other applicable factors. Other alternatives considered but eliminated from detailed analysis are also discussed in this chapter. Also included in this chapter is a comparison of how well the alternatives meet the project goals and a summary comparison of the environmental effects of each of the alternatives.

#### ALTERNATIVES DEVELOPMENT

#### **Existing Conditions Analysis**

As part of the scoping phase of the alternatives development process (discussed earlier under "Scoping"), a private transportation planning firm assisted the project team in analyzing existing conditions for Bryce Canyon National Park's transportation system. Topics explored include vehicular and non-motorized access and circulation into and throughout the study area, parking lot congestion, shuttle system operations, tour bus use, and visitation trends and projections. Key findings of this study confirmed the following issues among many others:

- In recent years, an average of over 1.2 million visitors have entered the park each year. Most visitors come during the summer months, creating a great deal of traffic congestion and high parking demand in this relatively small national park.
- Overall, private vehicles are the predominant travel mode used to access and move around the park, including cars, tour buses, and RVs. Combined with high visitation levels, this use means that primary parking areas in the park are at or over capacity on many days during peak season. Parking shortages also cause vehicles to idle, which increases emissions, noise impacts, and crowding.
- Increasing vehicular traffic on the Main Park Road and access roads has caused severe congestion and safety conflicts between vehicles, between vehicles and pedestrians, between vehicles and bicycles, and between vehicles and wildlife. Infrastructure and directional signage is inadequate to promote safety and protect wildlife.
- The shuttle system is highly successful and well-used; however, during peak season, shuttles are often at or above capacity. Optimizing the efficiency and capacity of the shuttle system is a key challenge for the park. From experience in Bryce and other parks, shuttle systems alone have not reduced congestion on roadways or in parking lots. As visitation continues to increase, additional management strategies are needed to complement the shuttle to reduce congestion and improve safety conditions, as well as maintain visitor experience and protect park resources.
- Natural and cultural resources are also impacted by high levels of congestion. Social trailing and impacts to sensitive wildlife habitat are directly related to crowding at trailheads, shuttle stops, parking areas, and other high use locations. In addition, noise impacts from idling shuttles, buses, and RVs are negatively impacting the park's soundscape.
- During peak visitation periods, park law enforcement and other staff spend a significant amount of time directing traffic, relieving congestion, and responding to emergent traffic situations such as accidents. No park employees are devoted full-time to managing transportation, and budget shortfalls have already complicated the park's ability to maintain its current transportation assets.

#### **Projected Conditions Analysis**

In addition to studying current conditions on the ground, the project team also enlisted transportation expertise to project or anticipate what the future may look like relative to these issues. Some of those key projections include:

- From year to year, park visitation has grown an average of two percent. For some years, that rate has been much higher. Assuming a conservative estimate that visitation continues to grow only 2% per year, annual park visitation could at least double by 2035.
- Given this expected increase in visitation, parking shortages will only get worse in the future. It is anticipated that the total number of parking spaces may need to double in order to accommodate increased demand.
- With tour bus volumes increasing and idling caused by parking shortages, noise impacts to the natural soundscape of the park may increase.

• Attempting to solve congestion and safety issues by expanding parking and roadway systems will result in greater financial challenges. Thoughtful strategies are needed to manage travel demand and encourage visitation patterns that protect resources and reduce the need for more parking spaces inside the park.

#### List of Solutions and Screening

After this analysis was complete, the project team then developed an extensive list of possible solutions to the transportation challenges and issues that had been identified. These possible solutions were drafted with input from park staff, agency representatives, partners, and members of the general public through the scoping process. The project team (cooperating agencies and transportation consultants) suggested additional solutions, and professional recommendations from the project consultant were added to the list.

Proposed solutions ranged from broad ideas, such as adding another park entrance, to very specific ideas, such as expanding certain parking lots and improving signage. The project team categorized these solutions by category type, such as parking, bicycle and pedestrian access, wayfinding, and visitor information, and evaluated and screened all suggested solutions to the transportation challenges and issues facing the park.

The project team then narrowed down the list of possible solutions to include in a range of transportation improvement alternatives. The initial screening determined apparent fatal flaws using a simple pass / fail evaluation. Justifications for elimination were based on CEQ's screening guidelines and evaluation criteria related to each plan goal (NPS 2011a). Only those solutions that did not meet these guidelines and criteria were set aside (NPS 2012a).

#### **Development of Draft Alternatives**

Based on the results of the screening, the project team sorted the remaining solutions into a reasonable range of draft alternatives (one no action and three action alternatives). Each of the alternatives was developed to respond to the purpose of and need for transportation improvements, the goals of the plan, and to solve specific issues at transportation hot spots, or those areas within the park where multiple transportation problems converge in single locations. These issues were analyzed, confirmed, and documented in the existing conditions report (URS 2012).

While there were many common threads to the proposed solutions, such as improving visitor information, there was also a great deal of variance in the suggested means to mitigate the most fundamental problems facing the park—traffic safety and congestion, parking shortages, maintaining a high-quality visitor experience and resource and environmental conditions necessitating compatible infrastructure. Therefore, the project team developed a range of alternatives that vary in their respective strategies for improving these fundamental problems.

These draft alternatives differ in the degree that they mitigate fundamental problems, traffic safety, and congestion by (1) expanding the park's supply of transportation infrastructure to meet forecast visitor demand and / or (2) actively managing visitor demand to constrain expansion of the park's transportation infrastructure.

On April 24 and 25, 2012, the project team conducted a Choosing By Advantages workshop with park staff, cooperating agencies, and partners to identify a preferred alternative. Choosing By

#### Environmental Assessment

Advantages is a decision-making process used to evaluate potential NPS plans and projects and identify the course of action that provides the greatest value for each dollar invested. Through this decision-making process, workshop participants compared the relative advantages of the draft alternatives responded to the plan's goals, transportation issues and geographic hot spots, a specific set of evaluation factors, and the attributes of each draft alternative. The comparison focused on the differences between draft alternatives and the relative importance of those advantages, including the importance to cost relationships between alternatives. The factors and attributes used throughout the Choosing By Advantages process directly related to each of the five plan goals described in the Purpose and Need section of this document.

During the two-day workshop, participants confirmed the initial range of draft alternatives, including one no-action (Alternative 1: Continue Current Approach) and three action alternatives (Alternative 2: Greatest Parking Supply Alternative, Many Visitor Choices Alternative [which has since been dismissed from analysis because of its similarities to the Preferred Alternative, and Alternative 3: Highest Visitor Demand Management Alternative), conducted the comparative analysis of the draft alternatives described above, and developed a draft Preferred Alternative, Alternative 4: Adaptive Travel Management Alternative. Workshop participants recommended that the draft Preferred Alternative be largely based on the Many Visitor Choices Alternative, but that it should also include specific elements of all three draft action alternatives (NPS 2012a). The Many Visitor Choices Alternative was later dropped from analysis because it was the basis for developing the Adaptive Travel Management Alternative and was not distinct enough as a standalone alternative. The No-action Alternative would not meet the goals of the plan, but each action alternative developed would meet those goals to a greater or lesser degree. The draft Preferred Alternative would best meet the identified goals of the Multimodal Transportation Plan, and it would best address the issues identified during the existing conditions analysis. Each of the alternatives is described in more detail later in this document.

#### **Cost Estimation**

Cost estimates were produced for planning and comparison purposes only; therefore, some additional estimating may be needed at the time certain actions are taken to ensure accuracy. The following three separate types of costs were estimated for each project:

- 1. Initial investment (Class C costs and other up-front costs, such as studies and media production)
- 2. Operation and maintenance
- 3. Staffing costs

The following sections detail the methodologies and assumptions assumed to develop each cost type.

Capital Investment – Class C Costs. Class C costs were estimated using a Class C cost estimating spreadsheet. A class C cost estimate is conceptual and based on square foot cost (unit cost) of similar construction. The spreadsheet was used to estimate construction costs for all projects that include improved or additional infrastructure. The basis of the estimate was conceptual plans used to estimate and establish the scope and quantities of each proposed infrastructure improvement. Total unit item costs from a construction database called RS Means included labor, materials, and equipment, and were used to estimate raw construction costs for items, such as clearing and grubbing, erosion control, earthwork, subgrade preparation, aggregate base courses,

and asphalt pavement. RS Means is used by professional estimators for up-to-date labor, materials, and overhead costs for specific project types and locations. The RS Means database is an estimation source which helps calculate the costs of construction prior to beginning construction. The raw costs described above were then multiplied by established NPS factors accounting for location, remoteness, wage rate, taxes, general conditions, historic preservation, contractor overhead and profit, bonds and permits, NPS construction contingency, design costs, construction management costs, and contracting methods. In addition, unit costs for structures like shuttle stops, comfort stations, entry fee booths, and information kiosks were established based on NPS project history to provide preliminary estimates for these items. After the construction costs were adjusted to total current costs, escalation costs were added to account for short-term (0- to 5-year) and long-term (6- to 20-year) projects at 6.90% per year. The percentage rate is based on the Utah Department of Transportation historic database. Raw costs were multiplied by 2.82 for short-term projects and 3.44 for long-term projects to account for mark-up and add-on factors to develop a localized estimate for the Bryce Canyon National Park area. The product of this pricing method was then considered the total Class C cost, or initial investment costs, for the infrastructure improvement with construction beginning in year two. A separate basis of estimate was established for projects anticipated for construction 6 to 20 years in the future.

Class C costs for proposed shuttle system improvements were based on the Alternative Transportation System pro forma for 5-year shuttle operations for short-term (0- to 5-year) improvements and the Bryce Canyon National Park bus life-cycle costs for 6- to 20-year improvements (NPS 2011b). A pro forma is a computational tool intended to help parks assess the financial performance of existing and proposed alternative transportation systems. The Class C costs were assumed to be a portion of the total cost of ownership of each estimate. They were also assumed to cover the potential lease or purchase of buses as well as construction of new shuttle stops associated with the improved service.

Initial Investment – Planning Studies and Visitor Media Production. Up-front costs for items such as planning and engineering studies as well as printed materials were included in the initial investment estimate for some project elements. These costs were assumed to be a flat cost based on the proposed task. These costs were typically assumed to be one-time costs unless otherwise noted in the project duration.

The recurring maintenance and facility operations costs were calculated for each infrastructure improvement with a Class C cost estimate. To account for the duration of planning, design, and construction, short-term project operation and maintenance costs were totaled from 2016 to 2035 (19 years). For long-term projects, the operation and maintenance costs were totaled from 2020 to 2035 (15 years).

The operation and maintenance for existing infrastructure was included for each alternative. The current park asset management plan identifies \$620,000 per year for operation and maintenance on existing roadway and parking assets. This value was increased annually to account for inflation (5.5%) to total approximately \$27.5 million by 2035. This number includes the operation and maintenance costs for the entire transportation system, including existing shuttles, replacement shuttles, shuttle stops, parking lots, as well as shuttle leasing costs. These numbers reflect current commitments; therefore, they are included in every alternative.

Staffing Requirements and Cost. Each project element was considered for its potential to increase NPS staffing levels to monitor, enforce, administer, or maintain the proposed project. If a project element was identified to increase staffing levels, an estimate of additional full-time

employees was established. Staffing requirements and costs were calculated by multiplying the estimated additional full-time employees by an annual wage of \$78,000 per full-time employee as well as the anticipated duration of the necessary employment. In many cases, each individual project element was assumed to require only a fraction of a full-time employee. The full-time employees were assumed to be additive based on the type of project (e.g., full-time employees for infrastructure improvements would be assumed to be covered by the same employee). The calculation represents the staffing costs for the entire duration of the element's life cycle (15 or 19 years). In some cases, the duration was assumed to be shorter.

Total Cost of Ownership. The total cost of ownership is a calculation that estimates all costs associated with owning certain kinds of assets over the lifetime of those assets. This calculation provides valuable information to NPS managers as they assess the likelihood of future funding as compared to projected costs over a long period. For this transportation plan, these costs were estimated through the year 2035 to reasonably predict inflation and other foreseeable future costs during the life of this plan. For this transportation plan, the total cost of ownership for each alternative was calculated as the sum of the following four individual costs:

- 1. Existing lifecycle costs required to maintain and operate the transportation system much as it is today without major changes or expansion. These numbers include costs for park roads, parking lots, shuttle stops, the contract to operate the shuttle system, shuttle leasing costs, and other transportation-related costs such as staffing. This base cost is estimated to be roughly \$27.5 million between now and 2035, and it is included in the cost estimate for every alternative.
- 2. Initial, up-front investments required to construct new facilities, redesign existing facilities, and implement or revise programs such as visitor information projects, wayfinding improvements, or intelligent transportation systems. These costs vary by alternative according to the program of projects included in each alternative.
- 3. Additional lifecycle costs required to maintain and operate new facilities or programs that would be implemented under each alternative. These costs include staffing estimates, and they reflect estimates of total maintenance and operation needs through 2035. These costs vary by alternative according to the proposed program of projects.
- 4. Additional shuttle costs required to implement changes to the shuttle system according to each alternative. The NPS currently contracts a private enterprise to own, operate, and maintain the shuttle system. Park staff manages that contract and ensures proper compliance and efficiency to the extent possible, but the NPS does not own or maintain the buses directly. In order to accurately estimate the costs for potential changes to the shuttle route, fleet, and / or frequency, historical data on shuttle costs were used to project both up-front and long-term future investments in the system. These costs vary by alternative according to the proposed changes to the shuttle system.

For each alternative, the sum of the above four costs equals the estimated total cost of ownership. In other words, that sum provides an estimate of how much it would cost the NPS to implement and maintain each alternative between now and the year 2035.

Cost Estimate Assumptions and Sources. Since many of the elements within each alternative are at the conceptual level, assumptions were made to help establish an element-level cost estimate.

- The Class C cost estimate used rough measurements from conceptual drawings to determine the size of new or enlarged infrastructure items.
- Recent Grand Canyon National Park and Zion National Park static sign plans were used to estimate the study, documentation, design, and fabrication of an updated sign plan for Bryce Canyon National Park.
- A recent Intelligent Transportation System pilot project at Grand Canyon National Park was used to estimate the Bryce Canyon National Park Intelligent Transportation System pilot project.
- Item costs for individual Intelligent Transportation System items were used to develop a build-out estimate for the proposed Bryce Canyon National Park Intelligent Transportation System. Item costs were estimated from data provided on the U.S. Department of Transportation Research and Innovative Technology Administration website.
- Intelligent Transportation System feasibility study costs were based on a recently awarded contract for Arches National Park.
- Social media, visitor information systems, shuttle marketing and branding, park printed materials, and the park website were assumed to be updated every four to five years.
- Shuttle system projects from Grand Canyon National Park, Zion National Park, and Bryce Canyon National Park were used to develop estimates for shuttle stop and shelters as well as the multimodal transportation hubs and plaza.
- Additional NPS planning staff required to oversee park-specific studies were assumed to have a duration of five years.
- Fee booth relocation assumed the same number of fee booths and staff members as the current configuration.

#### **Refinement of the Preferred Alternative**

Following the Choosing By Advantages workshop described previously, the project team further developed and refined the Preferred Alternative to reduce costs and improve the accuracy of the cost estimates, as well as to increase the likelihood of success for the preferred strategies. After making these refinements, the team again compared the Preferred Alternative to the initial four alternatives using the Choosing By Advantages evaluation framework developed during the April 2012 workshop. The Preferred Alternative is largely based on the Many Visitor Choices Alternative, which has since been dismissed from further analysis because of its similarities to the Preferred Alternative. This reevaluation allowed the project team to reconfirm the advantages of the refined Preferred Alternative and to respect the collaborative decision-making process that had previously occurred with park staff, cooperating agencies, and partners. This step in the process confirmed the high overall value that investment in the Preferred Alternative would provide relative to the No-action Alternative and the draft action alternatives. The Preferred Alternative sevaluated through the course of the Choosing By Advantages workshop. It also best addresses the transportation issues and hot spots that were identified as key drivers of this planning process.
During the week of October 22, 2012, members of the planning team and cooperating agencies convened to discuss final refinements to the Preferred Alternative. These meetings occurred onsite and involved in-depth exploration of site planning concepts proposed for certain locations throughout the park. Following these discussions, improvements to the proposed site plans were finalized within the established decision-making framework. To accommodate these improvements within the Preferred Alternative while still keeping total costs down, the planning team prioritized certain aspects of the Preferred Alternative and eliminated elements that did not provide lasting value. As a result of these changes, the planning team refined the cost estimates and reconsidered the results of the previous Choosing by Advantages process to confirm the relative value of the preferred Alternative would provide the park and partners the greatest value for every dollar invested.

### ALTERNATIVES CARRIED FORWARD

### Alternative 1: Continue Current Approach Alternative – No-action Alternative

The Continue Current Approach Alternative presents the park's ongoing routine of continuing maintenance and repairs and implementing previously approved plans. In other words, the Continue Current Approach Alternative describes the day-to-day operations of running the park's transportation system much as the park does today (Figure 3). It does not imply or direct discontinuing day-to-day maintenance and repairs or stopping previously approved plans. The Continue Current Approach Alternative provides a basis for comparing present park operations with the action alternatives and their anticipated environmental consequences. Should the Continue Current Approach Alternative be selected, the NPS would respond to future needs and conditions without major actions or changes in the present course.

Under this alternative, the park would continue to operate and maintain its current transportation system, including the shuttle system, with minor improvements as needed. To the extent possible, the current transportation network would be operated and maintained to acceptable standards. The park would continue to maintain, upgrade, and rehabilitate park roads and parking lots in an incremental fashion as the budget allows.

Under the Continue Current Approach Alternative, the park would only make modest upgrades to shuttle service as warranted by visitor demand. The park would continue to work with its partners to operate and maintain the shuttle system and associated parking in Bryce Canyon City.

The park would make modest improvements to park transportation signs and would continue to disseminate visitor information, primarily through the park newspaper and website.

Park staff time spent managing the park's transportation system would also continue at a level similar to current conditions, requiring approximately one-half of a full-time employee for law enforcement and 30% of the Facilities Manager's time year-round.

Phasing. Phased implementation of the Continue Current Approach alternative assumes that the park transportation and visitor use management study would occur in the short term (0 to 5years). No new strategies are recommended to improve travel demand management, education and visitor information, or roadways and parking. In the long term (6 to 20 years), the park would make improvements to shuttle routing and / or frequencies to accommodate increases in visitor demand. All proposed improvements would depend on available funding, which may result in short-term projects being delayed.



# FIGURE 3 Continue Current Approach Alternative

Bryce Canyon National Park Multimodal Transportation Plan



*Short-term (0 to 5 years) Continue Current Approach Improvements.* Continuing the current approach would include travel demand management, education and visitor information, and roadway and parking short-term improvements as described below.

*Travel Demand Management.* Static message signs would be placed along State Route 63, at the shuttle staging area, and north of the entrance station informing drivers of oversized vehicle (RV and trailer) restrictions in the park. The park would restrict oversized vehicles from viewpoint parking areas and the main park road south of the intersection with the Sunset Campground Road. RVs and trailers with a permit for the campground or a Lodge reservation would be limited to those areas during the peak season. Once in residence, permitted campers and Lodge guests would use shuttles to access park facilities and viewpoints. Day use RV visitors would be guided to the overflow parking area east of the visitor center by park staff for their connection to the shuttle system.

In addition to the *Existing Conditions Report* developed by URS (2012), which catalogues and assesses existing transportation conditions to provide a comprehensive understanding of the range and type of issues currently faced by the park, existing traffic count data, visitation data, and an alternative transportation system financial analysis, the park would conduct a transportation and visitor use management study. The study would build on the existing data and estimate the capacity of the park's transportation network and available financial resources to sustainably accommodate visitor demand on the transportation network (including roads, parking, trails, and shuttle system), other infrastructure, and the park's cultural and natural resources.

*Education and Visitor Information.* Improvements to signs and wayfinding would be limited to maintenance and minor upgrades needed to meet acceptable standards.

*Roadway and Parking.* The visitor center parking lot would be reconfigured to improve shuttle circulation. Parking spaces would be added where the existing shuttle stop is located, and the shuttle stop would be moved to the main park road. The existing RV overflow parking lot would be repurposed to accommodate shuttle users in addition to RVs.

Long-term (6 to 20 years) Continue Current Approach Alternative Improvements. Continuing the current approach would include modest shuttle system and roadway and parking long-term improvements as described below.

*Shuttle.* There are two components of the park's complete shuttle system: Bryce Canyon Shuttle and the Rainbow Point Tour. A private operator owns, operates, and maintains the shuttle vehicle fleet under contract to the park. The specific composition of the fleet changes from year to year. In 2010, the park's alternative transportation system consisted of a fleet of nine diesel engine buses: six 35-foot transit buses, two 40-foot transit buses, and one Motor Coach Industries tour bus. Currently, a portion of the park entrance fee is set aside to pay for the shuttle; therefore, it does not cost visitors extra to use the shuttle service. Under the Continue the Current Approach Alternative, the following components of the park's shuttle system would be managed much as they are today.

1. **Bryce Canyon Shuttle:** The Bryce Canyon Shuttle route provides service between Bryce Canyon City and locations within the Bryce Amphitheater area, and it typically operates between May and October of each year. Route duration ranges from 50 to 90 minutes, including stops at facilities and overlooks. Time intervals between shuttle buses typically range from every 20 minutes to every 10 to 15 minutes.

Under the No-action Alternative, the Bryce Canyon shuttle service would continue, but incremental improvements would be made to accommodate increasing visitor demand. Improvements would include minor adjustments to schedules, frequency, and routing, all of which require substantial commitments for ongoing maintenance and operations. The current number of buses in the fleet would not vary from the current fleet size, although bus replacement would be necessary before 2035.

2. Rainbow Point Tour: Bryce Canyon National Park also offers a twice daily guided tour to Rainbow Point, free of charge, from May to October. Operated by the Bryce Canyon Shuttle, this 3.5-hour round-trip tour covers 40 miles with stops along many of the park's scenic viewpoints.

Under the No-action Alternative as funding allows, the Rainbow Point Tour service would continue with no major expansion in frequency or fleet size.

*Roadway and Parking.* The Lodge parking lot would be reconfigured and restriped to improve efficiency and circulation. Shuttle-only access would be provided in the roundabout adjacent to the Lodge entrance.

Summary of Costs. Table 2 presents a summary of costs (both initial costs and total cost of ownership), as well as additional staff required for implementation of the Continue Current Approach Alternative.

Description	Amount
Total Estimated Costs through 2035	\$46,009,000
Initial Investment Costs	\$5,566,000
Total Operation and Maintenance Costs	\$28,381,000
Staffing and Study Costs	\$234,000
Total Additional Full-time Employees <sup>1</sup> per Year	0.20

# TABLE 2. CONTINUE CURRENT APPROACH ALTERNATIVE – NO-ACTION ALTERNATIVE COST SUMMARY

<sup>1</sup>Additional full-time employee breakdown: 0.2 full-time employee estimated for monitoring, patrol, and enforcement of proposed infrastructure improvements.

### Improvement Strategies Common to All Action Alternatives

As previously stated, this EA evaluates the Continue Current Approach Alternative described above, as well as three action alternatives. While each of the three action alternatives considers a unique approach to reducing traffic congestion, several improvement strategies, particularly related to safety and hot spot improvements, are common to all of these action alternatives.

Utah Prairie Dog Conservation Measures. The park is in the process of preparing a Utah Prairie Dog Stewardship Plan (the Finding of No Significant Impact expected in July 2014), which would provide park managers with a conservation and habitat management framework to protect and enhance Utah prairie dog colonies within the park while allowing for administrative activities and visitor use. Best management practices developed within that planning document would be incorporated proactively into the selected alternative to address ongoing challenges with Utah prairie dog conservation, such as habitat fragmentation and colony isolation, roadkill, loss of meadow habitat due to natural and human caused encroachments, and habituation from park

management and visitor use activities. Proactive management actions would assist with addressing and mitigating existing challenges as well as avoiding new impacts to colonies due to project implementation. Conservation measures would be based on the final Utah Prairie Dog Stewardship Plan in consultation with the U.S. Fish and Wildlife Service (USFWS) and could include, but are not limited to, vegetative and physical barriers, enhanced movement corridors via addition / expansion of underground culverts, temporary road closures during critical times of the year for Utah prairie dog, interpretive material such as wayside exhibits, and speed calming measures. A monitoring program will also be incorporated into an adaptive management framework that will identify site specific concerns within Utah prairie dog colonies before, during, and after project implementation, whether in a phased or full build-out context.

Adaptive Management. The park would use adaptive management strategies to manage and operate the park's transportation system under all action alternatives. Adaptive management promotes flexible decision-making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. It is not a trial and error process, but rather emphasizes learning while doing (U.S. Department of the Interior 2010a).

Adaptive management is the process by which the park would closely monitor or test the effectiveness of initial improvements before any additional actions are taken. The park would evaluate the effectiveness of strategies toward meeting plan goals, adapt strategies as needed, and modify the timing or intensity of transportation improvements as information and feedback is gathered and patterns are tracked.

This iterative feedback loop (Figure 4) would be used throughout the life of the plan, so that each successive set of improvement strategies would be refined based on lessons learned from earlier phases.

Performance Measure Framework. The park would use performance measures to monitor the performance of any implemented alternative. Monitoring is a key element of adaptive management, without which the process cannot be used to learn from past decisions and to plan better in the future. Therefore, the park would use a set of established performance measures to both measure the success of transportation improvements and to make decisions as to when undertake longer-term improvements based on need and funding availability. The application of performance measures would also assist the park in identifying what, if any, refinements are needed to transportation strategies and would help shape priorities over the life of the plan.

Continuous monitoring of transportation improvements should demonstrate the impact of investments on the park's transportation system as a whole, as well as progress toward meeting each of the five goal areas identified in this Multimodal Transportation Plan. Each measure would relate to at least one of five plan goal areas to help measure when a transportation improvement might be needed to better meet those goals.

The three action alternatives would build on existing park efforts to monitor conditions in the park such as parking availability, shuttle use, visitation, and specific resource conditions as they relate to the transportation system. During implementation of this EA, NPS staff will confirm exactly which performance measures best provide this type of information and which can be reasonably and consistently monitored over time with limited staffing and budget. Actual measures, indicators, and thresholds will be selected and may be refined in the future as park staff incorporate lessons learned over time. The park will engage the key partners as appropriate in



# FIGURE 4 Adaptive Management

Bryce Canyon National Park Multimodal Transportation Plan

order to coordinate data collection and public reporting. The data would be reviewed more frequently and the park would manage more variables (e.g., parking lots, shuttle frequency, multi-modal connections, travel information).

Performance measures would be identified for each of the Multimodal Transportation Plan's goals. Each measure would relate to one of five plan goal areas, and a corresponding indicator and threshold or target would indicate when a transportation improvement is needed. Figure 5 illustrates the mechanism for making decisions regarding implementation of specific transportation actions and improvements described in this EA. Park management would use an adaptive management approach based on monitoring of performance measures related to each transportation goal.



Figure 5. Planning and Implementation Process

The park's management process and plan for multimodal transportation continues even after the decision document for the EA. Figure 6 shows the implementation process after the planning and compliance work is completed.



*Definitions.* Goal—Each of the five plan goals articulate paths of action to achieve the year 2035 vision for the transportation network. Goals provide a framework by which a clear set of performance measures is established.

Performance Measures—Performance measures provide a means of assessing how different investment strategies will contribute to the achievement of plan goals and provide a basis for establishing program and project-level measures to guide plan implementation.

Indicators—Indicators are defined as a specific resource or social variable that can be measured to track changes in conditions caused by public use so that progress toward attaining desired conditions can be assessed.

Thresholds—Thresholds are defined as the minimally acceptable condition associated with each indicator. In some cases, rather than setting these minimum thresholds, park managers may decide to establish performance *targets* that set positive results that the park would like to achieve in the future.

Method / Data Source—Methods and data sources describe the means by which the park will collect data and monitor projects related to each performance measure. Methods are quantitative for data that are readily accessible or are more qualitative (based on observations) where data are not readily available or too costly or time intensive to collect.

While precise measures, indicators, and standards will be defined outside the EA process, they may be adjusted in the future as park staff incorporates lessons learned over time. The park will engage the key partners, as appropriate, in order to coordinate data collection and public reporting.

Table 3 presents a list of feasible and applicable topics that the park may focus on when confirming specific performance measures. Once finalized, each performance measure will help the park measure progress toward achieving plan goals and desired outcomes. When formal monitoring begins, the park would confirm the baseline for each of the performance measures, using analysis completed during this planning process as well as additional data already available from related park monitoring efforts.

Many of the possible performance measure topics can help the park track progress toward more than one park goal. Those topics have been repeated for multiple goals in the table below.

Transportation Goals and Desired Outcomes	Potential Performance Measure Topics
Asset Management:	<ul> <li>Annual and monthly visitation rates</li> </ul>
Manage individual transportation assets (e.g., parking	Parking lot closures
lots, road, shuttle bus shelters, trails) efficiently to	Pavement condition
maintain the transportation system as a whole at or	Vehicle, pedestrian, cyclists, wildlife accidents
	<ul> <li>Transportation modes (private vehicles, tour buses, park shuttle, pedestrian, and cycling)</li> </ul>
	Shuttle use and capacity

#### TABLE 3. POTENTIAL PERFORMANCE MEASURE TOPICS

Transportation Goals and Desired Outcomes	Potential Performance Measure Topics
Mobility, Access, and Connectivity:	Rate of parking lot closures
Provide seamless transportation connections within the	Annual and monthly visitation rates
park and to the shuttle staging area in the gateway	Vehicle, pedestrian, cyclists, wildlife accidents
visitor use by leveraging partnership and outreach	Noise levels
opportunities.	Social trailing / soil / vegetation
	Transportation modes
	Shuttle use and capacity
Visitor Experience:	Rate of parking lot closures
Enhance the experience of all visitors with safe, efficient,	Annual and monthly visitation rates
and sustainable transportation options as well as timely,	Vehicle, pedestrian, cyclists, wildlife accidents
relevant information that strengthens appreciation for	Noise levels
the park's resources.	Social trailing / soil / vegetation
	Transportation modes
	Shuttle use and capacity
Resource Protection:	Vehicle, pedestrian, cyclists, wildlife accidents
Minimize impacts to the park's natural and cultural	Noise levels
resources from transportation activities. Address existing	Social trailing / soil/ vegetation
and future transportation system-related effects on wildlife related to habitat fragmentation / connectivity	<ul> <li>Utah prairie dog populations near transportation facilities</li> </ul>
and wildlife vehicle strikes, particularly for the federally	Condition of cultural resources
effects on wildlife associated with the park transportation	
system.	
Sustainable Operations:	Shuttle system operating costs
Develop and maintain a financially and environmentally	Costs per passenger
sustainable transportation system that effectively uses staff time and resources and incorporates innovative	<ul> <li>Incorporate sustainable design and materials in transportation assets</li> </ul>
technology as feasible.	Annual and monthly visitation rates
	Vehicle, pedestrian, cyclists, wildlife accidents
	Noise levels
	Social trailing / soil / vegetation
	Transportation modes
	Shuttle use and capacity

#### TABLE 3. POTENTIAL PERFORMANCE MEASURE TOPICS

Travel Demand Management. Travel demand management improvement strategies common to all alternatives include the park's intention to consider oversized vehicle restrictions, a transportation and visitor use management study, and a possible reservation system, as discussed below.

*Testing of Oversized Vehicle Restrictions.* The park would implement a pilot project restricting oversized vehicles from viewpoint parking areas at all viewpoints in the Bryce Amphitheater and at the Paria View overlook. Static message signs would be placed along State Route 63 south of the intersection with State Route 12 and at the shuttle staging area informing drivers of oversized vehicle (RV and trailer) restrictions in the park. RVs and trailers with a permit for the

campground or a Lodge reservation would be limited to those areas during the peak season. Once in residence, permitted campers and Lodge guests would use shuttles to access park facilities and viewpoints. Signs would guide visitors with visual symbols as well as messages such as "No RVs and Trailers in Certain Areas of the Park…Park Ahead on Left and Ride the Shuttle." These pilot restrictions would be part of the adaptive management approach, and would determine if full or modified implementation of oversized vehicle restrictions would resolve the parking and congestion issues at targeted locations. As with other strategies, the park would test and monitor how effective these restrictions are in addressing congestion and adjust management strategies as needed.

*Transportation and Visitor Use Management Study.* As described under the Continue Current Approach Alternative, the park would conduct a transportation and visitor use management study. The study would build on the existing data and estimate the capacity of the park's transportation network and available financial resources to sustainably accommodate visitor demand on the transportation network (including roads, parking, trails, and shuttle system), other infrastructure, and the park's cultural and natural resources. The National Parks and Recreation Act of 1978 requires that NPS units address the visitor capacity issue in their general management planning processes through the "identification of and implementation commitments for visitor carrying capacities for all areas of the unit" (NPS 2006a). Visitor capacity consists of the maximum amounts and types of visitor use that an area can accommodate while sustaining desired resource conditions and visitor experiences, consistent with the purpose for which the area was established.

*Reservation System.* The park recognizes that parking cannot be expanded indefinitely to accommodate increasing visitation and still adhere to NPS policies and federal requirements to protect sensitive resources. The integrity of biological, cultural, and physical resources and systems is a primary consideration in park management and therefore may constrain development such as expanded parking in some locations. At some point in the future, if other strategies included in each alternative fail to improve conditions, it may become necessary to explore other means of accommodating and managing visitor demand. Therefore, as a long-term strategy under all alternatives, the park would explore the feasibility of implementing a reservation or time-based entry system to manage visitor demand.

It is important to note that any implementation of a reservation system would only occur as a future effort separate from this EA to confirm the need for and feasibility of such a system. At that time, NPS staff would engage with partners, agencies, and the public to determine the best way to design and implement that kind of visitor use management system. Any visitor use management system or technique would be based on the transportation and visitor use management study described above.

While details of a possible reservation system would be determined in the future, as appropriate, the following explanation provides some ideas for how the park and public may choose to design the system. For example, a reservation system may only apply to private vehicle entry, while visitors entering by bicycle, tour bus, shuttle, on foot or other means would not be subject to time-based entry. In addition, visitors in private vehicles may be allowed to enter the park or certain areas of the park during a designated time of day and / or limited only during periods of peak visitation. A reservation system could be in effect throughout the year or only during peak periods, and reservations could be allocated on a per day, per hour, or other basis. Another option would be to make all reservation slots available in advance or make a portion of the slots available in advance and the remainder available the same day. Specific techniques would be developed through a public process as discussed above.

Education and Visitor Information. Education and visitor information improvement strategies common to all alternatives include park wayfinding / sign plan and implementation, as discussed below.

*Park Wayfinding / Sign Plan and Implementation.* To ensure all park visitors, including international and first-time visitors, can seamlessly and easily navigate between major destinations, the park, in consultation with area cooperators, would develop and implement a comprehensive wayfinding plan. The plan would identify well-placed and consistent signs with international symbols. This would include placing additional roadway signs along State Route 12 and State Route 63 to ensure all visitors are provided clear and adequate notification of traffic conditions, transportation options, and / or vehicle restrictions. Developing and implementing a wayfinding plan would require a detailed review and analysis of existing sign conditions, recommended improvements, specific implementation strategies, and close coordination with appropriate authorities outside the park.

Shuttle. Shuttle improvement strategies common to all alternatives include a visitor center shuttle plaza, as discussed below.

*Visitor Center Shuttle Plaza.* Under all action alternatives, the park would improve pedestrian access to the park shuttle and would improve the comfort and safety of pedestrians by developing a highly visible and efficient shuttle plaza at the visitor center. The shuttle plaza would be developed between the entrance to the visitor center and the east side of the visitor center adjacent to the main park road. Plaza amenities would include a shelter, shuttle bus loading / unloading area, comfortable seating, and information displays. Convenient and attractive walkways would guide visitors between the shuttle plaza, visitor center, parking lots, and multi-use paths to the North Campground, the Bryce Canyon Rim, and elsewhere.

**Roadway and Parking**. Roadway and parking improvement strategies common to all alternatives include visitor center parking lot expansion, Lodge parking lot reconfiguration, Inspiration Point / Bryce Point shuttle stop, and Sunset Point parking expansion, as discussed below.

*Visitor Center Parking Lot Expansion.* In all action alternatives, the visitor center parking lot would be expanded to accommodate existing and future visitor demand, including reconfiguring the existing parking lot to improve shuttle circulation. Initial improvements would include relocating the shuttle stop and tour bus drop-off / loading outside the expanded parking lot on the east side of the building. In addition, the park would reduce the size of the parking lot island and restripe existing parking spaces. As a result of these initial improvements to the existing lot, the visitor center parking lot may accommodate an additional three to five parking spaces. Additional expansion of parking would be considered under each action alternative and would vary in size of expansion and number of spaces added.

Lodge Parking Lot Reconfiguration. To improve parking access and circulation in the vicinity of the Lodge, the park would restripe and make minor changes to the physical footprint of the Lodge parking lot. Access and parking for individual vehicles would be limited to this improved rear lot. Short-term guest check-in parking would be relocated to the main parking area at the rear of the Lodge. Through design elements or signs, only shuttle and tour bus access would be encouraged in the roundabout adjacent to the Lodge entrance. The existing shuttle stop at the front corner of the Lodge would be improved to include additional visitor amenities and interpretive information.

*Sunset Point Parking Expansion.* To accommodate forecast parking demand and improve access and circulation, the park would reconfigure and expand the Sunset Point parking lot in all action alternatives. These improvements would improve traffic flow through this popular area and increase the number of standard parking stalls by 70 to 110 spaces (assumes a minimum of 350 square feet per standard space), as well as 14 to 21 tour bus spaces (Figure 7).

### Alternative 2: Greatest Parking Supply Alternative

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park, with less traffic congestion at critical parking locations. The initial strategies would focus on infrastructure expansion, primarily enlarging parking lots at locations that are currently over capacity. Acceptable levels of parking capacity would be determined during performance monitoring (Figure 8). This alternative would have the most emphasis on capital construction projects and does not, therefore, include travel demand strategies or shuttle improvements in the short term. Based upon monitoring and potential increases in demand, however, the park would consider enhancing shuttle operations and facilities in the long term as funding allows.

This alternative could add approximately 625 spaces by 2035 to meet forecast visitor demand. In this alternative, only the most basic improvements to visitor information would be provided so visitors have enough information to reach their destination; however, alternative modes of travel—such as the shuttle, cycling, and walking—would not be enhanced to the same extent as they are in other action alternatives.

Phasing. The Greatest Parking Supply Alternative would be implemented in phases, with initial strategies focusing on infrastructure expansion, primarily enlarging parking lots at locations that are currently over capacity. Acceptable levels of parking capacity would be determined during performance monitoring. The park would also prepare a wayfinding / sign plan within the first five years, with plan implementation expected to occur in the long term. As previously described, the Greatest Parking Supply Alternative has more emphasis on capital projects and does not include travel demand strategies or shuttle improvements in the short term. Based on monitoring and potential increases in demand, the park would enhance shuttle operations and facilities in the long term. The park would also consider implementing a reservation system if and when the improved transportation system can no longer accommodate increasing visitor demand. All proposed improvements are subject to available funding, which may result in short-term projects being delayed.

*Short-term (0 to 5 years) Greatest Parking Supply Alternative Improvements.* In addition to the short-term improvements described under Improvement Strategies Common to All Action Alternatives, the following short-term improvements would be made under the Greatest Parking Supply Alternative.

*Roadway and Parking.* To mitigate congestion and automobile / pedestrian conflicts in the vicinity of the visitor center, the park would relocate the entrance station north of the visitor center along the main park road. The relocated entrance station may include three vehicle fee booths, a shuttle bypass lane, and three through-lanes. Relocation may require coordination with the Utah Department of Transportation and U.S. Forest Service. Pending additional study, fewer fee booths may be installed if viable options for fast-pass lanes, online purchases, and / or self-serve booths are identified.



# FIGURE 7 Sunset Point: Parking Expansion, Common to All Action Alternatives

Bryce Canyon National Park Multimodal Transportation Plan





# FIGURE 8 Greatest Parking Supply Alternative

Bryce Canyon National Park Multimodal Transportation Plan



The park would develop a 200-space parking lot and a new shuttle stop along the main park road at the intersection of the Bryce and Inspiration points access roads to mitigate congestion in the Bryce Point and Inspiration Point parking lots and to reduce natural resource damage from parking along roadsides in this area.

The General Store loop road would be changed to a two-way travel pattern. This change would require roadway widening and / or elimination of on-street parking spaces.

*Long-term (6 to 20 years) Greatest Parking Supply Alternative Improvements.* In addition to the long-term improvements described under Improvement Strategies Common to All Action Alternatives, the following long-term improvements would be made under the Greatest Parking Supply Alternative.

*Roadway and Parking.* The General Store parking lot would be restriped and parking efficiency would be maximized. The parking loop would be eliminated and pavement would be reduced near the High Plateaus Institute to create a plaza. The dispersed Sunrise Point parking areas would be consolidated to a centralized parking lot to accommodate 85 new parking spaces. Parking at Rainbow Point would also be expanded, and the Yovimpa Point parking lot would be planned, designed, and implemented to accommodate increased visitor demand and improve traffic congestion and circulation.

Summary of Costs. Table 4 presents a summary of costs (both initial costs and total cost of ownership), as well as additional (over and above existing) staff required to implement the Greatest Parking Supply Alternative.

Description	Amount
Total Estimated Costs through 2035	\$60,761,000
Initial Investment Costs (short term)	\$5,799,000
Initial Investment Costs (long term)	\$10,615,000
Total Operation and Maintenance Costs (including staffing)	\$42,878,000
Total Additional Full-time Employees <sup>1</sup> per Year	0.60

TABLE 4.	GREATEST	PARKING S	SUPPLY	ALTERNATIVE	Созт	SUMMARY

<sup>1</sup>Additional full-time employee breakdown: 0.6 full-time employee estimated for monitoring, patrol, and enforcement of proposed infrastructure improvements.

### Alternative 3: Highest Visitor Demand Management Alternative

Under the Highest Visitor Demand Management Alternative, the park would seek to improve mobility by providing the most efficient means to circulate large volumes of visitors through the park. This alternative would reduce congestion and improve visitor safety by removing private vehicles from the most heavily congested areas within the park and providing efficient visitor access into and through the park via alternate modes of travel.

The park would also limit facility expansion and limit vehicle access within the park, which would potentially reduce social trailing and vehicle emissions to help protect natural and cultural resources and visitor experience. From an operations standpoint, the Highest Visitor Demand

Management Alternative would require a more efficient division of staff responsibilities by dedicating staff to manage both travel demand and mandatory shuttle services.

Under the Highest Visitor Demand Management Alternative, the park would most actively manage travel demand by mandating that all visitors during the peak season or peak periods access the Bryce Amphitheater viewpoints and facilities via an expanded park shuttle or via bicycle and pedestrian facilities (Figure 9). Private vehicle access would be permitted during nonpeak periods only, with some exceptions for permitted campers and Lodge guests to reach and park their vehicles at those facilities.

Also under this alternative, multimodal transportation hubs with expanded parking would be developed at more locations throughout the park to facilitate convenient vehicle parking and efficient access to the expanded shuttle system and bicycle and pedestrian facilities. The park would actively monitor impacts to vehicle traffic south of the Bryce Amphitheater area to Rainbow Point. In the long term, the park would expand the current twice-a-day tour bus service to Rainbow Point into a full shuttle system that provides more frequent service to the southern part of the park.

The park would also inform visitors of vehicle restrictions and alternative modes available to circulate through the Bryce Amphitheater area.

The park would continuously monitor the effectiveness of these travel demand management strategies and may, at some point in the future and if other strategies fail to improve conditions, explore the feasibility of implementing a reservation system. A reservation (or time-based entry) system would limit access to a certain number of vehicles based on the estimated visitor capacity of the park's transportation system and help the park manage visitor demand.

Phasing. In the first five years of implementation, the Highest Visitor Demand Management Alternative would focus on shuttle enhancements and travel demand management strategies, such as an Intelligent Transportation System pilot project to encourage visitors to use alternate modes, visit the park at less crowded times, or visit less crowded areas.

Along with these strategies, the park would restrict oversized vehicles from entering certain areas of the park during the peak season to solve one of the most pressing transportation problems. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. If oversized vehicle restrictions are tested and successful and the Intelligent Transportation System does not prove successful in managing visitor demand on the park's transportation network, the park would consider restricting all vehicles from the Bryce Amphitheater area in the long term, as described above.

Other short-term strategies would include improving visitor information. Infrastructure improvements would include limited parking expansion and roadway and parking reconfiguration to improve access and circulation. Long-term strategies would fully put in place many of the systems tested in the 0- to 5-year timeframe and would fully develop the shuttle and infrastructure system needed to accommodate parking restrictions. All proposed improvements are subject to available funding, which may result in short-term projects being delayed.



# FIGURE 9 Highest Visitor Demand Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan



Short-term (0 to 5 years) Highest Visitor Demand Management Alternative Improvements. In addition to the short-term improvements described under Improvement Strategies Common to All Action Alternatives, the following short-term improvements would be made under the Highest Visitor Demand Management Alternative.

*Travel Demand Management.* An Intelligent Transportation System Feasibility Study would be conducted to examine technology options and develop a conceptual pilot program for testing. Goals of an Intelligent Transportation System would include assisting visitors in their pre-trip planning, facilitating and promoting alternative modes of travel into and through the park, alleviating traffic and parking congestion, alerting visitors to traffic incidents, and efficiently monitoring and managing the park transportation network in a way that distributes time-sensitive information with minimal staff resources.

An Intelligent Transportation System pilot project would include a single, trailer-mounted variable message sign and monitoring of parking conditions, with semi-manual operations and monitoring. For example, during the peak season, the park would place a programmable variable message sign along State Route 63. Information would be updated hourly based on traffic and parking conditions and could guide visitors with messages such as "Bryce Parking Lots Full...Park Ahead on Left and Ride the Shuttle." A pilot project would allow the park to monitor and assess the effect of an Intelligent Transportation System on visitor travel patterns and consider more sophisticated monitoring systems and permanent signs as needed and as funding allows.

One portable variable message sign would be purchased to test the effectiveness of real-time visitor information at various locations to determine the need for a large-scale Intelligent Transportation System.

The park would use electronic technology to communicate transportation options based on realtime information to reduce congestion within the park, to encourage visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high visitation days, and to reduce the demands on park staff to monitor and enforce parking and traffic regulations.

*Education and Visitor Information.* The park would update visitor maps and Hoodoo newspapers so that they more clearly convey transportation and parking options in the park.

Education and visitor information improvements would include the following:

- Shuttle options: Similar to the park's current Day-Hiking Trail Guide, which illustrates and describes suggested hikes and connections between hiking trails, a Shuttle-Use Guide would suggest parking areas, Rim Trail routes between shuttle stops, and popular destinations to access via the shuttle.
- **Parking options:** Parking quantities, times when parking areas typically fill during the peak season, and options for visitors when parking areas are full would be specifically indicated on the park website as feasible, as well as on the variable message sign described above.
- **Promotion of underutilized areas**: The park would more strongly encourage visitors to visit less-crowded attractions within the park and / or plan their trip to avoid crowded times. For instance, visitors beginning their trip during periods of congestion in the Bryce Amphitheater

area could be advised to visit the southern end of the park prior to visiting the Amphitheater area to better distribute daily visitation throughout the park.

Information on the park website would also more clearly indicate transportation and parking options in the park. Specific improvements could include adding a drop-down menu titled "Getting Around: Shuttle and Parking Options" under "Plan Your Visit." The park would consolidate messages regarding the shuttle service, parking areas, and transportation options on a single web page to ensure users could quickly and easily find clear and concise information about transportation options in the park.

The park would implement a shuttle marketing and branding program with a highly visible and unique identity, and would provide targeted information to actively promote shuttle use and encourage visitors to ride the shuttle as a convenient alternative to driving.

A visitor information social media pilot project would be implemented to disseminate real-time information to park visitors via smartphones and social media applications. The park's existing social media platform would be expanded for use with the transportation system to determine its effectiveness and outreach ability. Initially, a pilot project would be used to inform visitors of parking restrictions, congested areas, and shuttle stop locations. For pre-trip planning, social media would be used to disseminate information on less congested hiking areas and ranger-guided discussions or hikes.

The pilot project would require designated staff to assure information updates are being posted. Staff within the field would be able to transmit information (tweets) to a subscriber group for existing conditions. A staff person on a networked computer with access to the media platform would ensure that other information would be transmitted to subscriber groups and posted on discussion boards. The flexibility of the media platform would allow the park to obtain daily feedback on the effectiveness and adjust accordingly. The park would use social media to inform visitors, especially those en route to the park, about transportation options based on parking conditions in the park.

*Shuttle.* The park would add a shuttle stop along the main park road near the turnoff to Inspiration and Bryce points to facilitate transfers between the Bryce Amphitheater shuttle and the Rainbow Point tour service. A stop in this location would also include interpretive information and pedestrian wayfinding information.

A limited service Bryce Amphitheater area shuttle route that travels along the North Campground Road would be added with an additional stop to provide convenient shuttle access for campers restricted to parking RVs and trailers at the campground.

*Roadway and Parking.* Relocation of the entrance station under the Highest Visitor Demand Management Alternative would be the same as described under the Greatest Parking Supply Alternative. In addition to the proposed Sunset Point parking expansion, the park would reconfigure and restripe the Sunset Point parking lot to improve vehicle circulation and reduce driver confusion.

A new gravel parking lot and shuttle plaza would be developed as a multimodal transportation hub along the main park road at the turnoff to Inspiration and Bryce points. The shuttle stop(s), parking, and other improvements would be phased in over time as needed to accommodate 75–100 cars in the short term. While vehicle restrictions to the Bryce Point area are in effect, visitors

would park at this multimodal hub to board the mandatory shuttle to Inspiration and Bryce points. The gravel lot at the multimodal hub could also serve as overflow parking for Inspiration and Bryce points, and it may facilitate transfers between the Bryce Canyon shuttle and possible expanded tour service to Rainbow Point. Over time, this area would also include interpretive information and pedestrian wayfinding information.

Long-term (6 to 20 years) Highest Visitor Demand Management Alternative Improvements. In addition to the long-term improvements described under Improvement Strategies Common to All Action Alternatives, the following long-term improvements would be made under the Highest Visitor Demand Management Alternative.

*Travel Demand Management.* An Intelligent Transportation System would be developed based on the recommendations of the Intelligent Transportation System Feasibility Study described in the short-term improvements for this alternative. All information would be collected and disseminated from a Traffic Management Center to be located at the visitor center. The following is a conceptual description of the primary components of an Intelligent Transportation System Traffic Management Center:

- Transportation system information would be conveyed electronically. Vehicle detection systems would be used to detect vehicles entering and exiting all major parking lots within the Bryce Amphitheater area. Options for detecting vehicles entering and exiting the parking lots would include inductive detection loops, video detection, radar detection, or sensor pucks.
- Variable message signs would be used to relay messages for parking information to park visitors. During the peak season, a variable message sign would be placed along State Route 63 as travelers enter Bryce Canyon City, and a second variable message sign would be placed as needed.
- Real-time parking and shuttle information dissemination would be used. This could include placing video monitors at the visitor center and other key locations to display information as well as an enhanced website that could be accessed by visitors via their smartphones. Park rangers could also use the website to relay this information to park visitors. These options would allow park visitors to see the number of available parking spaces in each lot and help them make the decision whether to take the shuttle, walk, bike, or drive their personal vehicles. Real-time shuttle information would also inform visitors of waiting times for the next available shuttle.

The park would use electronic technology to: communicate transportation options based on realtime information to reduce congestion in the park, encourage visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high visitation days, and reduce staff demands for traffic and parking monitoring and enforcement.

Flex-time programs would be provided during off-peak hours and / or in underutilized areas of the park. Programs could include:

- Ranger-guided hikes commencing at Fairyland Point or other locations
- Youth educational programs conducted in meadow areas or Natural Bridge, for example
- Historic buildings / landscape tours

Flex-time programs would be implemented to encourage visitors to plan their visit during offpeak hours, which would help distribute visitor demand.

*Education and Visitor Information.* A fully operational social media visitor information system would be developed based on the results of the short-term pilot projects and further assessment of appropriate technologies. The information system would inform visitors about transportation options based on parking conditions in the park and reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high visitation days.

*Shuttle.* The park would focus on the following two areas of improvements to the shuttle system under the Highest Visitor Demand Alternative:

- 1. **Bryce Amphitheater:** Based on forecast demand, the frequency of the shuttle service would be increased for this area, and the shuttle service would be extended into the shoulder season. Based on forecast demand and shuttle efficiency, the Bryce Canyon Shuttle system by 2035 would provide the following service:
  - Peak Season: 3.5-minute frequency in the peak hours and 5-minute frequency in the offpeak hours
  - Shoulder Season (approximately April and October): 13-minute frequency in the peak hours and 16-minute frequency in the off-peak hours

The shuttle fleet for this route would include 15 buses plus 2 standby buses by 2035. A shuttle capacity of 50 seated passengers and 10 standees would be recommended.

Expanded parking would be accommodated at the visitor center and the Inspiration / Bryce points turnoff parking lot, and the park would partner with Bryce Canyon City to expand parking outside the park boundaries. The expanded parking lot would allow for increased shuttle capacity to meet estimated ridership and ensure shuttle access is a convenient and attractive alternative to private vehicle access.

- 2. Rainbow Point: The park would expand Rainbow Point tour service from a twice-daily tour to a higher frequency shuttle service. Based on forecast demand and shuttle efficiency, the shuttle system by 2035 would provide the following service:
  - Peak Season: 12-minute frequency in the peak hours and 15-minute frequency in the offpeak hours
  - Shoulder Season (approximately April and October): 30-minute frequency in the peak hours and 40-minute frequency in the off-peak hours

The shuttle fleet for this route would include 9 buses plus 1 standby bus by 2035. A shuttle capacity of 40 seated passengers and 10 standees would be recommended. The expanded shuttle system would increase the shuttle capacity to meet estimated ridership and ensure shuttle access is a convenient and attractive alternative to private vehicle access.

*Roadway and Parking.* The new parking lot and shuttle plaza along the main park road at the turnoff to Inspiration and Bryce points would be expanded as needed to accommodate 75 to 100 additional cars in the long term (assumes a minimum of 350 square feet per standard space). As described under short-term improvements, while vehicle restrictions to the Bryce Point area are in effect, visitors would park at this multimodal hub to board the shuttle to Inspiration and Bryce points. This lot could also serve as overflow parking for Inspiration and Bryce points. Over time, this area would also include interpretive information and pedestrian wayfinding information.

Summary of Costs. Table 5 presents a summary of costs (both initial costs and total cost of ownership), as well as additional staff (over and above existing) required for implementation of the Highest Visitor Demand Management Alternative.

Description	Amount
Total Estimated Costs through 2035	\$105,052,000
Initial Investment Costs (short term)	\$8,754,000
Initial Investment Costs (long term)	\$23,189,000
Total Operation and Maintenance Costs (including staffing)	\$73,122,000
Total Additional Full-time Employees <sup>1</sup> per Year	2.40

#### TABLE 5. HIGHEST VISITOR DEMAND MANAGEMENT ALTERNATIVE COST SUMMARY

<sup>1</sup>Additional full-time employee breakdown: 0.65 Full-time employees estimated for monitoring, patrol and enforcement of proposed infrastructure improvements, 1.05 full-time employees for Intelligent Transportation System management, 0.1 full-time employee for bicycle services, and 0.6 full-time employee for social media and information dissemination.

### Alternative 4: Adaptive Travel Management Alternative—the Preferred Alternative

As part of the Adaptive Travel Management Alternative (Preferred Alternative), an adaptive management approach would allow the park to monitor the effectiveness of transportation improvement strategies, assess their performance, and continue, modify, and / or seek alternate approaches to advancing plan goals.

The Preferred Alternative has been intentionally or specifically designed to improve visitor mobility. Under the Adaptive Travel Management Alternative (Preferred Alternative), the park would promote a wide range of access and circulation choices to improve visitor mobility. The park would seek to reduce congestion and preserve key park experiences by conducting pilot studies for restricting private vehicles at the Bryce Point / Inspiration Point and Fairyland Point areas, expanding shuttle service, increasing parking availability, as well as by conducting pilot studies for restrictions during the peak season for those oversized vehicles without a campground permit or a Bryce Canyon Lodge reservation. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include new or improved multimodal hubs to facilitate easy transfer between transportation modes, as well as improved visitor information and expanded travel choices (Figure 10). The pilot restrictions would be part of the adaptive management approach and would determine if full or modified implementation of oversized vehicle restrictions would resolve the parking and congestion issues at targeted

locations. As with other strategies, the park would test and monitor how effective these restrictions are in addressing congestion and adjust management strategies as needed.

Under the Adaptive Travel Management Alternative, the park would limit facility expansion to the extent possible and alternatively seek to repurpose and / or decommission existing infrastructure to help protect park resources and conserve limited funding. Related to this, the park would implement strategies to reduce congestion and related emissions in heavily congested areas of the park and consolidate social trailing in key areas to help protect natural and cultural resources.

From a park operations standpoint, this alternative necessitates a full-time employee dedicated to transportation planning and operations and is designed to more efficiently use staff time and resources.

The Preferred Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the plan, as described in "Purpose and Need." According to a well-rounded and feasible set of performance measures, the park would closely monitor progress towards meeting those goals. The park would test the effectiveness of improvements before any additional actions are taken. In that context, each transportation improvement would be considered in phases over time and would only be implemented if determined necessary at the time. Therefore, some of the projects included in the Preferred Alternative may not be implemented at all, either because conditions improved, the projects were not needed, or because pilot projects were tested and found not to work. The adaptive management framework under the Preferred Alternative would provide the park with the greatest flexibility and widest range of management strategies to respond to changing visitor use and resource conditions.

The park would build on its current monitoring program to track quantitative information, such as location, date, and time of parking lot closures, as well as qualitative information, such as crowding at key destinations. Through adaptive management, park staff would modify the timing or intensity of transportation improvements as they gather information and feedback and track patterns. Data collected would demonstrate the impact of investments on furthering the five goals of the plan.

Together with some limited parking expansions, the park would initially implement relatively low-build and low-cost improvements, such as operational, educational, and partnership strategies that shift visitor demand and visitor use patterns and promote alternative modes of transportation. Initial travel demand strategies, such as oversized vehicle restrictions, would address the most pressing transportation-related needs. At the same time, the park would invest in operational strategies, such as working in cooperation with partners to market the convenience of parking outside the park and riding the shuttle.



# FIGURE 10 Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan



Phasing. To facilitate implementation of transportation improvements over the life of the 20-year plan, the project team has conducted environmental analysis on the full build-out of the plan. The Adaptive Travel Management Alternative, the Preferred Alternative, would be implemented in phases, and the park would use an adaptive management approach described under Improvement Strategies Common to All Action Alternatives to determine the timing, scale, and location of improvements. In addition, some improvements may not be implemented, if the need does not present itself. Phased implementation also allows the park to take advantage of new transportation and communication technology improvements.

Initial strategies would focus on operational improvements to meet the most pressing transportation-related needs, such as implementing oversized vehicle restrictions, if found effective during the pilot projects, and placing variable message signs to promote parking at the shuttle staging area.

The first phase of improvements would be closely monitored. The necessity and timing of future improvement phases would be predicated on determining how well the first-phase transportation improvements are working toward meeting established performance measures. The park would implement additional phases as necessary. For instance, with the implementation of oversized vehicle restrictions in combination with improved visitor information promoting alternative transportation options, results of pilot projects and monitoring may indicate that parking congestion at specific hot spots has been adequately relieved. Therefore, related short-term improvement strategies, such as vehicle restrictions to Bryce Point, may be delayed until a point at which early-action improvements are no longer meeting established performance measures and additional travel demand strategies are needed. All proposed improvements are subject to available funding, which may result in short-term projects being delayed.

*Short-term (0 to 5 years) Adaptive Travel Management Alternative Improvements.* In addition to the short-term improvements described under Improvement Strategies Common to All Action Alternatives, the following short-term improvements would be made under the Adaptive Travel Management Alternative.

*Travel Demand Management.* Strategies under the Adaptive Travel Management Alternative would be the same as described under the Highest Visitor Demand Management Alternative, with the exception of testing vehicular restrictions at Fairyland Point.

Vehicular restrictions to Fairyland Point (Figure 11) would be tested and evaluated. Hiking and biking access to Rim Trail would be promoted. A sign would inform visitors that vehicles are restricted from using Fairyland Point Road. The existing gate may be used to restrict access if sufficient temporary parking is available at the west end of the access road. Fairyland Point hiking and biking would be incorporated into printed and electronic educational and marketing materials. Fairyland Point Road asphalt would not have to be removed, but the park would establish vehicle controls with signs, gates, etc., and maintenance on this section of road would be reduced to levels appropriate for bicycling, pedestrian, emergency, and maintenance access only.

*Education and Visitor Information.* Strategies under the Adaptive Travel Management Alternative would be the same as described under the Highest Visitor Demand Management Alternative.

*Roadway and Parking.* To mitigate congestion and automobile / pedestrian conflicts in the vicinity of the visitor center, the park would improve circulation around the entrance station. Minor improvements would be made at the entrance station, largely within the existing footprint. The



# Fairyland Point: Proposed Multimodal Access and Parking, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan United States Department of the Interior / National Park Service February 2014



westernmost existing fee booth would be relocated to the east side of the fee area depicted in Figure 12. The existing west entrance lane then would be converted to shuttle and tour buses only, and divider islands would be designed and installed to separate traffic and improve pedestrian safety at crosswalks.

The viability of converting visitor fee collections to an on-line system, payment at the shuttle staging area, hotels and visitor center, and / or self-pay kiosks would be studied. The park would continue to partner with Bryce Canyon City to sell entrance passes at business outlets and would study the potential for using more advanced technology to pay for and validate entrance passes. Should the study find that enhanced off-site fee collection is feasible, the park could consider removing or reducing the number of staffed fee collection booths.

To accommodate 20 to 30 additional parking spaces near the entrance station and visitor center, the park would expand parking on the east side of the main park road that ties into the existing overflow lot and provides safe crossing to the visitor center. This expansion assumes a minimum of 350 square feet per standard parking space plus vegetated islands. Depending on the success of this approach, the park may choose to expand and formalize this parking in the long term (see below).

The parking lot at the Lodge would be reconfigured to improve efficiency and safety, and the existing roundabout would be improved to provide adequate turning radius for shuttles and tour buses (Figure 13).

A simple tour bus holding parking area would be constructed across from the existing historic service station for approximately 6 to 12 tour buses depicted in Figure 14. This project would alleviate strain on congested parking areas elsewhere by providing a dedicated parking area for tour buses. Parking requirements would be coordinated through a commercial use authorization process with commercial operators.

Improvements would be made around the General Store and High Plateaus Institute to alleviate confusion, congestion, safety, and circulation problems depicted in Figure 14. Those improvements could include revegetation of the back parking loop, relocation of the picnic area, and reconfiguration of the intersection and parking stalls.

As described under the Highest Visitor Demand Management Alternative, a new gravel parking lot and shuttle plaza would be developed along the main park road at the turnoff to Inspiration and Bryce points (Figure 15). The difference under the Adaptive Travel Management Alternative is that there would be no plan for NPS to expand Rainbow Point shuttle service.

Adaptive Management. A transportation professional would be hired to coordinate and oversee transportation improvement projects and adaptive management, including monitoring and performance reporting. This support could come from the NPS Intermountain Region, NPS Denver Service Center, Federal Highway Administration, U.S. Department of Transportation Volpe Center, or other resources. The park would prepare annual progress reports and a close-out report at the end of the first 5-year cycle to document the results of the park's adaptive management approach. The report would be presented to NPS regional leadership and would include recommendations for transportation improvement strategies over the next annual and 5-year cycle.



### Entrance Station / Visitor Center: Multimodal Transportation Hub, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan



### Lodge Loop: Proposed Parking Lot Reconfiguration, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan





## General Store/Sunrise Point: Proposed Multimodal Transportation Hub, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan





## Inspiration/Bryce Point Turnoff: Proposed Multimodal Transportation Hub, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan



Long-term (6 to 20 years) Adaptive Travel Management Alternative Improvements. In addition to the long-term improvements described under Improvement Strategies Common to All Action Alternatives, the following long-term improvements would be made under the Adaptive Travel Management Alternative.

*Travel Demand Management.* Based on the results of the Intelligent Transportation System pilot project and monitoring results, an Intelligent Transportation System Feasibility Study would be conducted to examine technology options and develop a conceptual pilot program for testing. Goals of an Intelligent Transportation System would include those described under the Highest Visitor Demand Management Alternative. Also as described under the Highest Visitor Demand Management Alternative, an Intelligent Transportation System would be developed based on the recommendations of the feasibility study.

The Adaptive Travel Management Alternative would differ from the Highest Visitor Demand Management Alternative by including timing restrictions for parking, which would be implemented at the most heavily used parking areas, such as the visitor center and General Store. Time limits would be posted on signs. Vehicles that park in excess of the indicated time would be ticketed. Restrictions may be implemented as a pilot project to determine the effectiveness of restrictions and staff requirements for enforcement.

*Education and Visitor Information.* Improved public outreach, printed materials, websites, and the incorporation of social media and mobile technology would be implemented.

*Shuttle.* The park would focus on the following two areas of improvements to the shuttle system under the Adaptive Travel Management Alternative:

- 1. **Bryce Amphitheater:** Based on the results of the separate shuttle efficiency study (separate from this plan), the frequency of shuttle service may be increased and extended into the shoulder season. For example, based on forecasted demand and shuttle efficiency, the shuttle in 2035 could provide the following service:
  - Peak Season: 7-minute frequency in the peak hours and 10-minute frequency in the offpeak hours.
  - Shoulder Seasons (approximately April and October): 20-minute frequency in the peak hours and 25-minute frequency in the off-peak hour

As many as 8 additional new buses may be needed to implement this increased frequency and extended shuttle service, bringing the total shuttle fleet size to a maximum of 17 buses for this service area.

The shuttle route may be adjusted to travel along the North Campground Road with an additional stop to provide convenient shuttle access for campers restricted to parking RVs and trailers at the campground. Physical infrastructure would be limited at first to preserve flexibility.

2. **Rainbow Point:** The twice-a-day tour operation to Rainbow Point would continue, with no fleet or service expansion by the NPS. A multimodal transportation hub at the turnoff to Bryce and Inspirations points would facilitate transfer between the existing Bryce Amphitheater

shuttle system and any future expansion of the route to Rainbow Point, should such an expansion be considered by a commercial operator.

*Roadway and Parking.* Any improvements to parking at the visitor center should not preclude development of a parking garage behind the existing employee parking lot. Impacts of a parking garage would need to be mitigated and appropriate additional compliance would be required.

Including other small improvements, the park could further expand the parking lot near the visitor center to accommodate a total of 60 to 100 standard spaces if needed (see Figure 12). The park would also construct a new road segment just east of the existing main park road near the visitor center to provide flexible traffic management options, such as separating private vehicles from shuttles and tour buses and / or separating out one-way traffic as needed. This new road segment would serve the reconfigured entrance stations, new visitor center parking, and the current visitor center overflow parking lot. Reconfiguration of circulation patterns at the visitor center would allow the park to close off the main park road to the south of the fee booths and direct traffic to the east, toward an expanded parking lot, on a seasonal basis. This adjustment would reduce traffic passing by a portion of the Dave's Hollow Meadow where Utah prairie dogs occur and where wildlife vehicle conflicts are common.

If pilot study results show that vehicle restrictions to Fairyland Point reduces congestion and increases safety, a parking lot at the existing turn-off from the main park road would be constructed to accommodate visitors wishing to walk, bike, or ski out to the Fairyland Point area (see Figure 11). Over time, space could accommodate 30 to 50 standard parking spaces.

The simple tour bus holding parking area constructed across from the existing historic service station would be expanded to create a multimodal transportation hub that would serve the Lodge and Bryce Amphitheater destinations (see Figure 14). Parking would be phased in over time to include roughly 50 to 60 standard spaces, and an additional 15 to 25 spaces in the long term (assumes a minimum of 350 square feet per standard space). The project would provide for easy transition between transportation modes, including shuttle, biking, walking, and horseback riding at nearby trail ride corral.

An additional simple tour bus holding parking area to accommodate 6 to 12 buses may be developed along Lodge Loop Road at the intersection with Sunrise Loop Road (see Figure 7). This tour bus holding area would only be implemented if parking across from the historic service station becomes overly congested.

As described under the Highest Visitor Demand Management Alternative, a new parking lot with enhanced shuttle amenities would be developed along the main park road at the turnoff to Inspiration and Bryce points (see Figure 15), but without NPS expanding Rainbow Point shuttle service.

If monitoring results determine that congestion and safety conditions at the existing Bryce Point parking lot warrant additional transportation improvements, the park may construct a new overflow parking lot near the existing Bryce Point parking lot to accommodate approximately 20 standard spaces (assumes a minimum of 350 square feet per standard parking space). This new lot would provide additional overflow parking, especially when the shuttle is not in service, as well as provide access to and parking for the Rim Trail and increase pedestrian access to nearby popular viewpoints such as Inspiration and Bryce points (Figure 16).



# Bryce Point: Parking Expansion, Adaptive Travel Management Alternative

Bryce Canyon National Park Multimodal Transportation Plan



Summary of Costs. Table 6 presents a summary of costs (both initial costs and total cost of ownership), as well as additional staff (over and above existing) required for implementation of the Adaptive Travel Management Alternative.

Description	Amount
Total Estimated Costs through 2035	\$73, 539,611
Initial Investment Costs (short term)	\$4,623,050
Initial Investment Costs (long term)	\$16,875,199
Total Operation and Maintenance Costs (including staffing)	\$52, 041,362
Total Additional Full-time Employees <sup>1</sup> per Year	3.30

# TABLE 6. ADAPTIVE TRAVEL MANAGEMENT ALTERNATIVE (PREFERRED ALTERNATIVE) COST SUMMARY

<sup>1</sup>Additional full-time employee breakdown: 1.2 full-time employees estimated for monitoring, patrol and enforcement of proposed infrastructure improvements, 0.6 full-time employee for Intelligent Transportation System management, 0.1 full-time employee for bicycle services, 0.3 full-time employee for social media and information dissemination, and 1.1 full-time employee for park planning management and Bryce Canyon City parking coordination.

### MITIGATION MEASURES OF THE ACTION ALTERNATIVES

Mitigation measures are specific actions that, when implemented, reduce impacts and protect park resources and visitors. To prevent and minimize potential adverse impacts associated with the action alternatives, mitigation measures and best management practices would be implemented prior to and during the construction and post-construction activities under the transportation plan and are assumed in the analysis of effects. General and resource-specific best management practices and mitigation measures for the project are listed below in Table 7. (Note: This list is not all-inclusive, as there would be additional mitigation measures included in the contractor's specifications as projects are designed and built.)
#### General Measures

- All construction areas that are actively under way must have orange construction fence around them until the work site is safe.
- Impact areas and buffer zones would be flagged prior to construction to ensure that resource damage (as determined by the project footprint and buffer zone surrounding construction areas) would not be exceeded during construction.
- Staging areas for the construction office (a trailer), construction equipment, and material storage would either be
  located in previously disturbed areas near project sites (such as at existing parking areas) or in other disturbed
  areas that best meet project needs and minimize new ground disturbance. All staging areas would be returned to
  pre-construction conditions or better once construction had been completed. Standards for this, and methods for
  determining when the standards were met, would be developed in consultation with the park's vegetation
  program manager.
- Before construction, the contractor(s) for individual projects would work with park staff to develop a construction traffic management plan. The plan would include information on construction phases and duration, traffic scheduling, proposed haul routes, staging area management, visitor safety, detour routes, and pedestrian and bicyclist movements on adjacent routes. The NPS would limit the transport of debris, construction equipment, and materials to periods of off-peak traffic whenever possible.
- Garbage, trash, and other solid waste associated with construction operations would be disposed of in trash bins and disposed of weekly, or sooner if warranted, outside of the park at an approved facility.
- All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion. Any asphalt surfaces damaged during construction of the project would be repaired to original conditions. All demolition debris would be removed from the project site. This material would be disposed of outside the park at an approved facility or recycled as appropriate.
- The installation and removal of best management practices would be sequenced in relation to the scheduling of earth-disturbing activities, including before, during, and after such activities.
- All equipment on projects would be maintained in a clean and well-functioning state to avoid or minimize contamination from mechanical fluids. All equipment would be checked daily. Spill remediation kits will be available on-site every day and contractor staff trained in their use.
- A hazardous spill plan would be in place, stating what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials.
- Construction vehicles would not be allowed to park within meadow or other specified sensitive habitats.

#### Air Quality

- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary.
- To reduce entrainment of fine particles from hauling material, sufficient freeboard would be maintained, and loose material loads (aggregate, soils, etc.) would be covered with tarps.

#### Water Quality

- Erosion would be minimized to the extent possible, by designing paved or hardened surfaces to direct water flows away from sensitive areas. Existing roads and paved surfaces would be used as much as possible for construction activities and for keeping heavy equipment off undesignated paths and trails.
- The requirements for a storm water pollution prevention plan would be addressed by the contractor during the construction contract and would meet all statutory NPS standards. All National Pollutant Discharge Elimination System requirements would be met.
- Standard erosion control measures—such as silt fences, sand bags, or equivalent control methods—would be used to minimize any potential sediment delivery to ephemeral streams.

Sou	indscapes
•	To reduce noise and emissions, construction equipment would not be permitted to idle for longer than 5 minutes following initial engine warm-up unless specifically authorized by park management.
•	Construction foremen would include briefings to crews on vehicle use as a part of pre-construction conferences.
•	Contractors would be required to properly maintain construction equipment (e.g., mufflers) to minimize noise from equipment use.
•	Work would be restricted to 8 A.M.–6 P.M. to reduce noise impacts to guests within the campgrounds and Lodge, as well as reduce impacts to wildlife active from dusk to dawn.
Nig	ht Sky
•	Construction activities would occur only during daylight hours, from dawn to dusk, so as to avoid the need for night work or night lighting unless specifically authorized by park management.
•	Lighting would only be provided where necessary for the mobility or safety of visitors.
•	Different use areas, such as tour bus parking and privately owned vehicle parking, would be zoned for lighting. This would provide maximum flexibility to minimize impacts from parking area lighting by enabling the park to not light areas that are not used at night.
•	The minimum amount of light necessary would be used in each new developed area. Only target areas, such as parking lots, would be lit, and the illumination footprint would not be extended beyond the target. Trees and other light-absorbing elements would also be used in the landscape design to reduce impacts of lighting.
•	Fully shielded fixtures with asymmetrical light throws would be used to minimize the number of bollards for path lighting; these would concentrate lighting on the horizontal surface to direct light only where needed. It is assumed that where illumination is necessary there would be no horizontal light spread beyond paved surfaces.
•	Design elements would be incorporated into construction plans to reduce the amount of headlight shine and glare in areas where night sky interpretation occurs, including the visitor center and North Campground outdoor amphitheater.
•	All outdoor lighting should be fully shielded or be full cutoff fixtures, and lamp types chosen for spectral characteristics should be compatible with NPS goals for natural resources including wildlife and dark sky preservation, as well as NPS safety regulations.
Soi	S
•	Before clearing and grading, the ground in the area to be cleared would be clearly marked to minimize the amount of cleared area.
•	Only those areas necessary for construction would be cleared and grubbed.
•	Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as silt fences, straw wattles and / or sand bags would be used to minimize any potential soil erosion.
•	The amount of disturbed earth area would be minimized, and the duration of soil exposure to rainfall limited.
•	Topsoil will be removed and stockpiled separately from deeper excavations and used to assist native plant revegetation in disturbance corridors that are not converted to pavement, asphalt, or gravel surfaces, including buffer areas and shoulders of parking expansions.

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Vegetation						
•	Inventories for existing populations of nonnative species would occur in all project and staging areas and would be treated before construction, as deemed necessary by the park's vegetation program manager. As design plans develop, they would be cross-referenced with existing vegetation survey information to ensure that no new survey is necessary before work starts.					
•	A pre-construction survey for rare plants would be conducted in any areas suspected of containing populations of these species. Salvage via transplant would be conducted when feasible.					
•	Vegetation program staff at the park would provide input on salvage potential and tree avoidance at project sites where necessary. A supervisory biologist would also spot-check work in progress.					
•	Revegetation and recontouring of disturbed areas in the buffer zone would take place following construction and would be designed to minimize impacts on native vegetation and deter the possible spread of invasive species. Revegetation efforts would strive to reconstruct the natural spacing, abundance and diversity of native plant species found in similar vegetated landscapes of the park. All disturbed areas surrounding newly constructed / improved areas (such as expanded parking lots, multimodal hubs or road reconfigurations) would be restored as nearly as possible to pre-construction or better conditions shortly after construction activities are completed.					
•	A revegetation plan would be developed by the park's vegetation program manager in consultation with a landscape architect. Any revegetation efforts would use site-adapted native species and / or site-adapted native seed, and park policies regarding revegetation and site restoration would be incorporated. The plan would consider, among other things, use of native species, plant salvage potential, nonnative vegetation management, and pedestrian barriers. Policies related to revegetation would be referenced from the Bryce Canyon National Park Vegetation Management Plan (2010b) and NPS Management Policies (2006a).					
•	Social trails created by construction activities would be obliterated, revegetated, and protected from pedestrian impact upon the completion of the project in each individual area to reduce further resource damage.					
•	Weed control methods would be implemented to minimize the introduction of noxious weeds including power- washing of all earth-moving equipment and project-related vehicles prior to being brought into the park. The location selected for vehicle washing would be approved by a supervisory biologist and power washing would be approved by the Contracting Officer's Representative or park-approved Contracting Officer's Technical Representative.					
•	Staging area locations for construction equipment would be park approved, and the need to treat for nonnative vegetation would be considered.					
•	Nonnative species encroachment and distribution would be monitored for two to three years after construction.					
•	Revegetation efforts would be initiated as soon as possible following construction to minimize the competition of native species with nonnative species.					
•	The impact of tree removal would be minimized by salvaging as many suitable trees as possible for use in revegetating disturbed areas in each project area following construction and other disturbed areas throughout the park (including areas needed to minimize social trailing). Salvage would be limited to small trees and would not constitute a one-to-one tree loss because of slow growth patterns and high percentage of transplant die-off. Vehicle parking would be limited to existing roads or the staging areas.					
•	Any fill, rock, or additional topsoil needed would be obtained from a park-approved source. Topsoil from the project area would be retained and used for site restoration whenever feasible.					
•	To reduce the spread of noxious invasive species, surveys of the project area would be completed prior to any ground-disturbing activities. If noxious invasive species are found, a pre- and post-construction treatment of the area would be conducted using species-specific targeted herbicides and approved in the park's Vegetation Management Plan.					

#### Special Status Species: Utah Prairie Dog

- General conservation measures included in the park's Utah Prairie Dog Stewardship Plan (in process, the Finding
  of No Significant Impact expected July 2014) will be incorporated into best management practices to reduce and
  mitigate any associated impacts to colonies during and following construction related to transportation
  management planning. These measures will be implemented in a proactive manner to address road mortality,
  habitat fragmentation, impacts from noise disturbance, and human habituation. Management actions could
  include, but are not limited to, installation of vegetative and physical barriers, enhanced movement corridors via
  clearing / addition / expansion of underground culverts, temporary road closures, interpretive material such as
  wayside exhibits, and speed-calming measures.
- During construction in areas adjacent to active Utah prairie dog colonies (including the new multimodal hub across from the Historic Service Station and / or the tour bus holding area along the Lodge Loop Road and improvements near the visitor center), the park will install a visual barrier surrounding the Utah prairie dog colony to deter road crossings and reduce the impacts of construction traffic and activity on the colony. Movement between colonies that are bisected by roads will be enhanced via clearing out underground drainage culverts prior to installation of visual barriers. Visual barriers may be removed following construction, or a more permanent barrier (e.g., metal fence or rock wall with an underground barrier) may be constructed depending on monitoring results.
- The park will monitor Utah prairie dog behavior during and following construction activities in areas within 350 feet of active colonies, including the following areas: Dave's Hollow West, Dave's Hollow East, Historic Housing, and Sunset Point (if active). If roadkill mortalities increase from baseline conditions (at a level >10% or other increase percentage as determined in consultation with the USFWS), the park would implement conservation measures to further protect colonies. Mitigation measures will be determined through consultation with the USFWS and follow recommendations as outlined in park's Utah Prairie Dog Stewardship Plan.
- Construction activities within 350 feet of an active Utah prairie dog colony will be monitored by the park's biologist or qualified staff. Monitoring would occur no less than 8 hours per colony in two-hour (or greater) observation increments. A monitoring plan will be developed by the park and submitted for approval by the USFWS prior to implementation of any proposed improvements. Activities that have an observably detrimental impact on Utah prairie dog colonies and which extend beyond acceptable impacts as outlined in the Biological Opinion for this project would cause cessation of construction and result in reconsultation with the USFWS.Construction workers and supervisors will be informed about the status of the Utah prairie dog and appropriate activities around active colonies. Contract provisions will require the cessation of construction activities that had a detectably detrimental effect on Utah prairie dogs in the project area, until the park's biologist re-evaluates the project and its impact on the prairie dog. This may include modification of the contract for any determined protection measures, which may include timing or equipment restrictions.
- No construction equipment will be stored within 500 feet of an active colony or within mapped Utah prairie dog habitat in the park.
- All conservation measures from the biological opinion for this EA will be incorporated into project implementation, which may include timing restrictions near Utah prairie dog habitat, as well as other conservation measures.

#### Wildlife

- To minimize effects on wildlife, construction activities would be restricted to daylight hours, from dawn to dusk.
- Construction and staging in areas of unique or ecologically important wildlife habitat would be avoided or minimized. This would include meadow ecosystems, assemblages of structurally diverse vegetation, mature tree stands, known wildlife movement corridors, known nesting sites for raptors, and habitat known to be significant for foraging or breeding.
- To minimize negative impacts to nesting birds, trees needing removal would not be cut during nesting season for northern goshawk (*Accipiter gentilis*) or any birds protected under the Migratory Bird Treaty Act, generally from April 1 through July 31. If construction activities or tree cutting is required during this time, pre-construction / pre-tree cutting bird surveys would be conducted for nests. Consultation with the park's wildlife biologist will be required prior to any tree removal. Pre-tree cutting bird surveys may also be required outside this timeframe. No construction activities would be conducted in identified nesting areas until the young have fledged.

#### **Historic Properties**

- If previously unknown archeological resources are discovered during the project, a park archeologist will be contacted immediately. All work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed, if necessary, in consultation with the Utah State Historic Preservation Office and affiliated tribes. If the site would be adversely affected, a treatment plan would also be prepared as needed. Treatment plans would fully evaluate avoidance, project redesign, and data recovery alternatives.
- All workers would be informed of appropriate site etiquette and the penalties of illegally collecting artifacts or of intentionally damaging any archeological or historic property. Workers would also be informed of correct procedures if previously unknown resources were uncovered during construction activities.
- Staging areas for construction equipment and materials storage would be in designated areas where there is no potential for archeological resource disturbance. If the sites selected for these activities changed during later design phases for any alternative, additional archeological surveys would be conducted to ensure that the staging areas are clear of archeological resources.
- Implement a NHPA section 106 agreement document (Programmatic Agreement) that specifies roles and responsibilities and provides a programmatic approach to protecting and preserving historic properties throughout the implementation of the plan.
- Develop a plan of action for inadvertent archeological discoveries during construction associated with the implementation of the plan. The inadvertent discovery plan of action would be documented in an archeological monitoring and inadvertent discovery plan included in the Programmatic Agreement as an appendix.
- Known archeological sites and isolated occurrences would be flagged and avoided during any construction activities associated with the plan, and a NPS archeologist would be on-site during the entire ground disturbance near the site.
- All workers would be informed of appropriate archeological site etiquette and the penalties of illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers would also be informed of correct procedures if previously unknown resources were uncovered during construction activities.
- Contractor-selected, noncommercial areas outside of the project limits including, but not limited to, material sources, disposal sites, waste areas, haul roads, and staging areas would not encroach upon sites listed or eligible for listing in the NRHP. Written proof satisfactory to the NPS and the Utah SHPO shall document, for compliance with section 106, that no historic properties would be affected because:
  - there are no historic resources present, or
  - there is no effect on historic properties.
- Should previously unknown archeological resources be discovered during construction, work would be halted in
  the discovery area, the site would be secured, and the appropriate park staff would consult with the Utah SHPO
  and affiliated tribes, if necessary, according to 36 CFR 800.13 and, as appropriate, provisions of Native American
  Graves Protection and Repatriation Act. If the archeological resource would be adversely affected, a treatment
  plan would also be prepared as needed. Treatment plans would fully evaluate avoidance, project redesign, and
  data recovery alternatives.
- In compliance with Native American Graves Protection and Repatriation Act, the NPS would also notify and consult concerned American Indian tribal representatives for the proper treatment of human remains and funerary and sacred objects should these be discovered during project construction.
- Archeological resources found within the construction area would be removed only by the NPS or their designated representatives.
- Protect cultural landscapes and viewsheds, historic structures / districts, and features.
- Minimize impacts to native vegetation in and near cultural landscapes and historic districts.
- Match existing design and materials and physical appearance for ramp, curbs, gutters, and sidewalks within cultural landscapes and historic districts.

Ethnographic Resources						
If Native American huma during construction, all v inadvertent discoveries c	n remains, funerary objects, sacred objects, or objects of cultural patrimony are uncovered vork would cease immediately, and the tribes would be contacted per regulations regarding overed by the Native American Graves Protection and Repatriation Act.					
Visitor Experience and Health	and Safety					
The park or its contractor approval that would:	or would develop and implement a visitor protection / safety plan for park review and					
provide procedures	for managing staging areas to restrict public access and maintain site safety					
ensure that visitors	are safely and efficiently routed around construction areas					
<ul> <li>outline measures to the site, as well as I</li> </ul>	protect the safety of visitors by providing established and maintained walkways across parrier fencing along trails and paths					
<ul> <li>To the extent practicable during peak visitation tin approved by the park, o round. Weekend work ( the construction.</li> </ul>	e, work would be scheduled to avoid construction activity and construction-related delays mes. In general, no holiday or nighttime work would be allowed. Unless otherwise peration of heavy construction equipment would be restricted to dawn to dusk, year- Friday through Sunday) would not be allowed unless authorized by park staff overseeing					
<ul> <li>As allowed by time and projects would be share construction periods. The sent to those with reservent methods. The purpose we project implementation</li> </ul>	funding, information about this transportation project and other foreseeable future d with the public through park publications and other appropriate means during is could take the form of an informational brochure or flyer distributed at the gate and vations at park facilities, postings on the park's website, press releases, and other vould be to minimize the potential for negative impacts to visitor experience during and other planned projects during the same construction season.					
<ul> <li>NPS employees, resident road closures, as appropriate</li> </ul>	s, and concessioners would be notified about project implementation and road delays or priate.					
The contractor would pr assist the park in manage	ovide a weekly construction schedule with daily updates to the NPS field supervisor to jing visitation and park operations during construction.					
<ul> <li>A traffic control plan we construction period(s) as plan would be provided implementation. Traffic immediately.</li> </ul>	build be developed in conjunction with the construction documents for use during the sociated with roadway, entrance station, overlooks, and parking area improvements. The by the contractor to the park superintendent for review and approval before delays could be possible; however, emergency vehicle access would be provided					
Parking areas might hav minimal time required to	e to be closed on a short-term basis on limited occasions. Such closures would be for the o complete the work.					
<ul> <li>To ensure continuity in the implementation, new particular demolition of existing particular implemented after an existing net loss of parking at or</li> </ul>	he availability of visitor and tour bus parking and loading / unloading during arking and drop-off areas would be constructed and put into service before the arking areas. New parking could be constructed in phases, but demolition would be quivalent number of replacement parking spaces had been constructed so as to avoid any ne time.					
<ul> <li>If required, flaggers, sign work areas.</li> </ul>	ns, or other new technology, as appropriate, would be used to manage traffic around					
Continued vehicular and pedestrian pathways we restored to natural concerned.	I pedestrian access to visitor facilities would be provided during construction. Temporary buld be provided as needed between key visitor destinations and then removed and litions upon project completion.					
Gateway Communities	Gateway Communities					
To coordinate with gate maintain a constructive including state and loca park concessioners and	way communities in relation to project implementation, the NPS would develop and dialogue and outreach effort with public and private organizations and businesses, I tourism and travel offices and establish positive and effective working relationships with others in the tourism industry to ensure a high quality of service to park visitors.					

#### Park Operations and Management

- The NPS would develop a monitoring program in advance of implementing the first phase of construction. The monitoring program would use conventional benchmarking tools to track progress and would be updated on a regular basis. It would be used to assess the plan's effectiveness on an ongoing basis and to aid managers in making decisions as to when to implement subsequent phases of construction. The monitoring program would track the park's success in meeting quantitative goals, such as parking occupancy in lots, the incidence of unauthorized / overflow parking, traffic volumes, and the total accumulation of vehicles. It would also assess conformance with qualitative standards such as ease of access to key visitor destinations, and the popularity of new shuttle routes. If plan objectives were not being reached, park managers could then decide to implement other actions identified in this plan as part of future work phases.
- The NPS would actively manage shuttle and tour bus loading / unloading operations and would prepare a management plan for these operations in cooperation with the park concessioner.

### ALTERNATIVES CONSIDERED BUT DISMISSED

During the scoping and alternatives development phases of this planning effort, a number of individual actions were proposed by individuals and organizations for incorporation into the alternatives. Many of these actions were dismissed from subsequent consideration or inclusion as alternatives. These actions and their rationale for dismissal are categorized by improvement type and described below.

#### New / Expanded Transportation Infrastructure

Improvements to air travel access to the park were suggested as an option, including the promoting Bryce Canyon Airport to encourage private air travel, adding Aviation as an NPS specialty service to manage and promote air travel, and extending shuttle service to Bryce Canyon Airport.

Adding aviation to park responsibilities, however, would be prohibitively expensive given limited budgets, staff availability and park capabilities. Low air traffic volumes at Bryce Canyon Airport likely cannot support cost-effective shuttle service.

Adding personal transportation technologies, such as Segway, was suggested as an option. Any new technologies would require careful study of their environmental impacts and their effects on the visitor experience and park resources.

Accommodating all-terrain vehicles in the Multimodal Transportation Plan was suggested as an option. The park currently does not permit all-terrain vehicles. All-terrain vehicles have significant emissions, noise, and trail impacts, as well as safety concerns in heavily congested traffic that require careful consideration beyond the scope of this planning process.

Requiring golf carts and transit only on the main park road was suggested as an option; however, there are significant capital costs, maintenance expenses, and management challenges related to establishing a fleet of golf carts.

Implementing a street car, trolley, fixed rail, or tram system only in the park was considered as an option. The construction and operation costs and complexity of a fixed-rail system or new transit technology are too great, as compared with enhancements to the existing shuttle system that

could perform the same or similar transportation function. Potentially extreme visual impacts resulting from a fixed-rail or other similar systems could impair views of the canyon that would create irresolvable environmental impacts.

Restoring the historic roadway route from Sunset Campground to the Lodge was considered as an option. Restoring this route to its original alignment would create traffic impacts to the Lodge that were mitigated by its reconfiguration, and would therefore solve one problem (additional access) only to create another (increased traffic in a historic district) causing impacts to a historic district.

Providing road connections to the base of the Bryce Amphitheater so visitors can experience the park from bottom up was considered as an option. Constructing a road to the base of the canyon in this area would create potential access and safety issues for trail users and motorists and excessive visual impacts to popular vistas. These impacts would severely detract from the overall visitor experience for hikers who experience the solitude of the backcountry trail system as well as pedestrians and motorists who experience the scenic vistas from numerous viewpoints. Road construction over the unstable, eroding Bryce Canyon Rim presents geophysical hazards and likely facility failure. Similar roads nearby, including State Route 12, experience these problems currently. Additionally, several trails in the main Bryce Amphitheater area are part of the historic trails district and the park strives to maintain the historic integrity of these trails.

# Parking

Installing parking meters throughout the park was considered as an option. Charging a parking fee would be inconsistent with NPS policies that allow the park to only charge one entrance fee for general park use. Parking meters and / or parking fees would require a substantial change to the park's fee structure as well as additional maintenance and staff for servicing them.

# **Regional Coordination, Planning and Partnerships**

Developing a regional park service shuttle between Bryce Canyon National Park, Zion National Park, and Cedar Breaks National Monument was considered as an option. Given the distances between the parks, this type of transportation service is best provided by a private operator. It is unlikely that crowding within the park can be addressed by this alternative alone. This option would be beyond the scope of this plan.

# Intelligent Transportation Systems

Using electronic trail signs was considered as an option. There are significant costs and environmental impacts to extending electrical connections to trailheads. The advantage of using electronic signs instead of conventional signs is unclear.

#### Natural Resource and Wildlife Management

Hazing wildlife on the sides of the roadway to avoid deer jams and vehicle versus deer collisions was suggested as an option. Wildlife are protected resources in national parks, and hazing would result in severe environmental impacts to wildlife behavior, feeding and rearing patterns, and would degrade the visitor experience.

### **Finance and Operations**

Closing the park for three months mid-winter was suggested as an option. Seasonal closure of the park would eliminate admission for the segment of the general population that enjoys the park during the winter months, and therefore does not further the goal of improving access and mobility.

Privatizing park management was suggested as an option. This option does not directly address the Purpose and Need to address transportation issues and crowding challenges within the park.

### Staff Time and Resources

Adding a courtesy van through the park's shuttle contractor to rescue stranded hikers was suggested as an option. While a courtesy van could lessen the burden on law enforcement personnel, this type of an on-demand service may prove difficult to staff; and it may be challenging to respond to service calls in a cost effective and timely manner. This option may not be technically feasible.

# **ALTERNATIVE SUMMARIES**

Table 8 below summarizes the major components of each alternative, and Table 9 summarizes the anticipated environmental impacts for each alternative. Only those impact topics that have been carried forward for further analysis are included in this table. The "Affected Environment and Environmental Consequences" chapter provides more detail related to these impacts.

Key Element	Alternative 1: Continue Current Approach Alternative	Alternative 2: Greatest Parking Supply Alternative	Alternative 3: Highest Visitor Demand Management Alternative
Travel Demand Management			
Private Vehicle Circulation	Peak season restrictions for RVs (except in campground)	Peak season restrictions for RVs (except in campground)	Peak season restrictions for RVs (except in campground) Peak season restrictions for private cars in Bryce Amphitheater (shuttle only)
Pedestrian and Bicycle Circulation	No major changes	No major changes	Marketing Bike rentals by NPS Additional amenities Maps
Education and Visitor Information			
Visitor Information	Only minor improvements (wayfinding, signs, printed materials, online information)	Wayfinding / Sign Plan Printed materials Online information	Wayfinding / Sign Plan Printed materials Real-time information Mobile technology Marketing
Shuttle			
Shuttle Circulation	Only minor improvements as needed	Only minor improvements as needed	Mandatory Bryce Amphitheater Shuttle (peak sease Expanded shuttle service to Rainbow Point provide by NPS
Roadway and Parking			
Parking Expansion	No new spaces	625+ new spaces	400+ new spaces
Major Multimodal Transportation Hubs (New / Expanded)	No new construction	No new construction	Visitor Center Hub Inspiration / Bryce Point Turnoff Hub
Adaptive Management			
Monitoring and Adaptive Management	Ongoing monitoring	Ongoing monitoring	Ongoing monitoring
Total Approximate Area of Disturbance at Full Build-out	8.43 acres	25.27 acres	20.43 acres

# TABLE 8. SUMMARY OF ALTERNATIVES AND HOW EACH ALTERNATIVE MEETS PLAN GOALS

	Alternative 4: Adaptive Travel Management Alternative (Preferred Alternative)
	Peak season restrictions for RVs (except in campground) Restrictions on private cars at Fairyland Point (bike / walk only) Restrictions on private cars at Bryce Point (shuttle only)
	Marketing Encourage bike rentals by non-NPS entity Additional amenities Maps
	Wayfinding / Sign Plan Printed Materials Real-time information Mobile technology Marketing
son) led	Expanded voluntary Bryce Amphitheater Shuttle (phased over time if needed) Possibility of expanded Rainbow Point Shuttle service provided by non-NPS entity
	440+ new spaces
	Visitor Center Hub Inspiration / Bryce Point Turnoff Hub Lodge / Sunrise Loop Hub
	Ongoing monitoring Greatest flexibility and widest range of management strategies to respond to changing visitor use and resource conditions Annual reporting on projects. Five-year reporting on plan.
	20.88 acres

# TABLE 8. SUMMARY OF ALTERNATIVES AND HOW EACH ALTERNATIVE MEETS PLAN GOALS

Key Element	Alternative 1: Continue Current Approach Alternative	Alternative 2: Greatest Parking Supply Alternative	Alternative 3: Highest Visitor Demand Management Alternative	Alternative 4: Adaptive Travel Management Alternative (Preferred Alternative)
Plan Goals	Meets Plan Goals?	Meets Plan Goals?	Meets Plan Goals?	Meets Plan Goals?
Asset Management: Manage individual transportation assets efficiently to maintain the transportation system as a whole at or above a safe, acceptable condition.	No. The Continue Current Approach Alternative does not contain adequate activities or strategies to efficiently manage the transportation system at or above a safe, acceptable condition. The park would continue to need to divert law enforcement personnel for traffic management. In addition, the shuttle system often runs at or over capacity during peak season.	No. The Greatest Parking Supply Alternative would not allow the park to efficiently manage the transportation system at or above a safe, acceptable condition. The shuttle system often runs at or over capacity during peak season. Proposed parking additions, expansions, and reconfigurations would not be adequate to improve asset management related to the transportation system. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of transportation assets, but only to a limited degree.	Yes. The Highest Visitor Demand Alternative would allow the park to efficiently manage the transportation system at or above a safe, acceptable condition. Numerous strategies would be employed that would improve the transportation system, including expanding parking, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes. Improving the transportation system would lead to improved asset management of the transportation system (e.g., less of a need to use law enforcement personnel to direct traffic). As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of transportation assets.	Yes. The Adaptive Management Alternative would allow the park to efficiently manage the transportation system at or above a safe, acceptable condition. Numerous strategies would be employed that would improve the transportation system, including expanding parking, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes. Improving the transportation system would lead to improved asset management of the transportation system (e.g., less of a need to use law enforcement personnel to direct traffic). The park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of transportation assets.
<i>Mobility, Access, and Connectivity:</i> <i>Provide seamless transportation connections</i> <i>within the park and with surrounding</i> <i>communities and manage visitor use by</i> <i>leveraging partnership and outreach</i> <i>opportunities.</i>	No. The Continue Current Approach Alternative does not contain adequate activities or strategies to provide seamless transportation connections within the park and with surrounding communities or to manage visitor use by leveraging partnership and outreach opportunities. The minor improvements under this alternative would not be enough to have a substantial effect on visitor mobility, access, or connectivity.	No. The Greatest Parking Supply Alternative would not allow the park to provide seamless transportation connections within the park and with surrounding communities and manage visitor use by leveraging partnership and outreach opportunities. The parking expansions proposed under this alternative would not have a substantial effect on visitor mobility, access, or connectivity. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of visitor mobility, access, and connectivity, but only to a limited degree.	Yes. The Highest Visitor Demand Alternative would allow the park to provide seamless transportation connections within the park and with surrounding communities and manage visitor use by leveraging partnership and outreach opportunities. Numerous strategies would be employed that would improve visitor mobility, access, and connectivity, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, and increasing the availability of parking. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of visitor mobility, access, and connectivity.	Yes. The Adaptive Management Alternative would allow the park to provide seamless transportation connections within the park and with surrounding communities and manage visitor use by leveraging partnership and outreach opportunities. Numerous strategies would be employed that would improve visitor mobility, access, and connectivity, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, and increasing the availability of parking. The park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing better management of visitor mobility, access, and connectivity.
<i>Visitor Experience:</i> <i>Enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources.</i>	No. The Continue Current Approach Alternative does not contain adequate activities or strategies to enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources. The minor improvements under this alternative would not be enough to have a substantial effect on visitor experience, and visitor experience would be expected to degrade over time.	No. The Greatest Parking Supply Alternative would not allow the park to enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources. The parking expansions proposed under this alternative would have a limited effect on visitor experience, especially over the long term and as visitation increases beyond the parking capacity. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing a limited and short-term improvement in visitor experience.	Yes. The Highest Visitor Demand Alternative would allow the park to enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources. Numerous strategies would be employed that would improve visitor experience, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing improved visitor experience.	Yes. The Adaptive Management Alternative would allow the park to enhance the experience of all visitors with safe, efficient, and sustainable transportation options, as well as timely, relevant information that strengthens appreciation for the park's resources. Numerous strategies would be employed that would improve visitor experience, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. The park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, allowing improved visitor experience.

Key Element	Alternative 1: Continue Current Approach Alternative	Alternative 2: Greatest Parking Supply Alternative	Alternative 3: Highest Visitor Demand Management Alternative	Alternative 4: Adaptive Travel Management Alternative (Preferred Alternative)
Plan Goals	Meets Plan Goals?	Meets Plan Goals?	Meets Plan Goals?	Meets Plan Goals?
<i>Resource Protection:</i> <i>Minimize impacts to the park's natural and cultural resources from transportation activities.</i>	No. The Continue Current Approach Alternative does not contain adequate activities or strategies to minimize impacts to the park's natural and cultural resources from transportation activities. Natural and cultural resources would continue to be impacted by transportation activities in the park.	Yes. The Greatest Parking Supply Alternative would allow the park to minimize impacts to the park's natural and cultural resources from transportation activities. Expanding parking and encouraging visitors to ride the shuttle would help minimize impacts to natural and cultural resources from transportation activities, but only to a limited degree.	Yes. The Highest Visitor Demand Alternative would allow the park to minimize impacts to the park's natural and cultural resources from transportation activities. Numerous strategies could help minimize impacts to natural and cultural resources from transportation activities, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, to help ensure adequate protection of natural and cultural resources.	Yes. The Adaptive Management Alternative would allow the park to minimize impacts to the park's natural and cultural resources from transportation activities. Numerous strategies could help minimize impacts to natural and cultural resources from transportation activities, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. The park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, to help ensure adequate protection of natural and cultural resources.
Sustainable Operations: Develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible.	No. The Continue Current Approach Alternative does not contain adequate activities or strategies to develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible. As stated above, the park would continue to need to divert law enforcement personnel for traffic management and the shuttle system often runs at or over capacity during peak season. The park would continue its use of print and web materials and limited social media.	No. The Greatest Parking Supply Alternative does not contain adequate activities or strategies to develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible. The parking expansions proposed under this alternative would not likely help foster sustainability, especially over the long term and as visitation increases beyond the parking capacity. As noted above, the park would use adaptive management to monitor the effectiveness of these strategies and would phase many of the improvement strategies accordingly, but this may not improve sustainability of the transportation system or park staff time and resources.	Yes. The Highest Visitor Demand Alternative would allow the park to develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible. Numerous strategies would be employed that could help facilitate sustainable operation of the transportation system, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. Improving the transportation system, using adaptive management to monitor the effectiveness of these strategies, and phasing many of the improvement strategies accordingly, would help ensure the sustainability of the transportation system as well as park staff time and resources.	Yes. The Adaptive Management Alternative would allow the park to develop and maintain a financially and environmentally sustainable transportation system that effectively uses staff time and resources and incorporates innovative technology as feasible. Numerous strategies would be employed that could help facilitate sustainable operation of the transportation system, including implementing a wayfinding plan, developing a shuttle plaza and multimodal transportation hubs to support the park's promotion of using alternate transportation modes, expanding shuttle service, and increasing the availability of parking. Improving the transportation system, using adaptive management to monitor the effectiveness of these strategies, and phasing many of the improvement strategies accordingly, would help ensure the sustainability of the transportation system as well as park staff time and resources.

## TABLE 8. SUMMARY OF ALTERNATIVES AND HOW EACH ALTERNATIVE MEETS PLAN GOALS

Environmental Assessment

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Bryce Canyon National Park

Impact Topic	Alternative 1: Continue Current Approach Alternative	Improvement Strategies Common to All Action Alternatives	Alternative 2: Greatest Parking Supply Alternative	Alternative 3: Highest Visitor Demand Management Alternative	Alternative 4: Adaptive Travel Management Alternative (Preferred Alternative)
Air Quality	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor adverse impacts on local air quality. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the improvements common to all action alternatives would result in short- and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term negligible beneficial and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term negligible beneficial and at a local scale.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term minor beneficial and at a local scale.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long- term minor beneficial and at a local scale.
Soundscapes	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor adverse impacts on the park soundscape. Effects on the existing soundscape would likely be detectable, but the effects on the visitor experience and biological resources would likely be small and of little consequence. Cumulative effects would be short- and long- term minor adverse and at a local scale.	Implementing the improvements common to all action alternatives would result in short- and long-term minor adverse and beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be minor. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term minor to moderate adverse and minor beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be minor. Cumulative effects would be long-term minor adverse and at a local scale.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor to moderate adverse and minor beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be minor. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor to moderate adverse and minor beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and to biological resources would likely be minor. Cumulative effects would be short- and long-term minor adverse and at a local scale.
Night Sky	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible adverse effects at a local scale. Cumulative effects would be short- and long-term negligible adverse and at a local scale.	Implementing the improvements common to all action alternatives would result in short- and long-term negligible adverse effects on the lightscape at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term negligible adverse effects at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible adverse effects of the lightscape at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term negligible adverse effects of the lightscape at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.
Vegetation	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible to minor adverse local impacts on vegetation. The total approximate area of disturbance at full build-out would be 8.43 acres. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the improvements common to all action alternatives would result in short- and long-term negligible to minor adverse local impacts on vegetation (individual plants and vegetation communities). Cumulative effects would be long-term minor adverse and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short-term negligible to minor adverse local impacts on vegetation. The total approximate area of disturbance at full build-out would be 25.27 acres. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Highest Visitor Demand Management Alternative would result in short- term negligible to minor adverse and beneficial local impacts on vegetation. The total approximate area of disturbance at full build-out would be 20.43 acres. Cumulative effects would be short to long- term negligible adverse and at a local scale.	Implementing the Adaptive Travel Management Alternative would result in short-term negligible to minor adverse and beneficial local impacts on vegetation. The total approximate area of disturbance at full build-out would be 20.88 acres. Cumulative effects would be short to long- term negligible adverse and at a local scale.
Special Status Species	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible to minor adverse impacts on the Utah prairie dog. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the improvements common to all action alternatives would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on the Utah prairie dog. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term minor to moderate adverse and negligible beneficial impacts on the Utah prairie dog. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on the Utah prairie dog. Cumulative effects would be short- and long-term minor adverse and at a local scale.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on the Utah prairie dog. Cumulative effects would be short- and long-term minor to moderate adverse and at a local scale.
Cultural Landscapes	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible to minor adverse beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long- term negligible adverse and local.	Implementing the improvements common to all action alternatives would result in long- term negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long- term negligible adverse and local.	Implementing the Greatest Parking Supply Alternative would result in long-term negligible to minor adverse beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long-term negligible adverse and local.	Implementing the Highest Visitor Demand Management Alternative would result in long- term negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long- term negligible adverse and local.	Implementing the Adaptive Travel Management Alternative would result in long- term negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long- term negligible adverse and local.

# TABLE 9. ENVIRONMENTAL IMPACT SUMMARY BY ALTERNATIVE

# TABLE 9. ENVIRONMENTAL IMPACT SUMMARY BY ALTERNATIVE

Impact Topic	Alternative 1: Continue Current Approach Alternative	Improvement Strategies Common to All Action Alternatives	Alternative 2: Greatest Parking Supply Alternative	Alternative 3: Highest Visitor Demand Management Alternative	Alternative 4: Adaptive Travel Management Alternative (Preferred Alternative)
Ethnographic Resources	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible adverse effects on ethnographic resources. Cumulative effects would be short-term negligible adverse.	Implementing the improvements common to all action alternatives would result in short- term negligible adverse effects on ethnographic resources. Cumulative effects would be short-term negligible adverse.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term negligible adverse and beneficial effects on ethnographic resources. Cumulative effects would be short- and long-term and negligible adverse.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible adverse and beneficial effects on ethnographic resources. Cumulative effects would be short- and long- term negligible adverse.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term negligible adverse and beneficial effects on ethnographic resources. Cumulative effects would be short- and long- term negligible adverse.
Recreation Resources	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible to moderate adverse impacts on recreation resources. Cumulative effects would be short- term negligible adverse.	Implementing the improvements common to all action alternatives would result in short- term negligible adverse and short- and long- term negligible to minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term minor beneficial.	Implementing the Greatest Parking Supply Alternative would result in short-term negligible adverse and short- and long-term minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term negligible beneficial.	Implementing the Highest Visitor Demand Management Alternative would result in short- term negligible adverse and short- and long- term negligible to minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term moderate beneficial.	Implementing the Adaptive Travel Management Alternative would result in short- term negligible adverse and short- and long-term minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term moderate beneficial.
Visitor Use and Experience	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor to moderate adverse impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate adverse.	Implementing the improvements common to all action alternatives would result in short- term negligible adverse and short- and long- term negligible to minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term minor beneficial.	Implementing the Greatest Parking Supply Alternative would result in short-term negligible adverse and short- and long-term minor to moderate beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.	Implementing the Highest Visitor Demand Management Alternative would result in short- term negligible adverse and short- and long- term negligible to minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.	Implementing the Adaptive Travel Management Alternative would result in short- term negligible adverse and short- and long-term minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.
Gateway Communities	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term minor adverse.	Implementing the improvements common to all action alternatives would result in short- and long-term negligible to moderate beneficial and negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term minor beneficial and negligible adverse.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term negligible to minor beneficial and adverse effects on gateway communities. Cumulative effects would be short- and long- term minor beneficial.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor to moderate beneficial and negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term moderate beneficial.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor to moderate beneficial and negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term moderate beneficial.
Park Operations	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible to moderate adverse and negligible beneficial effects on park operations. Cumulative effects would be short- and long-term moderate adverse and local. A change in financial balance between revenue sources and operating costs would also occur.	Implementing the improvements common to all action alternatives would result in short- and long-term minor to moderate adverse and minor beneficial impacts on park operations. Cumulative effects would be short- and long- term minor adverse and at a local scale. A change in financial balance between revenue sources and operating costs would also occur.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term negligible to minor adverse and negligible to moderate beneficial effects on park operations. Cumulative effects would be short- and long-term beneficial and local. A change in financial balance between revenue sources and operating costs would also occur.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible to moderate adverse and negligible to moderate beneficial effects on park operations. Cumulative effects would be short- and long-term minor adverse and local. A change in financial balance between revenue sources and operating costs would also occur.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term negligible to moderate adverse and negligible to moderate beneficial effects on park operations. Cumulative effects would be short- and long-term minor adverse and local. A change in financial balance between revenue sources and operating costs would also occur.
Socioeconomics	Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible to moderate adverse effects and negligible beneficial effects on the social and economic condition. Local communities would also be adversely affected by a deterioration of visitor experience and adverse effects on visitor attendance. Cumulative effects would be short- and long-term minor adverse and local.	Implementing the improvements common to all action alternatives would result in short- and long-term negligible to minor adverse and negligible to minor beneficial impacts on the social and economic condition. Local communities would also be beneficially affected by improvements in visitor experience and beneficial effects on visitor attendance. Cumulative effects would be short- and long- term minor beneficial and at a local scale.	Implementing the Greatest Parking Supply Alternative would result in short- and long- term negligible to minor adverse and beneficial effects on social and economic conditions. Cumulative effects would be short- and long-term minor beneficial and local.	Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible to minor adverse and minor to moderate beneficial effects on the social and economic conditions. Cumulative effects would be short- and long-term moderate beneficial and local.	Implementing the Adaptive Travel Management Alternative would result in short- and long-term negligible to minor adverse and moderate beneficial effects on the social and economic conditions would be short- and long-term moderate beneficial and local. Cumulative effects would be short- and long-term moderate beneficial and local.

# THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the [park superintendent] of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

Alternative 3, the Highest Visitor Demand Alternative, is an environmentally preferable alternative. This alternative would seek to improve mobility by providing the most efficient means to circulate large volumes of visitors through the park, reduce congestion and improve safety by removing private vehicles from the most heavily congested areas within the park, and provide efficient visitor access into and through the park via alternate modes of travel. The Highest Visitor Demand Alternative would limit facility expansion, limit vehicle access, and potentially reduce impacts to resources from reduced vehicle emissions and inappropriate parking. For these reasons, the Highest Visitor Demand Alternative would cause the least damage to the cultural, biological, and physical environment and would best protect, preserve, and enhance natural and cultural resources, thereby making it an environmentally preferable alternative.

Alternative 4, the Adaptive Travel Management Alternative (Preferred Alternative), is also an environmentally preferable alternative for several reasons. The Adaptive Travel Management Alternative would improve mobility by promoting a wide range of access and circulation choices, including shuttle, bicycle, and pedestrian in addition to appropriate vehicle restrictions; limit facility expansion and alternatively seek to repurpose and / or decommission existing infrastructure to help protect park natural and cultural resources; and incorporate the most extensive adaptive management component to best protect natural and cultural resources. For these reasons, the Adaptive Travel Management Alternative (Preferred Alternative) would cause the least damage to the cultural, biological, and physical environment and best protect, preserve, and enhance natural and cultural resources, thereby making it an environmentally preferable alternative.

Alternative 1, the Continue Current Approach Alternative, is not an environmentally preferable alternative, because it does not fully assure productive surroundings, reduction in degradation, or achieve a balance between population and resource use due to the current, and anticipated continued, degradation on visitor experience, congestion, and effects to resources from inappropriate parking, congestion, access and visitor safety issues.

Alternative 2, the Greatest Parking Supply Alternative, is not an environmentally preferable alternative, because it emphasizes the most capital improvement projects (infrastructure expansion) which would result in degradation of the environment and a reduction in the natural and cultural aspects of the park. This alternative would not promote alternative modes of travel (shuttle, cycling, walking) to the same extent as in other action alternatives.

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# AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the existing environmental conditions of the natural and human environment that may be affected by the proposed action and alternatives under consideration.

This chapter also analyzes the potential environmental consequences that would occur as a result of implementing the proposed plan or its alternatives. A summary of the alternatives can be found in Table 8. In the Environmental Consequences or impacts discussions, the NPS takes a "hard look" at all potential impacts by considering the direct and indirect, and cumulative effects of the proposed action on the environment, along with connected and cumulative actions. Impacts are described in terms of context and duration. The context or extent of the impact is described as local or widespread. The duration of impacts is described as short term, ranging from days to three years in duration, or long term, extending up to 20 years or longer. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. The NPS equates "major" effects as "significant" effects. The identification of "major" effects would trigger the need for an environmental impact statement. Where the intensity of an impact could be described quantitatively, the numerical data is presented; however, most impact analyses are qualitative and use best professional judgment in making the assessment.

### METHODOLOGY

The NPS based the impact analyses and conclusions that follow on the review of existing literature and park studies, information provided by experts in the park and other agencies, professional judgments, park staff insights, consultation with the state historic preservation office and park-affiliated tribes, and public input.

# Туре

Type describes the classification of the impact as either beneficial or adverse, direct or indirect. Impacts can be beneficial or adverse. Beneficial impacts would improve resource conditions; adverse impacts would deplete or negatively alter resources. Both direct and indirect impacts are analyzed, consistent with CEQ regulations (40 CFR 1502.16), and DO-12. The following definitions of direct and indirect impacts are used but not specifically identified in the environmental analysis:

direct - an effect that is caused by an action and occurs at the same time and place

*indirect* – an effect that is caused by an action but is later in time or farther removed in distance, but still reasonably foreseeable

# Context

Context is the affected environment within which an impact would occur, such as local, parkwide, regional, global, affected interests, society as a whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa. The CEQ requires that impact analyses include discussions of context.

# Impact Intensity

Impact intensity is the degree to which a resource would be beneficially or adversely affected. The criteria that were used to rate the intensity of the impacts for each resource topic is presented later in this section under each topic heading.

# Duration

The duration of an impact is the time period for which the impact is evident and is expressed as short term or long term. A short-term impact would be temporary in duration and would be associated with road construction activities. Depending on the resource, impacts may last as long as construction takes place, a single year, a growing season, or longer. The duration for each resource topic is presented later in this section under each resource topic heading.

# CUMULATIVE IMPACT SCENARIO

The CEQ regulations which implement NEPA 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.

Cumulative impacts were determined by combining the impacts of each of the alternatives with other past, present, and reasonably foreseeable future actions (e.g., the impacts of the No-action Alternative plus the impacts of past, present, and future actions). Past, ongoing, and reasonably foreseeable future projects at Bryce Canyon National Park were identified. In addition, relevant past, present, and reasonably foreseeable future actions in the surrounding region of the park were considered. The geographic scope of the analysis includes elements in the park's boundary and study area. The temporal scope includes projects within a range of approximately 10 years. Given this, the following actions were identified for the purpose of conducting the cumulative effects analysis.

# **Past Actions**

Past actions in the park include the following:

- Bryce Canyon acoustic monitoring: soundscape study within park focusing on areas where American peregrine falcon territories were known (2009 to 2010).
- Vegetation Management Plan: plan efforts to protect and restore plant communities while controlling the spread of invasive plants (2010).
- Main park road chip sealing: chip-seal of main park road from park entrance to the Farview Viewpoint entrance (2009).
- Paria View rehabilitation: reconstruction of the walkway, fencing, and parking area (2008).
- Horse concession fence: construction of a single rail fence near the Mixing Circle junction to direct horse / mule traffic more efficiently (2008).

- Fire Management Plan: plan was developed in cooperation with the neighboring Dixie National Forest to implement wildland and prescribed fire to reduce fuel loads, restore native vegetative communities, and safeguards structures from fire hazards (2005).
- Rim Road reconstruction: rerouted main park road and improved road in several sections, widened and stabilized road in several sections, and installed erosion control features in areas of high grade (2004).
- Mossy Cave Trail rehabilitation and resource protection project: restore damage due to erosion from a large storm event (2006).
- Tropic Canyon Highway stabilization project: highway repair project to fix portions of highway that had eroded as a result of high moisture and repeat flooding (2006).

Present and Future Actions

Present and future actions in the park include the following:

- Reinstall brick pavers at Bryce Canyon Lodge.
- Active trails wayside installation.
- Campground roads rehabilitation and upgrade.
- Byway 12 park boundary and Lodge signs (wood signs indicating park boundaries and entrance to Lodge).
- Rehabilitate Sunset Overlook access trails.
- Construct wildlife viewing pullouts (as described in the Wildlife Viewing Pullouts EA [NPS 2010a]) and associated interpretive panels to increase opportunities for park visitors to learn about wildlife and habitats of the park.
- Rehabilitate visitor center lighting to provide safe visitor access for evening programs.
- Rehabilitate / replace wayside / backcountry exhibits.
- Replace plastic bike racks with metal racks (and expand bike rack locations throughout the park).
- Routine maintenance of roads and trails (includes restriping, chip-sealing, repairing rock walls, stabilizing slopes, replacing culverts).
- Rehabilitate Bryce Point access trail from the edge of the parking area to the overlook to make area more accessible and enable viewing of Bryce Amphitheater.
- Replace Sunset Campground comfort stations.
- Continue to restore land disturbed by vehicles and foot traffic (per the Vegetation Management Plan).

- Expand / replace utility lines (water, sewer, electric) throughout developed areas of park.
- Rehabilitate failing park sewage system.
- Visitor use, which is projected to continue to increase.
- Plan and develop a multi-use path from Bryce Canyon City to areas within park.

Past, Present, and Future Actions outside the Park

Past, present, and future actions near the park include the following:

- Development and population increase in the nearby communities of Bryce Canyon City and Tropic.
- Purchase of an 800-acre preserve at Johnson Bench for the protection of the Utah prairie dog.
- Bryce Canyon City Habitat Conservation Plan, being developed to mitigate for impacts on the Utah prairie dog from city improvement and development actions.
- Garkane transmission line from Tropic to Hatch, north of the park, which would cross several Utah prairie dog colonies.
- Translocation and flea insecticide dusting (for prevention of plague) of Utah prairie dogs within the Dixie National Forest.
- Coordinate with Bryce Canyon City and other entities regarding the potential for shuttle staging area expansion, parking agreements, parking garage facilities, bike rental concessions, bicycle and pedestrian network maps, trail ambassador program, and shuttle service expansion.
- U.S. Forest Service activities in areas adjacent or near the park, including prescribed burns (specifically in the Dave's Hollow area), invasive (weed) species management, revegetation projects, and temporary road construction projects.
- Garfield County projects include a planned bike trail along State Route 12 and improvements to Hole in the Rock Road south of Escalante. These projects are tourism related and may draw additional visitors to the area.
- Utah Department of Transportation projects include: past improvements to the State Route 63 and State Route 12 junction to Bryce Canyon; planned roadway improvement projects along U.S.-Highway 89 and State Route 12; and planned enhancements to Bryce Canyon City Main Street and the NPS shuttle access area.
- Bryce Canyon City tourism-related services, including lodging, restaurants, all-terrain vehicles, horse and helicopter tours, rodeo, winter sports, and retail businesses. The city is also planning a Wayfinding Master Plan (3- to 5-year project).

# AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND CLIMATE CHANGE

# Affected Environment

The Clean Air Act of 1963 (42 United States Code [USC] 7401 et seq.) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with NPS units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

Bryce Canyon National Park is in Garfield and Kane counties in Utah. Both counties are in attainment areas of the state (areas with concentrations of criteria pollutants that are below the levels established by National Ambient Air Quality Standards; Utah Department of Environmental Quality 2014).

Bryce Canyon National Park is designated a Class I area under the Clean Air Act. Class I areas are given additional protection through programs and goals established by the Clean Air Act legislation. Vistas in the park are occasionally obscured by pollution-caused haze, which typically consists of fine particulates and gases in the atmosphere. Air quality-related values in the park may also be at risk from atmospheric deposition of nitrogen and sulfur compounds. Particulates in the atmosphere can cause inflammation and irritation of the respiratory system, increased nitrogen has been shown to promote growth of exotic and invasive plant species and decrease biodiversity, and sulfates can cause acidification and changes to soil and water chemistry (NPS 2012b).

Five-year estimates of air quality conditions are used to evaluate conditions in parks for visibility, deposition, and ozone. Ozone is not monitored in Bryce Canyon National Park. Trends for visibility and deposition from 2005 to 2009 for the park are as follows (NPS 2012b):

- Visibility 3.7 deciviews above natural conditions, which does not meet the desired condition of less than 2 deciviews. Between 2000 and 2009, visibility at the park on the 20 percent clearest days improved significantly, but remained unchanged on the 20 percent haziest days (NPS 2012b).
- Deposition Ammonium increased significantly, nitrate decreased significantly, and sulfate was relatively unchanged.

Pollutants affecting the park come primarily from sources outside the park boundaries, including the large urban source of Las Vegas and nearby sources such as the Alton Coal Mine Project (NPS 2012b). Local fires, both prescribed and wild, also create occasional air quality disturbances (NPS 1996).

#### Intensity Level Definitions

Impacts on air quality were determined based on the following impact definitions and thresholds.

Negligible. Impacts would result in a change to local air quality, but the change would be so slight that it would not be of any measurable or perceptible consequence.

Minor. Impacts would result in a detectable change to local air quality, but the change would be small and of little consequence. Change in mobile source emissions from motor vehicles would be small and of little consequence resulting from changes in availability / level of shuttle services, increase / decrease in automobile trips, and / or changes in average daily traffic volume. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

Moderate. Impacts would result in a change to local air quality that would be readily detectable. Without mitigation, short-term impacts from construction equipment and dust would be readily detectable. Change in mobile source emissions from motor vehicles would be readily detectable resulting from changes in availability / level of shuttle services, increase / decrease in automobile trips, and / or changes in average daily traffic volume. Mitigation measures, however, would be extensive and likely successful.

Major. Impacts would result in changes to regional air quality that would be severe. Without mitigation, short-term impacts from construction equipment and dust would be severe. Change in mobile source emissions from motor vehicles would be severe resulting from changes in availability / level of shuttle services, increase / decrease in automobile trips, and / or changes in average daily traffic volume. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed.

Short-term Impacts. Construction-related emissions (air quality typically recovers in 7 days or less).

Long-term Impacts. Outside the construction period (air quality typically takes more than 7 days to recover).

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed and the existing local air quality would be expected to continue to deteriorate. The current transportation hot spots near the visitor center, at viewpoints and destinations throughout the Amphitheater area, and at other key locations would become more congested and vehicle emissions would increase, resulting in short-term and minor adverse impacts on local air quality.

Travel Demand Management. There would be no impacts on local air quality as a result of conducting a pilot study on restricting oversized vehicles and conducting the transportation and visitor use management study. These pilot restrictions could result in more visitors using the existing shuttle service to access those restricted areas of the park, which could result in a reduction in mobile source emissions from the slight decrease in automobile trips and could have a beneficial impact on local air quality. These effects would be short-term negligible and local. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would continue to result in short-term and minor adverse impacts on local air quality. Any exhaust, mobile source emissions,

and fugitive dust generated from visitor vehicles would be short term and local and would likely dissipate rapidly.

Education and Visitor Information. Short-term education and visitor information activities (0 to 5 years) planned under the Continue Current Approach Alternative would include maintenance and minor upgrades to signs and wayfinding in the park. These activities would have no impact on local air quality.

Shuttle. Under the Continue Current Approach Alternative, shuttles currently run at capacity or exceed capacity between May and October. During these periods, more park visitors may instead use their personal vehicles to tour the park, which would increase mobile source emissions, such as nitrates and particulates, and have a short-term and minor adverse impact on local air quality. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would result in a decrease in automobile trips and / or changes in average daily traffic volume and related mobile source emissions in the park. These incremental adjustments could have a short-term and negligible to minor beneficial impact on local air quality. Because no substantial change in the availability / level of shuttle services would occur under the Continue Current Approach Alternative, it is likely that mobile source emissions would increase as the number of private vehicles increases in the park. Overall, these short-term and minor adverse impacts would not likely affect visibility or noticeably contribute to atmospheric deposition.

Roadway and Parking. Under the Continue Current Approach Alternative, construction and maintenance associated with planned activities would likely result in minor effects on local air quality and would include best management practices and mitigation measures, if required. Any exhaust, mobile source emissions such as nitrates, and fugitive dust generated from visitor vehicles or construction activities would be short term and local and would likely dissipate rapidly. Continued degradation of parking availability and the existing deficiencies of the transportation system may result in a minor to moderate increase in mobile source emissions, particularly within identified hot spot areas, and could result in long-term minor adverse effects on local air quality. These long-term minor adverse impacts may contribute to diminished visibility and could potentially contribute to atmospheric deposition.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect local air quality include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), vegetation management activities (such as prescribed burns and weed management), utility development adjacent to the park, and urban development adjacent to the park (primarily within Bryce Canyon City and Tropic).

These activities would continue and may increase due to continued increases in visitor automobile trips at the park. Impacts on local air quality are occurring on adjacent lands. Activities in and adjacent to the park contribute to air emissions and adverse effects on local air quality. The overall cumulative impacts on local air quality from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short and long term minor adverse.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor adverse impacts

on local air quality. Cumulative effects would be short- and long-term minor adverse and at a local scale.

### Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on local air quality as a result of conducting the transportation and visitor use management study and implementing a reservation system. The pilot restrictions on oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park, which could result in a reduction in mobile source emissions from the slight decrease in automobile trips and could have a beneficial impact on local air quality. These effects would be short-term negligible and local. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would result in short-term and minor adverse impacts on local air quality. Any exhaust, mobile source emissions, and fugitive dust generated from visitor vehicles would be short term and local and would likely dissipate rapidly. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day and would provide a short-term minor beneficial impact on local air quality.

Education and Visitor Information. Education and visitor information improvement activities would have no impact on local air quality.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service, leading to a decrease in automobile trips and / or average daily traffic volume in the park, thereby reducing the level of mobile source emissions such as nitrates and particulates. The reduction in emissions would have a short-term minor beneficial impact on local air quality. Construction and maintenance associated with these proposed improvements would likely result in minor air quality effects and would include best management practices and mitigation measures detailed in Table 7, Mitigation Measures and Best Practices. Any exhaust, mobile emissions, and fugitive dust generated from visitor vehicles or construction activities would be short term and local and would likely dissipate rapidly. Overall, these short-term and minor adverse impacts would not likely affect visibility or noticeably contribute to atmospheric deposition.

Roadway and Parking. Construction and maintenance activities associated with roadway and parking improvements would likely result in minor air quality effects and would include the best management practices and mitigation measures detailed in Table 7, Mitigation Measures and Best Practices. Any exhaust, mobile source emissions such as nitrates, and fugitive dust generated from visitor vehicles or construction activities would be short term and local and would likely dissipate rapidly. Expanding and reconfiguring the parking lots to provide additional visitor parking would reduce vehicle delays, idling time, and associated mobile source emissions, and would result in a short-term minor beneficial impact on local air quality. Over the long term, improvements in parking availability in conjunction with a slight increase in availability / level of shuttle services may result in a decrease in automobile trips, average daily traffic volume, and related mobile source emissions and would have a negligible to minor beneficial effect on air quality in the local area.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect local air quality include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), vegetation management activities (such as prescribed burns and weed management), utility development adjacent to park, and urban development adjacent to park (primarily within Bryce Canyon City and Tropic).

These activities would continue and may increase due to continued increases in visitor automobile trips at the park. Impacts on local air quality are occurring on adjacent lands. Activities in and adjacent to the park contribute to air emissions and adverse effects on local air quality. The overall cumulative impacts on local air quality from past, present, and reasonably foreseeable future projects in combination with activities common to all action alternatives would be short- and long-term negligible beneficial.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term negligible beneficial and at a local scale.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the parking supply would also reduce vehicle delays and associated vehicle idling. The impacts of the activities proposed for Travel Demand Management, Education and Visitor Information, and Shuttle have already been analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, construction and maintenance associated with short- and long-term proposed roadway and parking improvements would likely result in minor air quality effects and would include best management practices and mitigation measures detailed in Table 7, Mitigation Measures and Best Practices. Any exhaust, mobile source emissions such as nitrates, and fugitive dust generated from visitor vehicles or construction activities would be short term and local and would likely dissipate rapidly. Construction activities related to the infrastructure expansion, which would almost double available parking spaces, would likely result in short-term minor adverse effects on local air quality. Increased parking availability and transportation improvements would likely result in long-term minor beneficial effects on local air quality by reducing congestion in hot spot areas and potentially reducing vehicle idling times and mobile source emissions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Greatest Parking Supply Alternative would be the same as described under the impacts common to all action alternatives. Implementing the Greatest Parking Supply Alternative would result in shortand long-term minor adverse and beneficial effects on local air quality at a local scale. This alternative, when combined with past, present, and reasonably foreseeable future actions, would result in short- and long-term negligible beneficial effects on local air quality at a local scale. Conclusion. Implementing the Greatest Parking Supply Alternative would result in short-term and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term negligible beneficial and at a local scale.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Under the Highest Visitor Demand Management Alternative, restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park, which could result in a reduction in mobile source emissions from the slight decrease in automobile trips and could have a beneficial impact on local air quality. These effects would be short-term negligible and local. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak- traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction in mobile source emissions and would have short- and long-term minor beneficial impacts on local air quality. Any exhaust, emissions, and fugitive dust generated from visitor vehicles would be short-term and local and would likely dissipate rapidly. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations could provide a short-term negligible beneficial impact on local air quality.

Education and Visitor Information. Under the Highest Visitor Demand Management Alternative, short- and long-term education and visitor information improvements would result in more clearly communicated parking and transportation options in the park and encourage the use of these options. These short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have shortand long-term minor beneficial impacts on local air quality.

Shuttle. Under the Highest Visitor Demand Management Alternative, expanding shuttle service and capacity and increasing the availability and level of shuttle services would lead to a decrease in automobile trips and / or changes in average daily traffic volume and associated mobile source emissions, such as nitrates and particulates, in the park. These improvements would have short-and long-term minor beneficial impacts on local air quality. Increased shuttle service would also result in increased shuttle emissions and have a short-term negligible to minor adverse impact on local air quality. Overall, these short-term and minor adverse impacts would not likely affect visibility or noticeably contribute to atmospheric deposition.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, construction and maintenance associated with roadway and parking proposed improvements would likely result in minor air quality effects and would include best management practices and

mitigation measures detailed in Table 7, Mitigation Measures and Best Practices. Any exhaust, mobile source emissions such as nitrates, and fugitive dust generated from construction activities would be short-term and local and would likely dissipate rapidly. Construction activities related to the infrastructure expansion would likely result in short-term minor adverse effects on local air quality. Over the long term, increased parking availability would likely result in long-term minor beneficial effects on local air quality by reducing congestion and potentially reducing vehicle idling times and associated mobile source emissions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Highest Visitor Demand Management Alternative would be the same as for all action alternatives (and as described above under the Greatest Parking Supply Alternative). Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor adverse and beneficial effects on local air quality; however, impacts would be predominantly beneficial. This alternative, in combination with past, present, and reasonably foreseeable future actions, would result in short- and long-term minor beneficial effects on local air quality.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term minor beneficial and at a local scale.

# Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic congested areas of the park during the peak season. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Under the Adaptive Travel Management Alternative, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by allowing visitors to access information prior to their arrival, encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and decrease in automobile trips from increased use of alternate modes of visitor travel in the park would result in a reduction to mobile source emissions and would have short- and long-term minor beneficial impacts on local air quality. Any exhaust, emissions, and fugitive dust generated from visitor vehicles would be short-term and local and would likely dissipate rapidly. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations which could provide a short-term negligible beneficial impact on local air quality. Testing non-motorized only access at Fairyland Point could result in a slight decrease in automobile trips and associated mobile source emissions and could have a short-term negligible beneficial impact on local air quality.

Education and Visitor Information. Under the Adaptive Travel Management Alternative, education and visitor information would assist in clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options prior to and during a visit. These short- and long-term improvements would help visitors better plan their trip and would allow the park to better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have short- and long-term minor beneficial impacts on local air quality.

Shuttle. Under the Adaptive Travel Management Alternative, expanding shuttle capacity and increasing the availability and level of shuttle services would lead to a decrease in automobile trips and / or changes in the average daily traffic volume and associated mobile source emissions, such as nitrates and particulates, in the park. These improvements would have short- and long-term minor beneficial impacts on local air quality. Increased shuttle service would also result in increased shuttle emissions and have a short-term negligible to minor adverse impact on local air quality. Overall, these short-term and minor adverse impacts would not likely affect visibility or noticeably contribute to atmospheric deposition.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction and maintenance associated with proposed short- and long-term roadway and parking improvements would likely be minimal and would include best management practices and mitigation measures detailed in Table 7. Any exhaust, mobile source emissions such as nitrates, and fugitive dust generated from construction activities would be short-term and local and would likely dissipate rapidly. Construction activities related to the infrastructure expansion would likely result in short-term minor adverse effects on local air quality. Increased parking availability would likely result in long-term minor beneficial effects on local air quality by reducing congestion and potentially reducing vehicle idling times and associated mobile source emissions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Adaptive Travel Management Alternative would be the same as for all action alternatives. Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor adverse and beneficial effects on local air quality; however, impacts would be predominantly beneficial. This alternative, when combined with past, present, and reasonably foreseeable future actions, would result in short- and long-term minor beneficial effects on local air quality.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term minor adverse and beneficial impacts on local air quality. Cumulative effects would be short- and long-term minor beneficial and at a local scale.

# SOUNDSCAPES

# Affected Environment

In accordance with 2006 NPS Management Policies and DO-47 Sound Preservation and Noise Management, an important component of the NPS's mission is the preservation of natural soundscapes associated with national park units. 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. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. In a national park setting, soundscapes can contribute to or hinder visitor enjoyment of the park. For example, noise produced by vehicles or

aircraft can detract from that natural soundscapes visitors expect as part of the park environment. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. Environmental noise levels are typically stated in terms of decibels on the A-weighted scale (dBA). Noise levels stated in terms of dBA reflect the response of the human ear by filtering out some of the noise in the lowand high-frequency ranges that the ear does not detect well. The A-weighted scale is used in most community ordinances and standards. Human hearing typically encompasses the sound range from just above 0 dBA at the quietest end to approximately 140 dBA, where pain is produced in most listeners and permanent hearing loss would result.

Noise Levels at Bryce Canyon National Park. Preservation of the natural soundscapes in Bryce Canyon National Park is a key part of the park's mission. Natural quiet is important for visitors seeking opportunities for solitude. The park's 1987 General Management Plan states:

A large percentage of the park is also noted for its extremely low noise level. This has been evaluated and identified as an important park element especially for those visitors seeking opportunities for solitude. The elevation of the park in relation to the surrounding topography makes it highly vulnerable to impacts on solitude. As development increases, especially outside the park, noise levels as well as sources of artificial light will increase creating impacts on the solitude of the park.

In the absence of human-caused sound, ambient noise levels in the park often fall below 20 decibels (NPS 2011c). Disturbances to the park's natural soundscapes primarily come in the form of aircraft, in addition to idling buses, shuttles, and RVs. The park has placed "Turn off Engine" signs at viewpoint parking areas to discourage idling. Visitors in the area near the visitor center experience soundscape disturbances from the constant noise of traffic entering and exiting the park. Once a visitor ventures from traveled roadways, unnatural sound diminishes markedly. A Bryce Canyon National Park visitor study conducted from July 26 to August 1, 2009 by the National Park Service Visitor Services Project, showed that 68% of visitors felt that natural quiet / the sounds of nature were either extremely important or very important park resources. The study also reported that noise from visitors was the third most commonly listed factor that contributed to a negative experience of the visitors who experienced detractions from enjoying the park, with crowding (unspecified) and inclement weather being the first and second detractions mentioned. The type of noise created by visitors (such as talking, cell phones, or other noise) was not specified; however, noise created by campers, motorcycles, shuttles, and other human-caused sounds were also cited as detractions from enjoying park attributes or resources (NPS 2010d).

#### **Intensity Level Definitions**

Impacts on soundscapes were determined based on the following impact definitions and thresholds.

Negligible. For development zones, the existing sound environment would not be affected, or the effects would be at or below the level of detection due to the existing human-related activity in

the area. For other areas, the effects on the existing sound environment would be barely detectable, and the changes would be so slight that they would not be of any consequence to visitor experience or to biological resources.

Minor. For development zones, the effects on the existing sound environment would be detectable, but due to the existing human-related activity in the area, the changes would be of little consequence to visitor experience or to biological resources. For others areas, the effects on the existing sound environment would be readily detectable, although the effects would be small and of little consequence to the visitor experience or to biological resources. Mitigation measures, if needed to offset adverse effects, could be easily and successfully implemented.

Moderate. For development zones, effects would be readily detectable, and despite existing human-related activity in the area, the changes would be apparent to visitors or to biological resources. For other areas, the effects on the natural sound environment would be obvious, and the changes would be readily apparent to visitors or to a limited amount of biological resources. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.

Major. For development zones, effects would be obvious, and despite existing human-related activity in the area, the changes would result in substantial consequences to visitor experience or to a broader range of biological resources. For other areas, the effects on the existing sound environment would be extensive and would have substantial consequences to visitor experience or to biological resources. Extensive mitigation measures would be needed to offset any adverse effects, and their success could not be guaranteed.

Short-term Impacts. The impact would occur only during the construction period and would end when the project was completed.

Long-term Impacts. The impact would occur or continue after the project was completed.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would continue to operate and maintain the transportation network as it is currently, the existing soundscape would be expected to continue to deteriorate from increased visitation and related vehicle congestion. Existing sounds in the most visited portion of the park, Bryce Amphitheater, consist of vehicular traffic (visitors and employees entering and leaving parking areas), visitor sounds, building-related sounds (air conditioners, deliveries, entry and exit activities), and natural sounds (wildlife, wind, etc.). The Bryce Amphitheater would continue to be a transportation hot spot where visitor congestion is expected to increase, resulting in an increase in human-caused sounds. An increase in human-caused sounds would result in short- and long-term minor adverse impacts on the soundscape.

Travel Demand Management. Under the Continue Current Approach Alternative, there would be no impacts on soundscapes as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park, which could result in a reduction of sound related to oversized vehicles and could have a beneficial impact on the park soundscape in the select areas with restrictions. These effects would be short- and long-term negligible beneficial and local. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would result in short-and long-term minor adverse impacts on the soundscape.

Education and Visitor Information. Under the Continue Current Approach Alternative, short-term education and visitor information activities would have no impact on the soundscape.

Shuttle. Under the Continue Current Management Alternative, long-term shuttle incremental adjustments could have a short-term and negligible to minor beneficial impact on the soundscape. Because no substantial expansion of the shuttle system would occur under this alternative, it is likely that vehicle- and visitor-related sounds would increase as the number of private vehicles increases in the park.

Roadway and Parking. Under the Continue Current Approach Alternative, construction and maintenance associated with short- and long-term roadway and parking activities would likely result in minor soundscape effects and would include best management practices and mitigation measures, if required. Any sounds generated from construction and maintenance activities would be short-term and local. Continued degradation of parking availability and the existing deficiencies of the transportation system may result in a minor to moderate increase in sounds, particularly within identified hot spot areas, and could result in long-term minor adverse effects on the local soundscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the soundscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and immediately adjacent to the park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (visitor travel in private vehicles primarily), vegetation management activities (such as vegetation removal activities within and immediately adjacent to the park), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the soundscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse effects on the park soundscape. The overall cumulative impacts on the soundscape from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term minor adverse and at a local scale.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor adverse impacts on the park soundscape. Effects on the existing soundscape would likely be detectable, but the effects on the visitor experience and biological resources would likely be small and of little consequence. Cumulative effects would be short- and long-term minor adverse and at a local scale.

#### Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on the park soundscape as a result of conducting the transportation and visitor use management study and implementing a reservation system. The pilot study for restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park, which could result in a reduction of sound related to oversized vehicles and could have a beneficial impact on the park soundscape in the select areas with restrictions (e.g., Bryce Point and Fairyland Point). These effects would be short- and long-term negligible beneficial and local. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would result in short- and long-term minor adverse impacts on the soundscape. Sounds from visitor vehicles would be short-term and local and would dissipate once vehicles leave the park. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day and would provide a short-term minor beneficial impact on the park soundscape.

Education and Visitor Information. Education and visitor information improvements would have no impact on the park soundscape.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service, leading to fewer private vehicles traveling through and idling in the park, thereby reducing vehicle sounds. The reduction in vehicle-related sound would have a short-term minor beneficial impact on the park soundscape. Noise from construction and maintenance activities would likely result in minor adverse effects on the local soundscape. Planrelated construction and maintenance activities would include best management practices and mitigation measures detailed in Table 7. Sounds generated from visitor vehicles or construction activities would be short-term and local.

Roadway and Parking. During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees. Expanding and reconfiguring the parking lots to provide additional visitor parking would reduce vehicle delays, idling time, and associated vehicle sounds, and would result in a short-term minor beneficial impact on the park soundscape. In areas with new and reconfigured parking lots, primarily within the Bryce Amphitheater area, additional parking spaces would also result in an increase in vehicles and visitors, resulting in an increase in noise (e.g., vehicles entering and exiting parking areas, shuttles, car doors, visitor-related noise) in these areas. This increase in noise in and surrounding new and expanded parking areas would result in long-term minor to moderate adverse impacts on the local soundscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the park soundscape include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (visitor travel in private vehicles primarily), vegetation management activities (such as vegetation removal activities), utility development in and adjacent to park (including transmission and sewer lines), and urban development adjacent to park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the soundscape in and around the park are occurring on adjacent lands. Activities in and

adjacent to the park contribute to adverse effects on the park soundscape. The overall cumulative impacts on the soundscape from past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives, would be short- and long-term minor adverse and at a local scale.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term minor adverse and beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be small and of little consequence. Cumulative effects would be short- and long-term minor adverse and at a local scale.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, construction activities related to the infrastructure expansion, which would almost double available parking spaces, would likely result in short-term minor adverse effects on the area soundscape. During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees.

Expanding and reconfiguring the parking lots to provide additional visitor parking would reduce vehicle delays, idling time, and associated vehicle sounds, and would result in a short-term minor beneficial impact on the park soundscape. In areas with new and reconfigured parking lots, primarily within the Bryce Amphitheater area, additional parking spaces would also result in an increase in vehicles and visitors, resulting in an increase in noise (e.g., vehicles entering and exiting parking areas, shuttles, car doors, visitor related noise) in these areas. This increase in noise in and surrounding new and expanded parking areas would result in long-term minor to moderate adverse impacts on the local soundscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Greatest Parking Supply Alternative would be the same as described under the impacts common to all action alternatives. Implementing the Greatest Parking Supply Alternative would result in shortand long-term minor adverse and beneficial effects on soundscapes at a local scale. The overall cumulative impacts on the soundscape from past, present, and reasonably foreseeable future projects in combination with the impacts from the Greatest Parking Supply Alternative, would be long-term minor adverse and at a local scale. **Conclusion**. Implementing the Greatest Parking Supply Alternative would result in short- and long-term minor adverse and beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be small and of little consequence. Cumulative effects would be long-term minor adverse and at a local scale.

## Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Under the Highest Visitor Demand Management Alternative, restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park, which could result in a reduction to vehicle-related sounds and could have a beneficial impact on the park soundscape in the select areas with restrictions (e.g., Bryce Point and Fairyland Point). These effects would be short-term negligible and local. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction to vehicle-related sounds and would have short- and long-term minor beneficial impacts on the park soundscape. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations and result in a short-term negligible beneficial impact on the park soundscape.

Education and Visitor Information. Under the Highest Visitor Demand Management Alternative, short- and long-term education and visitor information improvements would result in more clearly communicated parking and transportation options in the park and encourage the use of these options. These short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have shortand long-term minor beneficial impacts on the park soundscape from reduced private vehiclerelated noise.

Shuttle. Under the Highest Visitor Demand Management Alternative, expanding shuttle service and capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related sounds in the park, and would have short- and long-term minor beneficial impacts on the park soundscape. Increased shuttle service would also result in increased shuttle related sounds and have a short-term negligible to minor adverse impact on the park soundscape.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, construction activities related to the infrastructure expansion would likely result in short-term minor adverse effects on the area soundscape. During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews.

Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees.

In areas with new and reconfigured parking lots, primarily within the Bryce Amphitheater area, additional parking spaces would also result in an increase in vehicles and visitors, resulting in an increase in noise (e.g., vehicles entering and exiting parking areas, shuttles, car doors, visitor related noise) in these areas. This increase in noise in and surrounding new and expanded parking areas would result in long-term minor to moderate adverse impacts on the local soundscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Highest Visitor Demand Management Alternative would be the same as described under the impacts common to all action alternatives. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor adverse and beneficial effects on soundscapes at a local scale; however, impacts would be predominantly beneficial. The overall cumulative impacts on the soundscape from past, present, and reasonably foreseeable future projects in combination with the impacts from the Highest Visitor Demand Management Alternative, would be short- and long-term minor adverse and at a local scale.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor adverse and beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and biological resources would likely be small and of little consequence. Cumulative effects would be short- and long- term minor adverse and at a local scale.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic congested areas of the park during the peak season. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Under the Adaptive Travel Management Alternative, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction in vehicle-related sounds and would have short- and long-term minor beneficial impacts on the park soundscape. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations which could provide a short-term negligible beneficial impact on the park soundscape. Restricting vehicles at Fairyland
Point could result in more visitors accessing the restricted Fairyland area by foot or bicycle, which would result in a reduction in vehicle-related sounds in that area and would have a short-term negligible to minor beneficial impact on the area soundscape.

Education and Visitor Information. Under the Adaptive Travel Management Alternative, education and visitor information would assist in clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options. These short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have short- and long-term minor beneficial impacts on the park soundscape from reduced private vehicle-related noise.

Shuttle. Under the Adaptive Travel Management Alternative, expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related sounds in the park and would have short- and long-term minor beneficial impacts on the park soundscape. Increased shuttle service would also result in increased shuttle-related sounds and have a short-term negligible to minor adverse impact on the park soundscape.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction activities related to the infrastructure expansion would likely result in short-term minor adverse effects on the area soundscape. During construction, human-caused sounds would likely increase due to construction activities, equipment, vehicular traffic, and construction crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees. Expanding and reconfiguring the parking lots to provide additional visitor parking would reduce vehicle delays, idling time, and associated vehicle sounds, and would result in a short-term minor beneficial impact on the park soundscape. In areas with new and reconfigured parking lots, primarily within the Bryce Amphitheater area, additional parking spaces would also result in an increase in vehicles and visitors, resulting in an increase in noise (e.g., vehicles entering and exiting parking areas, shuttles, car doors, visitor related noise) in these areas. This increase in noise in and surrounding new and expanded parking areas would result in long-term minor to moderate adverse impacts on the local soundscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions under the Adaptive Travel Management Alternative would be the same as described under the impacts common to all action alternatives. Implementing the Adaptive Travel Management Alternative would result in short- and long-term minor adverse and beneficial effects on soundscapes at a local scale; however, impacts would be predominantly beneficial. The overall cumulative impacts on the soundscape from past, present, and reasonably foreseeable future projects in combination with the impacts from the Adaptive Travel Management Alternative, would be short- and long-term minor adverse and at a local scale.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term minor adverse and beneficial impacts on the park soundscape. Effects on the existing soundscape would include both adverse and beneficial effects, and would likely be detectable, but the effects on visitor experience and to biological resources would likely be small and of little consequence. Cumulative effects would be short- and long-term minor adverse and at a local scale.

# **NIGHT SKY**

## Affected Environment

In accordance with 2006 NPS Management Policies, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light (NPS 2006a). Natural lightscapes are critical for nighttime scenery, such as viewing a starry sky, but are also critical for maintaining nocturnal habitat. Many wildlife species rely on natural patterns of light and dark for navigation, to cue behaviors, or hide from predators (International Dark Sky Association 2010). Lightscapes can be cultural as well, and may be integral to the historical and / or ethnographic fabric of a place. Human-caused light may be obtrusive in the same manner that noise can disrupt a contemplative or peaceful scene. Light that is undesirable in a natural or cultural landscape is often called light pollution.

The NPS recognizes that a clear view of the night sky is an important value to park visitors. Artificial light pollution can affect opportunities for night-sky viewing and enjoyment. The expanse of land or viewshed that can be seen from Bryce Canyon National Park is vast. On a clear day at the park, visitors can see nearly 200 miles to the Black Mesas in eastern Arizona. On a clear dark night, visitors can see approximately 7,500 stars and 2.2 million light years to the Andromeda Galaxy. The absence of in-park light pollution, the good air quality, and the remoteness of Bryce Canyon National Park make for exceptional stargazing. Bryce Canyon has become a leader in night sky protection and appreciation. The park's astronomy program, which began in 1969, is thought to be the longest active NPS astronomy program. By 2001, the clear, dark skies and astronomy interpretive programs at Bryce Canyon National Park had become so popular that the park began hosting an annual astronomy festival. In each of the past three years, over 35,000 visitors participated in astronomy events that included evening programs and ranger-hosted star gazing and telescope viewing. Bryce Canyon National Park strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. The park also strives to ensure that all outdoor lighting is shielded to the maximum extent possible, to keep light on the intended subject and from diffusing to impact the night sky. The primary sources of light are concentrated in the northern area of the park, near the visitor center and the Lodge Loop.

#### **Intensity Level Definitions**

Impacts on lightscapes were determined based on the following impact definitions and thresholds.

Negligible. Night sky is unchanged by artificial light, leaving the current amount of stars, astronomical objects, and atmospheric phenomena visible. No visible change in light pollution, either bright stationary point source lights, or sky glow from cities (but change may be detectable by a trained observer or instrument).

Minor. Changes in the lightscape are visible along the horizon, but are unnoticed at higher angular altitudes. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

Moderate. Changes in lightscape are obvious, and extend perceptibly overhead. Mitigation measures would be extensive and likely successful.

Major. Changes in lightscape are conspicuous overhead. The sky background is noticeably brighter and more colored in appearance. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed.

Short-term Impacts. The impact would occur only during the construction period and would end when the project was completed.

Long-term Impacts. The impact would occur or continue after the project was completed.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed and the existing lighting in the park would not be expected to change.

Travel Demand Management. There would be no changes to the lightscape in the park as a result of conducting the transportation and visitor use management study or restricting oversized vehicles from select areas of the park.

Education and Visitor Information. Short-term education and visitor information activities would not change the existing lightscape or result in additional light sources in the park.

Shuttle. Shuttle activities occur only during daylight hours; no shuttle activities occur at night. These activities would not change the existing lightscape or result in additional light sources in the park.

Roadway and Parking. Construction and maintenance activities under this alternative could potentially include minimal temporary lighting; however, no new permanent lighting would be installed. These activities would not change the existing lightscape or result in additional light sources in the park. Roadway and parking activities under the Continue Current Approach Alternative would result in short-term negligible effects on the lightscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the lightscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (night time activities primarily), vegetation management activities (such as prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the lightscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park may contribute to adverse effects on the park lightscape. The overall cumulative impacts on the lightscape from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term negligible adverse effects and at a local scale. Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term negligible adverse effects at a local scale. Cumulative effects would be short- and long-term negligible adverse and at a local scale.

Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no changes to the lightscape in the park as a result of conducting the transportation and visitor use management study, implementing a reservation system, or restricting oversized vehicles from select areas of the park.

Education and Visitor Information. Education and visitor information improvements would not change the existing lightscape or result in additional light sources in the park.

Shuttle. Shuttle activities occur only during daylight hours; no shuttle activities occur at night. These improvements would not change the existing lightscape or result in additional light sources in the park.

Roadway and Parking. Construction and maintenance activities under the impacts common to all alternatives could potentially include minimal temporary lighting. No permanent lighting would be installed as part of parking lot, shuttle hub, or other proposed improvements. Proposed improvements would not change the existing lightscape or result in additional light sources in the park. Roadway and parking improvements common to all action alternatives would result in short-term negligible adverse effects on the lightscape during construction periods.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the lightscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility improvement construction projects, visitor use activities (night time activities primarily), vegetation management activities (such as prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the lightscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park may continue to contribute to adverse effects on the park lightscape. The overall cumulative impacts on the lightscape from past, present, and reasonably foreseeable future projects in combination with the improvements common to all action alternatives, would primarily be short-term negligible adverse effects, and at a local scale.

**Conclusion**. Implementing the improvements common to all action alternatives would result in short- and long-term negligible adverse effects on the lightscape at a local scale. Cumulative effects would be short term negligible and at a local scale.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

#### Environmental Assessment

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Construction and maintenance activities under this alternative could potentially include minimal temporary lighting. No permanent lighting would be installed as part of parking lot, shuttle hub, or other proposed improvements. Proposed improvements would not change the existing lightscape or result in additional light sources in the park. Roadway and parking improvements under the Greatest Parking Supply Alternative would result in short-term negligible adverse effects on the lightscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the lightscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility improvement construction projects, visitor use activities (night time activities primarily), vegetation management activities (such as prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the lightscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park may continue to contribute to adverse effects on the park lightscape. The overall cumulative impacts on the lightscape from past, present, and reasonably foreseeable future projects in combination with the improvements proposed under the Greatest Parking Supply Alternative, would primarily be short-term negligible adverse effects, and at a local scale.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short- and long-term negligible adverse effects at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Under the Highest Visitor Demand Management Alternative, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The use of lighted variable message signs would have a negligible adverse effect on the nightscape. There would be no changes to the lightscape in the park as a result of conducting the Intelligent Transportation System Feasibility study or implementing the flex-time interpretation programs.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation. These improvements would not change the existing lightscape or result in additional light sources in the park.

Shuttle. Shuttle activities occur only during daylight hours; no shuttle activities occur at night. These improvements would not change the existing lightscape or result in additional light sources in the park.

Roadway and Parking. Construction and maintenance activities under this alternative could potentially include minimal temporary lighting. No permanent lighting would be installed as part of parking lot, shuttle hub, or other proposed improvements. Proposed improvements would not change the existing lightscape or result in additional light sources in the park. Roadway and parking improvements under the Highest Visitor Demand Management Alternative would result in short-term negligible adverse effects on the lightscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the lightscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility improvement construction projects, visitor use activities (night time activities primarily), vegetation management activities (such as prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the lightscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park may continue to contribute to adverse effects on the park lightscape. The overall cumulative impacts on the lightscape from past, present, and reasonably foreseeable future projects in combination with the improvements proposed under the Highest Visitor Demand Management Alternative, would primarily be short-term negligible adverse effects, and at a local scale.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible adverse effects of the lightscape at a local scale. Cumulative effects would be short-term negligible adverse and at a local scale.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework

than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Under the Adaptive Travel Management Alternative, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The use of lighted variable message signs would have a negligible adverse effect on the nightscape. There would be no changes to the lightscape in the park as a result of conducting the Intelligent Transportation System Feasibility study, testing and evaluating the Fairyland restrictions, or implementing the timed entry system restrictions.

Education and Visitor Information. Under the Adaptive Travel Management Alternative, education and visitor information would assist in clearly communicating parking and transportation options in the park and encouraging the use of these options. These short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation. These improvements would not change the existing lightscape or result in additional light sources in the park.

Shuttle. Under the Adaptive Travel Management Alternative, expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles traveling within the park. Shuttle activities occur only during daylight hours, no shuttle activities occur at night. These improvements would not change the existing lightscape or result in additional light sources in the park.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction and maintenance activities could potentially include minimal temporary lighting. No permanent lighting would be installed as part of parking lot, shuttle hub, or other proposed improvements. Proposed improvements would not change the existing lightscape or result in additional light sources in the park. Roadway and parking improvements under the Adaptive Travel Management Alternative would result in short-term negligible adverse effects on the lightscape.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the lightscape in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility improvement construction projects, visitor use activities (night time activities primarily), vegetation management activities (such as prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), and urban development adjacent to the park (primarily within Bryce Canyon City).

These activities would continue and may increase due to increased visitation at the park. Impacts on the lightscape in and around the park are occurring on adjacent lands. Activities in and adjacent to the park may continue to contribute to adverse effects on the park lightscape. The overall cumulative impacts on the lightscape from past, present, and reasonably foreseeable future projects in combination with the improvements proposed under the Adaptive Travel Management Alternative, would primarily be short-term negligible adverse effects, and at a local scale. Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term negligible adverse effects of the lightscape at a local scale. Cumulative effects would be short term negligible adverse and at a local scale.

## VEGETATION

# Affected Environment

According to the 2006 Management Policies, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants.

The elevation of Bryce Canyon National Park ranges from 6,850 feet above sea level on the eastern side of the park to 9,115 feet at its southern end. The vegetation in the park reflects the change in elevation and topography, as well as the geology, soils, and water availability. Within the area of proposed improvements, there are three major vegetation communities: Ponderosa Pine Forests, Mountain Grasslands, and Fir-Spruce-Aspen Forests. The remaining two major vegetation communities in the park—Pinyon and Juniper Woodlands and Breaks Communities—are outside the area of proposed improvements.

Ponderosa pine (*Pinus ponderosa*) forest covers approximately 15,093 acres in the park. Common understory species include greenleaf manzanita (*Arctostaphylos patula*), serviceberry (*Amelanchier utahensis*), mountain mahogany (*Cercocarpus ledifolius* var. *intermontanus*), and snowberry (*Symphoricarpos oreophilus* var. *utahensis*).

Mountain grasslands comprise 2,309 acres in the park and are found primarily along drainages in the north end of the park. Common grassland species include black sagebrush (*Artemesia nova*), needle and thread (*Stipa comata* var. *comata*), cinquefoil (*Potentilla* sp.), buckwheat (*Eriogonum* sp.), and sedges (*Carex* sp.).

The Fir–Spruce–Aspen forests are closed forests of white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), blue spruce (*Picea pungens*), and quaking aspen (*Populus tremuloides*). These species are found at the higher elevations in the southern portion of the park and comprise approximately 6,231 acres of the park. Common understory plants include Oregon grape (*Mahomia repens*) and common juniper (*Juniperus communis*; NPS 2010b).

Additional information about the vegetation communities in the park—and the park's management of those communities—can be found in Bryce Canyon National Park's Vegetation Management Plan and Environmental Assessment (NPS 2010b). Vegetation communities found within the plan area are shown in Figure 17 and detailed in Table 10.



# FIGURE 17 Vegetation Communities within the Plan Area

Bryce Canyon National Park Multimodal Transportation Plan United States Department of the Interior / National Park Service February 2014



Vegetation Community	Acres	
Adjacent to Roadways in Plan Area		
Aspen Forest Complex	0.50	
Black Sagebrush Shrubland Complex	8.71	
Blue Spruce Forest Complex		
Bristlecone Pine Woodland	1.54	
Claron Formation	3.40	
Dry Meadow Mixed Herbaceous Vegetation Mosaic	2.67	
Manzanita Shrubland Complex	1.37	
Mixed Mountain Shrubland Complex	0.37	
Perennial Disturbed Grassland Complex	1.23	
Ponderosa Pine / Mixed Herbaceous Woodland Complex	18.74	
Ponderosa Pine / Mixed Mountain Shrub Woodland Complex	10.78	
Ponderosa Pine / Pinyon Pine–Juniper spp. / Mixed Mountain Shrub Woodland Complex	0.06	
Ponderosa Pine (Douglas Fir) / Manzanita Woodland Complex	35.97	
Roadside Restored Herbaceous Complex	69.49	
Sedge and Rush Wet Meadow Herbaceous Vegetation Mosaic	1.95	
Viscid Rabbitbrush Shrubland Complex	0.35	
White Fir / Manzanita–Mixed Shrub Forest	7.09	
White Fir / Mixed Grass Forest	9.46	
White Fir Forest Complex	10.25	
Roadways / Mixed Urban or Built-up Land	105.17	
Bryce Point Parking Lot Expansion Area		
Bristlecone Pine Woodland	0.09	
Ponderosa Pine (Douglas Fir) / Manzanita Woodland Complex	0.17	
Roadways	0.02	
Entrance Station / Visitor Center Plaza Area		
Black Sagebrush Shrubland Complex	0.78	
Perennial Disturbed Grassland Complex	0.31	
Ponderosa Pine / Mixed Herbaceous Woodland Complex	3.49	
Roadside Restored Herbaceous Complex	0.71	
Roadways	4.34	
Fairyland Point Road Area		
Ponderosa Pine / Mixed Herbaceous Woodland Complex	0.45	
Ponderosa Pine / Mixed Mountain Shrub Woodland Complex	0.16	
Ponderosa Pine (Douglas Fir) / Manzanita Woodland Complex	0.23	
Roadways	0.29	
General Store / Sunrise Point Proposed Parking Area		
Ponderosa Pine / Mixed Mountain Shrub Woodland Complex	0.27	
Ponderosa Pine (Douglas Fir) / Manzanita Woodland Complex	0.16	
Roadways / Mixed Urban or Built-up Land	1.35	

TABLE 10. VEGETATION COMMUNITIES WITHIN THE PLAN AREA

Vegetation Community	Acres	
Inspiration Point and Bryce Point Intersection Area		
Dry Meadow Mixed Herbaceous Vegetation Mosaic		
Ponderosa Pine / Mixed Herbaceous Woodland Complex	4.21	
Roadways	0.63	
Lodge Area		
Ponderosa Pine / Mixed Herbaceous Woodland Complex		
Ponderosa Pine / Mixed Mountain Shrub Woodland Complex		
Roadways / Mixed Urban or Built-up Land		
Sunset Point Area		
Ponderosa Pine / Mixed Herbaceous Woodland Complex		
Ponderosa Pine (Douglas Fir) / Manzanita Woodland Complex		
Roadways	1.47	
Total Vegetation Communities		
Total Roadway/Mixed Urban or Built-up Land		

#### TABLE 10. VEGETATION COMMUNITIES WITHIN THE PLAN AREA

Source: Northern Colorado Plateau Network 2011

The majority of acres of vegetation communities described in Table 10 are adjacent to roadways (184.01 acres) within the plan area. Nearly 114 acres of the plan area are within roadways, mixed urban, and built-up (disturbed) land. The most common vegetation type within the plan area is Ponderosa Pine.

#### **Intensity Level Definitions**

Impacts on vegetation resources were determined based on the following impact definitions and thresholds.

Negligible. No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native plant species' populations. The effects would be on a small scale.

Minor. The alternative would affect some individual plants and would also affect a relatively limited portion of that species' population. Mitigation to offset adverse effects could be required and would be effective.

Moderate. The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population over a relatively large area in the park. Mitigation to offset adverse effects could be extensive, but would likely be successful.

Major. The alternative would have a considerable effect on individual native plants and affect a sizeable segment of the species' populations over a relatively large area in and out of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

Short-term Impacts. Vegetation recovers in less than three years.

Long-term Impacts. Vegetation requires more than three years to recover.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would continue to operate and maintain the transportation network as it is currently. The existing condition for vegetation communities, particularly adjacent to roadways and high visitor use areas, may deteriorate due to increased visitation. Continued private vehicle parking issues may result in impacts on undisturbed areas adjacent to roadways and parking lots. The Bryce Amphitheater would continue to be a transportation hot spot where visitor congestion is expected to increase, resulting in an increase in human-related impacts on vegetation.

Travel Demand Management. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park but would not reduce the number of private passenger vehicles entering the park. Restricting oversized vehicles and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on individual native plants or vegetation communities.

Education and Visitor Information. Short-term education and visitor information activities would not result in new construction or disturbance that could lead to effects on individual native plants or vegetation communities.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may use their personal vehicles to tour the park instead of shuttles, which could increase disturbance to vegetation in any areas where visitors may park outside of paved designated lots due to congestion and over-capacity parking. Visitor disturbance of vegetation in these areas would result in short-term negligible to minor adverse effects on individual native plants in local areas, with limited, if any, effects on native plant species populations and communities. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles. These incremental adjustments could have a short-term and negligible beneficial effect on vegetation adjacent to roadways and parking lots from a reduced number of visitor vehicles. No substantial expansion of the shuttle system would occur under the Continue Current Approach Alternative.

Roadway and Parking. Proposed visitor center parking improvements may result in approximately 8.43 acres of disturbance to vegetation (primarily within Ponderosa Pine/Mixed Herbaceous Woodland Complex) in previously undisturbed areas where additional parking may be added. Construction activity would occur primarily in previously disturbed or paved areas of the visitor center. Effects on individual native plants and plant populations due to visitor center improvements would be short-term negligible to minor adverse and local. Mitigation measures and best management practices described in Table 7 would minimize effects on vegetation in the construction area.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect vegetation communities in the park include: roadway improvement projects and ongoing

road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as nonnative vegetation removal activities, restoration, and prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), habitat conservation planning, and urban development adjacent to the park (primarily within Bryce Canyon City). Vegetation communities may also be affected by wildland fires.

Impacts on vegetation communities in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on vegetation communities. The overall cumulative impacts on vegetation from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term minor adverse and at a local scale.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible to minor adverse local impacts on vegetation. Cumulative effects would be short-and long-term minor adverse and at a local scale.

Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park but would not reduce the number of private passenger vehicles entering the park overall. Restricting oversized vehicles and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on individual native plants or vegetation communities.

Education and Visitor Information. Education and visitor information improvements would not result in new construction or disturbance that could impact native plants or vegetation communities.

Shuttle. Shuttle improvements would reduce the number of private vehicles entering the park, particularly during the peak visitor season. These incremental adjustments could have a short-and long-term and negligible beneficial effect on vegetation adjacent to roadways and parking lots from a reduced number of visitor vehicles.

Roadway and Parking. The proposed construction and improvement activities would result in disturbance to vegetation in previously undisturbed areas and in previously disturbed but revegetated areas. The majority of disturbance would occur within ponderosa pine communities. Some proposed parking expansion and improvements would occur in previously disturbed or paved areas.

Increases in parking areas would also result in a reduction in parking issues (over-capacity parking lots and parking along roadways), reducing the potential adverse effects to vegetation. Effects on individual native plants and plant populations due to the proposed construction and improvements would be short- and long-term minor adverse and local. Mitigation measures and best management practices described in Table 7 would minimize effects on vegetation

communities in the construction area. Revegetation measures would be implemented to mitigate impacts on vegetation communities in areas disturbed during construction that would not be needed for visitor improvements.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect vegetation communities in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), habitat conservation planning, and urban development adjacent to the park (primarily within Bryce Canyon City). Vegetation communities may also be affected by wildland fires.

The overall cumulative impacts on vegetation from past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives, would be long-term minor adverse and at a local scale.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term negligible to minor adverse local impacts on vegetation (individual plants and vegetation communities). Cumulative effects would be long-term minor adverse and at a local scale.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, effects from the expansion of the visitor center parking lot, and Sunset Point parking lot reconfiguration and expansion would be the same as discussed above under Impacts Common to All Action Alternatives. Approximately 25.27 acres could be disturbed if all proposed improvements occur (i.e., full build-out); the majority of disturbance would occur within ponderosa pine communities.

Effects of construction related activities on vegetation would be short- and long-term minor adverse and local. Mitigation measures and best management practices described in Table 7 would minimize effects on vegetation in the construction area. Revegetation measures would be implemented to mitigate impacts on vegetation communities in areas disturbed during construction that would not be needed for visitor improvements.

Overall, the Greatest Parking Supply Alternative would likely result in the greatest adverse impacts on native plants and vegetation communities due to the highest number of parking spaces when compared with the other action alternatives. In addition, the Greatest Parking Supply

Alternative would not include beneficial effects to native plants and vegetation communities from Travel Demand Management, Education and Visitor Information, and Shuttle improvements. Beneficial effects would be limited to those from reduction in parking issues (over-capacity parking lots and parking along roadways).

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect vegetation in the park under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on vegetation from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term minor adverse and at a local scale.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short-term negligible to minor adverse local impacts on vegetation. Cumulative effects would be short- and long-term minor adverse and at a local scale.

## Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles would not result in new construction or disturbance that could lead to effects on individual native plants or vegetation communities. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction in potential disturbance of vegetation in areas where visitors may park outside of paved designated lots due to congestion and over-capacity parking. A potential reduction in visitor disturbance of vegetation would result in short-term negligible to minor beneficial effects on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, the proposed short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which have a short-term negligible beneficial effect on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles in the park and would have a short- to long-term negligible beneficial effect on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Roadway and Parking. Proposed parking construction and improvement activities under the Highest Visitor Demand Alternative would result in disturbance to vegetation in previously undisturbed areas and in previously disturbed but revegetated areas. Approximately 20.43 acres could be disturbed if all proposed improvements occur (i.e., full build-out); the majority of disturbance would occur within ponderosa pine communities. Some proposed parking expansion and improvements would occur in previously disturbed or paved areas. Effects on individual native plants and plant populations due to the proposed construction and improvements would be short-term minor adverse and local. Mitigation measures and best management practices described in Table 7 would minimize effects on vegetation in the construction area. Revegetation measures would be implemented to mitigate impacts on vegetation communities in areas disturbed during construction that would not be needed for visitor improvements.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect vegetation in the park under the Highest Visitor Demand Management Alternative are the same as those detailed under the actions common to all alternatives. The overall cumulative impacts on vegetation from past, present, and reasonably foreseeable future projects in combination with the impacts from the Highest Visitor Demand Management Alternative, would be short- and long-term negligible adverse and at a local scale.

**Conclusion**. Implementing the Highest Visitor Demand Management Alternative would result in short-term negligible to minor adverse and beneficial impacts on vegetation at a local scale. Cumulative effects would be short-and long-term negligible adverse and at a local scale.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. The reduction in congestion and increased use of alternate modes of visitor travel in the park, as well as vehicle restrictions at Fairyland Point, would result in a reduction in potential disturbance of vegetation in areas where visitors may park outside of paved designated lots due to congestion and over-capacity parking. A potential reduction in visitor disturbance of vegetation would result in short-term negligible to minor beneficial effects on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Education and Visitor Information. By clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options, the proposed short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which could have a short-term negligible beneficial effect on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles in the park and would have a short-term negligible beneficial effect on individual native plants in local areas, with limited, if any, effects on native plant species populations.

Roadway and Parking. Proposed parking construction and improvement activities under the Adaptive Travel Management Alternative would result in disturbance to vegetation in previously undisturbed areas and in previously disturbed but revegetated areas. Approximately 20.88 acres could be disturbed if all proposed improvements occur (i.e., full build-out); however, improvements would be minimized as much as possible under the adaptive management approach. Some proposed parking expansion and improvements would occur in previously disturbed or paved areas. Effects on individual native plants due to the proposed construction and improvements, including conversion of areas into permanent parking facilities, would be minor adverse and local. Impacts on vegetation communities in the park due to the proposed improvements would be negligible to minor adverse. Mitigation measures and best management practices described in Table 7 would minimize effects on vegetation in the construction area. Revegetation measures would be implemented to mitigate impacts on vegetation communities in areas disturbed during construction that would not be needed for visitor improvements.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect vegetation in the park under the Adaptive Travel Management Alternative are the same as those detailed under the actions common to all alternatives. The overall cumulative impacts on vegetation from past, present, and reasonably foreseeable future projects in combination with the impacts from the Adaptive Travel Management Alternative, would be short- and long-term negligible adverse and at a local scale.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortterm negligible to minor adverse and beneficial impacts on vegetation at a local scale. Cumulative effects would be short-and long-term negligible adverse and at a local scale.

# SPECIAL STATUS SPECIES

# Affected Environment

The Endangered Species Act of 1973 requires examination of impacts on all federally listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the USFWS to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the 2006 NPS Management Policies and DO-77 Natural Resources Management Guidelines require the NPS to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species (NPS 2006a).

Federally Listed Species. For the purposes of this analysis, the USFWS was consulted with regards to federally listed species to determine those species that could potentially inhabit the park. Federally listed, proposed, and candidate species that may inhabit the park include California condor, southwestern willow flycatcher, western yellow-billed cuckoo, and Utah prairie dog. The Utah prairie dog currently inhabits the park and is evaluated in detail below. The remaining three federally listed species have been observed in Bryce Canyon National Park but observations have been limited. Habitat and distribution requirements for these federally listed species and reasons for exclusion from further analysis are presented in Table 11.

*Utah Prairie dog.* The Utah prairie dog is the only federally listed or sensitive species that is known to inhabit and breed in the proposed alternatives action area; therefore, only this species will be further evaluated for environmental consequences in this EA. The information provided has been summarized from the Biological Assessment.

Species and Critical Habitat Description. The Utah prairie dog is a member of the Sciuridae family of rodents and the white-tailed prairie dog group subgenus *Leucocrossuromys*. Adult prairie dogs range in total body length from 12 to 15 inches and are cinnamon- to dark cinnamon-colored (USFWS 2012a; USFWS 2012b).

Primary habitat features include the following:

- Semiarid shrub-steppe and grassland habitats where they prefer swale-type formations that contain moist herbaceous vegetation commonly available, even during drought periods (Collier 1975; Crocker-Bedford 1976; Crocker-Bedford and Spillett 1981 as cited in USFWS 2012a). Plentiful high-quality food found in swales enables prairie dogs to attain a large body mass, thus enhancing survival and increasing litter sizes and juvenile growth rates (Hoogland 2001 as cited in USFWS 2012a).
- Well-drained soils to allow for deep burrows (at least 3.3 feet) to protect the prairie dogs from predators and environmental and temperature extremes. Soil color may aid in disguising prairie dogs from surface predators.
- Short stature vegetation to allow the prairie dogs to see approaching predators and to have visual contact with other members of the colony (Collier 1975; Crocker-Bedford and Spillett 1981; Player and Urness 1982 as cited in USFWS 2012a). Utah prairie dogs have been observed occupying ponderosa pine forests in Bryce Canyon National Park, however.

Prairie dogs are a keystone species and considered an important component of the ecosystem (Kotliar et al. 1999; Hoogland et al. 2004 as cited in USFWS 2012a). Prairie dogs decrease vegetation height and increase landscape heterogeneity. Several wildlife species such as burrowing owls (*Athene cunicularia*), rabbits (*Lepus* spp.), ground squirrels (*Spermophilus* spp.), weasels (*Mustela* spp.), and badgers also rely on the habitat conditions created by Utah prairie dog colonies, and frequently use their burrows (Collier and Spillett 1975; Hoogland 2001 as cited in USFWS 2012a).

Critical habitat has not been designated for this species (USFWS 2012b).

Name	Status <sup>1</sup>	Habitat	Potential to Inhabit the Park	Critical Habitat	Effect Determination
California condor ( <i>Gymnogyps</i> <i>californianus</i> )	E	Habitat generally consists of foothill grassland and oak savannah foothills for foraging deer and cattle. Large trees, dead snags, and cliffs are used for roosting sites. Mountainous areas with cliffs and pine forest or chaparral vegetation are used for breeding habitat.	California condors have been intermittent visitors to the park. The current population in Utah is experimental. This species is not known to inhabit the park consistently and it is not known to use the park as a breeding area.	Not in park	No effect
Southwestern willow flycatcher <i>(Empidonax traillii extimus)</i>	E	Breeds in the southwestern United States, including Utah. Nesting habitat consists of mid-to-low elevation multilayered, dense riparian habitat along rivers, streams, or other wetland areas.	Nesting habitat in the park is rare. The park has conducted surveys for this species since 1995. A few sightings have been recorded near Yellow Creek and Sheep Canyon / Swamp Canyon drainages. No nesting signs or behavior have been observed in the park.	Not in park	No effect
Western yellow-billed cuckoo ( <i>Coccyzus</i> <i>americanus occidentalis</i> )	С	Breeding habitat consists of dense riparian woodlands of willow ( <i>Salix</i> sp.) and cottonwood ( <i>Populus</i> sp.). Non-breeding habitat consists of various types of woodlands and scrub in the United States and mangroves in Puerto Rico.	This species is rare in the park. Only one sighting has occurred along Sheep Creek in 2002.	Not in park	No effect

# TABLE 11. FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES WITH POTENTIAL TO OCCUR IN THE PARK

 $^{1}E$  = endangered, C = candidate

Status of the Species within Bryce Canyon National Park. Bryce Canyon National Park is within the Utah prairie dog Paunsaugunt Recovery Unit. The Paunsaugunt Recovery Unit is primarily in Garfield County, with small areas in Piute and Kane counties. There are 15,620 acres of mapped prairie dog habitat within this recovery unit. The Paunsaugunt Recovery Unit contains up to 20 percent of all adult Utah prairie dogs. Spring survey counts generally vary from 654 to 2,205 adult prairie dogs.

During the 1950s the Utah prairie dog was eradicated in Bryce Canyon National Park. Reintroduction of the prairie dog in the park, mostly as juveniles, began in 1974 and continued through 1988. Since then, Utah prairie dogs have colonized multiple areas in open grassy meadows of the central and northern portions of the park, and their numbers have fluctuated due to natural predators, fires, road fatalities, plague, as well as seasonal or episodic weather events. Park biologists currently perform management activities, such as DeltaDust insecticide treatments to control fleas, which are vectors for the outbreak of sylvatic plague in colonies, and to help sustain healthy populations of Utah prairie dog.

Surveys are conducted each spring to monitor active colonies and population trends (NPS 2009). Historic and active burrows in the park have been mapped and updated periodically. The park estimates that there are approximately 600 acres of suitable Utah prairie dog habitat with 7 active colonies currently in the park. All of the active colonies have low numbers and densities of Utah prairie dogs (fewer than 100 prairie dogs counted during surveys in 2013). Most of the active colonies are within the study area assessed in this EA.

According to unpublished park data documenting observations of prairie dog mortality since 1978 in the park, 78 prairie dog mortalities were observed during the 6-year period from 2008 to 2013, with the majority due to vehicle strikes (97 percent). The majority of observed mortalities occurred in the areas of the Mixing Circle, Dave's Hollow, and Historic Housing prairie dog colonies in the park. In the last two years (2012 and 2013), the park recorded a 26 percent and 32 percent, respectively, mortality of the park's counted population. The majority of vehicle strikes in 2013 occurred to the Historic Housing colony. Vehicle strikes are the main cause of prairie dog mortality in the park due to the proximity of most meadow habitat and colonies to roadways.

Bryce Canyon National Park conducts annual population counts of adult prairie dogs and applies Delta Dust (insecticide) to all active colonies. The park is also currently developing a Utah Prairie Dog Stewardship Plan. Among the purposes of the proposed stewardship plan would be to:

- Maintain a sustainable population of Utah prairie dogs to foster their role as a keystone species in the environment.
- Identify ways to enhance prairie dog habitat in the park based on habitat suitability and connectivity with existing populations, while maintaining the diversity of native plant communities and facilitating park operations.
- Minimize and mitigate the effects of human activities in the park on Utah prairie dogs.
- Contribute to range-wide recovery and sustainability of Utah prairie dog populations.

*Factors Affecting Species Environment.* In addition to natural population dynamics, site-specific prairie dog numbers may be influenced by various environmental and human factors, including disease outbreaks (e.g., epizootic plague); changing climatic conditions and climate cycles; seasonal or episodic weather events; habitat loss, alteration, and fragmentation from

environmental or human activities; disturbance from recreational and economic land uses; and unlawful lethal take. At Bryce Canyon National Park, the primary cause of mortality is vehicle strikes, which in recent years has exceeded 25 percent of the counted Utah prairie dog population in the park.

Utah prairie dogs are subject to natural predation by coyotes (*Canis latrans*), badgers (T*axidea taxus*), long-tailed weasels (*Mustela frenata*), various raptor species (*Buteo* spp., *Aquila chrysaetos*), and snakes (*Crotalus* spp., *Pituophus* spp; USFWS 1991; Hoogland 2001 as cited in USFWS 2012a). In established colonies, predators probably do not exert a controlling influence on numbers of prairie dogs. Predators can have a greater impact on translocation sites where an established social system or burrow system is not present (USFWS 2012b).

Utah prairie dog populations are susceptible to sylvatic plague (*Yersinia pestis*), a bacterium introduced to the North American continent in 1899 (Cully et al. 1993 as cited in USFWS 2012b). There is a limited understanding of the variables that determine when sylvatic plague will impact prairie dog populations (USFWS 2012b). Plague results in local extirpations, reduced colony sizes, increased variation in local population sizes, and increased distances between colonies (Cully and Williams 2001as cited in USFWS 2012a).

State-listed or Other Sensitive Species. The Utah Sensitive Species List (Utah Division of Wildlife Resources 2007) and the Utah Comprehensive Wildlife Conservation Strategy (Utah Division of Wildlife Resources 2005) list several species of special concern that are likely to inhabit Bryce Canyon National Park. The species listed in Table 12 have been documented or are suspected of occurring in the park seasonally or throughout the year.

Name	State Status	Occurrence
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Wildlife Species of Concern	An occasional winter visitor to the park
Ferruginous hawk (Buteo regalis)	Wildlife Species of Concern	An occasional winter visitor to the park
Greater sage-grouse (Centrocercus urophasianus)	Wildlife Species of Concern	Probably present; there have been no documented sightings
Lewis's woodpecker (Melanerpes lewis)	Wildlife Species of Concern	A rare winter visitor
Three-toed woodpecker (Picoides tridactylus)	Wildlife Species of Concern	A rare winter visitor
Long-billed curlew (Numenius americanus)	Wildlife Species of Concern	A migrant visitor
American white pelican (Pelecanus erythrorhynchos)	Wildlife Species of Concern	A migrant visitor
Spotted bat (Euderma maculatum)	Wildlife Species of Concern	Known to occur
Fringed myotis (Myotis thysanodes)	Wildlife Species of Concern	Known to occur

TABLE 12. STATE-LISTED SPECIES OF SPECIAL CONCERN WITH POTENTIAL TO OCCUR IN THE PARK

*Sensitive wildlife.* The peregrine falcon (*Falco peregrinus anatum*) and northern goshawk (*Accipiter gentilis atricapillus*) are sensitive bird species that are known to breed in Bryce Canyon National Park. The park conducts management and monitoring activities for these bird species.

The peregrine falcon is listed as a state Tier III species (removed from the federal list of endangered and threatened species in 1999). The park conducts protocol monitoring on this species semi-annually and maintains data on nesting sites. Several known eyries in the park are located along the breaks or cliffs. Peregrines have been observed hunting in surrounding open woodlands and grasslands.

The northern goshawk is a state-listed Tier I and Conservation Agreement species. This species is known to nest in the park and hunt over open grasslands. The park conducts monitoring of northern goshawks in the park, and protocol surveys are conducted prior to prescribed fires. Northern goshawks inhabit the Bryce Amphitheater area of the park.

*Rare plants.* There are no known populations of rare plant species in the proposed action areas. The majority of the known populations of rare plants in the park inhabit barren areas along breaks and in open pine woodland habitats on bare, gravelly soils.

The Utah prairie dog is the only special status species carried forward for further analysis. The remaining three federally listed species, nine state-listed species, and rare plants have been dismissed from further analysis either because the species (in the case of the federally listed species) is not in the park or because the potential impacts on the species (state-listed and rare plants) would be minor or less.

**Intensity Level Definitions** 

Impacts on special status species were determined based on the following impact definitions and thresholds.

Negligible. No federally listed species or sensitive species would be affected or the alternative would affect an individual of a listed species, its critical habitat or a sensitive species, but the change would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population.

Minor. The alternative would affect an individual(s) of a listed species, its critical habitat or a sensitive species, but the change would be small. Mitigation measures would be likely be required to reduce impacts.

Moderate. An individual or population of a listed species, its critical habitat, or a sensitive species would be noticeably affected. The effect would have some consequence to the individual, population, or habitat. Mitigation measures would likely be required to reduce impacts.

Major. An individual or population of a listed species, its critical habitat, or a sensitive species would be noticeably affected with a vital consequence to the individual, population, or habitat. Mitigation measures would likely be required to reduce impacts.

Short-term Impacts. Species recovers in less than 1 year.

Long-term Impacts. Species requires more than 1 year to recover.

For effects to Utah prairie dogs, USFWS has established that for projects that temporarily impact habitat (do not extend into the following season and the habitat can feasibly be restored) or those

projects with small permanent surface or buried structures that do not substantially alter habitat or behavior, the buffer is a 350-foot zone extending out from the proposed project right-of-way or exterior boundary. The 350-foot buffer is the range within which normal behavior (e.g., foraging, vigilance activities) of individual Utah prairie dog may be disrupted by noise or human presence.

For projects with large permanent surface or buried structure that may substantially alter Utah prairie dogs habitat or behavior or extend into the following season, the buffer zone extends outward 0.5 mile from the proposed project right-of-way or exterior boundary. The 0.5-mile buffer is the range within which normal dispersal of individual Utah prairie dogs may be disrupted by structures (including roadways and parking areas) and human presence.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would continue to operate and maintain the transportation network as it is currently. The existing condition for Utah prairie dogs may deteriorate due to increased visitation. Continued private vehicle parking issues may result in impacts on undisturbed areas adjacent to roadways and parking lots. The Bryce Amphitheater would continue to be a transportation hot spot where visitor congestion is expected to increase resulting in an increase in human-related impacts on Utah prairie dogs. Human activities near prairie dogs may result in adverse effects on the species' behavior by causing disturbance to foraging, breeding, or nesting. However, Utah prairie dogs are likely acclimatized (habituated) to human presence and high visitor use under the existing condition. An increase in human-related impacts would likely result in short- and long-term minor adverse impacts on Utah prairie dogs.

Travel Demand Management. There would be no impacts on Utah prairie dogs as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. A reduction in the number of oversized vehicles in restricted areas may reduce vehicle / wildlife strikes in those areas, resulting in a negligible short-term beneficial effect on Utah prairie dogs. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would continue to result in short- and long-term moderate adverse effects on Utah prairie dogs from potential disturbance of habitat from visitors as well as increased potential for vehicle / wildlife strikes.

Education and Visitor Information. Short-term education and visitor information activities would have no impact on Utah prairie dogs.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park, which would result in short- and long-term minor adverse effects on Utah prairie dogs from potential disturbance of habitat from visitors as well as increased potential for vehicle / wildlife strikes. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles. These incremental adjustments could have a short-term and negligible beneficial impact on Utah prairie dogs from a decrease in potential disturbance of habitat from visitors as well as a decrease in potential for vehicle / wildlife strikes. Because no substantial expansion of the shuttle system would occur

under the Continue Current Approach Alternative, it is likely that any beneficial effects of shuttle use would be offset by increased visitation over the long term.

Roadway and Parking. Proposed visitor center parking improvements may result in approximately 8.43 acres of disturbance to vegetation (primarily Ponderosa Pine / Mixed Herbaceous Woodland Complex) in previously undisturbed areas where additional parking may be added. The visitor center is adjacent to the Dave's Hollow West colony (active colony with 11 prairie dogs in 2013) and north of the Dave's Hollow East colony (active colony with 13 prairie dogs in 2013). The proposed improvements and activities related to the visitor center would occur within the 350-foot and 0.5-mile buffer zones of the active portions of the Dave's Hollow West colony, but not directly within the colonies or within meadow habitat. Proposed changes to the visitor center area would occur in both previously disturbed and undisturbed areas.

Planned visitor center parking improvements under the Continue Current Approach Alternative may result in disturbance to individual Utah prairie dogs from noise, dust, ground vibration, and increased human presence while improvement related activities are occurring. Noise and increased human activity may result in a reduction of foraging or possible temporary displacement of prairie dogs. Prairie dogs in this area, however, may be acclimatized to noise and human activity due to their proximity to the existing visitor center, related traffic, and human activities. Adverse effects on prairie dogs in this area due to the proposed improvements to the visitor center would be temporary, occurring primarily during construction, and minimal overall. Effects on Utah prairie dogs that inhabit the visitor center area would be short-term negligible to minor adverse and local. Over the long term under the Continue Current Approach Alternative, continued degradation of parking availability and the existing deficiencies of the transportation system would likely result in short- and long-term minor to moderate adverse effects on Utah prairie dogs from potential disturbance of habitat from increased visitors as well as increased potential for vehicle / wildlife strikes.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect the Utah prairie dog and special status species in the park include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (visitor travel in private vehicles primarily), vegetation management activities (such as vegetation removal activities and prescribed burns), utility development in and adjacent to park (including transmission and sewer lines), habitat conservation planning (Bryce Canyon City Habitat Conservation Plan), translocations and flea dusting activities for prairie dogs, and urban development adjacent to the park (primarily within Bryce Canyon City). The Utah prairie dog population fluctuates in the park because of natural predators, fire suppression, road fatalities, sylvatic plague, habituation, and longer and more extreme winters that decrease the time available for the feeding season.

Adverse impacts could occur to Utah prairie dogs from wildland fires, the presence of plague, and vehicle strikes where colonies are adjacent to roadways. Impacts on Utah prairie dogs and vegetation communities in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on Utah prairie dogs. The overall cumulative impacts on Utah prairie dogs from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short-and long-term moderate adverse and at a local scale.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term and long-term negligible to minor adverse impacts on Utah prairie dogs. Conservation measures developed in consultation with the USFWS for the Utah Prairie Dog Stewardship Plan would be implemented and would include, but would not be limited to, vegetative and physical barriers, enhanced movement corridors via clearing / addition / expansion of underground culverts, temporary road closures, and speed-calming measures. The park would be implementing these measures to mitigate ongoing and potential additional adverse impacts such as human disturbance to habitat, habitat fragmentation, and vehicle / wildlife strikes. Cumulative effects would be short- and long-term minor adverse and at a local scale.

## Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on Utah prairie dogs as a result of conducting the transportation and visitor use management study common to all action alternatives. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. A reduction in the number of oversized vehicles in restricted areas may reduce vehicle / wildlife strikes in those areas, resulting in a negligible short-term beneficial effect on Utah prairie dogs. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park, and the expected trend of increasing visitation would continue to result in short- and long-term moderate adverse effects on Utah prairie dogs from potential disturbance of habitat from visitors as well as increased potential for vehicle / wildlife strikes. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day and would provide a short-term negligible beneficial effect on Utah prairie dogs from limited vehicle access that may reduce vehicle / wildlife strikes.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have short- and long-term negligible to minor beneficial impact on Utah prairie dogs in the park by potentially reducing vehicle / wildlife strikes.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service, leading to fewer private vehicles traveling through the park. A reduction in vehicles in the park may result in minor beneficial effects on Utah prairie dogs due to reduced visitor traffic along roadways from expanded shuttle service. Reduced traffic would result in the reduction of potential injury or death from vehicle strikes.

Roadway and Parking. No new or expanded development would occur within Utah prairie dog habitat; therefore, no direct impacts to prairie dog habitat, including burrows, would occur. Expansion of the visitor center parking lot and Sunset Point parking lot reconfiguration and expansion may result in disturbance to individual Utah prairie dogs from noise, dust, ground vibration, and increased human presence while activities are occurring. Noise and increased human activity may result in reduced prairie dog foraging or possible temporary displacement and cause stress to animals in the area. Prairie dogs in these areas are likely acclimatized to vehicle traffic and related noise due to their proximity to the existing roadways and parking lots. Utah

prairie dogs, however, may experience long-term adverse impacts due to increased visitor contact, habituation, and exposure to human foods. Development-related effects on prairie dogs would be temporary, occurring primarily during construction, and minor adverse as compared to the existing condition.

The visitor center is adjacent to the Dave's Hollow West colony (active colony with 11 prairie dogs in 2013) and north of the Dave's Hollow East colony (active colony with 13 prairie dogs in 2013). The proposed improvements and activities related to the visitor center would occur within the 350-foot and 0.5-mile buffer zones of the active portions of the Dave's Hollow West colony and the historic portion of the Dave's Hollow East colony, but not directly within the colonies or within meadow habitat. For the active portion of the Dave's Hollow West colony, 2.6 acres are within the 350-foot buffer and 14.9 acres (entire active colony) are within the 0.5-mile buffer area. For the active portion of the Dave's Hollow East colony, 0.2 acre is within the 350-foot buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer area. For the active colony) are within the 0.5-mile buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer area. For the active colony) are within the 0.5-mile buffer area. Inter area would occur in both previously disturbed and undisturbed areas. Long-term effects may occur from increased traffic to and from the parking lots, potentially increasing injury or mortality from vehicle strikes and potentially adversely impacting dispersal corridors of prairie dogs. Utah prairie dogs would not likely be directly affected in the areas of Sunset Point parking lot, as there are no adjacent colonies. Expansion of the visitor center parking lot and Sunset Point parking lot would result in long-term minor to moderate adverse impacts on prairie dogs.

The proposed parking and circulation reconfiguration at the Lodge area would not likely result in adverse effects to Utah prairie dogs. There are no Utah prairie dog colonies within 350 feet of the Lodge parking lot area. The Mixing Circle Junction active colony is within 0.5 mile of the Lodge area; however, proposed changes would occur within existing paved and disturbed areas, and prairie dogs are not likely to be impacted by these activities.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect Utah prairie dogs in the park under the impacts common to all action alternatives include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as nonnative vegetation removal activities, restoration, and prescribed burns), utility development in and adjacent to the park (including transmission and sewer lines), habitat conservation planning (Bryce Canyon City Habitat Conservation Plan), and urban development adjacent to the park (primarily within Bryce Canyon City). Utah prairie dogs may also be adversely affected by wildland fires.

Activities and conservation measures common to all action alternatives may result in minor beneficial effects on prairie dogs due to improved parking and circulation in the park, primarily due to reduced impacts on vegetation adjacent to roadways and parking lots from inappropriate parking. Construction activities would result in adverse impacts on prairie dogs from disturbance due to noise, dust, ground vibration, and increased human presence. Impacts on Utah prairie dogs in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on Utah prairie dogs. The overall cumulative impacts on Utah prairie dogs from past, present, and reasonably foreseeable future projects in combination with the impacts common to all action alternatives, would be short- and long-term moderate adverse and at a local scale.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on Utah prairie

dogs. Conservation measures developed in consultation with the USFWS for the Utah Prairie Dog Stewardship Plan would be implemented and would include, but would not be limited to, vegetative and physical barriers, enhanced movement corridors via clearing / addition / expansion of underground culverts, temporary road closures, and speed-calming measures. The park would implement these measures to mitigate ongoing and potential additional adverse impacts such as human disturbance to habitat, habitat fragmentation, and vehicle strikes. Cumulative effects would be short- and long-term moderate adverse and at a local scale.

# Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, no new or expanded development would occur within Utah prairie dog habitat; therefore, no direct impacts to prairie dog habitat, including burrows, would occur. Under this alternative, effects from the expansion of the visitor center parking lot and Sunset Point parking lot reconfiguration and expansion would be the same as discussed above under Impacts Common to All Action Alternatives. Approximately 25.27 acres of vegetation communities (primarily within the Ponderosa Pine / Mixed Herbaceous Woodland Complex) could be disturbed if all proposed improvements occur (i.e., full build-out); the majority of disturbance would occur within Ponderosa Pine communities. Habitat for Utah prairie dogs typically consists of meadows within the park, minimal, if any, prairie dog activity (such as foraging or dispersal) occurs within Ponderosa Pine vegetation.

Under the Greatest Parking Supply Alternative, approximately 19 acres of active and historic Utah prairie dog colonies are within 350 feet of proposed new and expanded parking lots, and approximately 135.9 acres are within 0.5 mile of proposed new and expanded parking lots. Effects of construction-related activities on Utah prairie dogs would be short-term minor to moderate adverse and local. Long-term effects may occur from increased traffic to and from the expanded and new parking lots, potentially increasing injury or mortality from vehicle strikes and adversely impacting dispersal corridors, and would result in long-term minor to moderate adverse impacts on prairie dogs.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect Utah prairie dogs in the park under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. Activities under the Greatest Parking Supply Alternative may result in negligible beneficial effects on prairie dogs due to improved parking and circulation in the park, primarily due to reduced impacts on vegetation adjacent to roadways and parking lots from inappropriate parking. Construction activities would result in adverse impacts on prairie dogs from disturbance due to noise, dust, ground vibration, and increased human presence. Impacts on Utah prairie dogs in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on Utah prairie dogs. The overall cumulative impacts on Utah prairie dogs

from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term moderate adverse and at a local scale.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on Utah prairie dogs. Conservation measures developed in consultation with the USFWS for the Utah Prairie Dog Stewardship Plan would be implemented and would include, but would not be limited to, vegetative and physical barriers, enhanced movement corridors via clearing / addition / expansion of underground culverts, temporary road closures, and speed-calming measures. The park would implement these measures to mitigate ongoing and potential additional adverse impacts such as human disturbance to habitat, habitat fragmentation, and vehicle strikes. Cumulative effects would be short- and long-term moderate adverse and at a local scale.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The effects of these actions would be the same as discussed under the Impacts Common to All Action Alternatives above.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have short- and long-term negligible to minor beneficial impact on Utah prairie dogs in the park by potentially reducing vehicle / wildlife strikes. In addition, Utah prairie dog conservation measures include interpretive material that would inform visitors about the status of prairie dogs and appropriate visitor activities and behavior near colonies to improve visitor awareness, with the goal of decreasing visitor disturbance.

Shuttle. Under the Highest Visitor Demand Alternative, effects from the proposed expansion of shuttle service and capacity, and increasing service frequencies would decrease the number of private vehicles in the park. A reduction in vehicles in the park may result in negligible to minor beneficial effects on Utah prairie dogs due to reduced visitor traffic along roadways. Reduced traffic would result in the reduction of potential injury or death of prairie dogs from vehicle strikes and reduced disturbance, particularly along roadways.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, no new or expanded development would occur within Utah prairie dog habitat; therefore, no direct impacts

to prairie dog habitat, including burrows, would occur. Under this alternative, effects from the expansion of the visitor center parking lot would be the same as discussed above under Impacts Common to All Action Alternatives. The proposed Inspiration Point and Bryce Point turnoff parking lot would not be within the boundaries of any active colonies; therefore, construction-related adverse impacts (direct, indirect, or cumulative) would not likely occur. Development of a new parking lot and shuttle stop at the Inspiration Point and Bryce Point turnoff would not likely result in long-term adverse impacts to prairie dogs, because the nearest active colonies are nearly 0.5 mile away and the area is not identified as a potential future translocation site due to the proximity of the road corridor. The nearby active colonies are the Sunset Colony (presumed active but no prairie dogs were found during survey) and the Mixing Circle Junction colony (4 prairie dogs were found in 2013). The Rainbow Gate historic colony is within the 350-foot buffer (25.3 acres), but it is not within the proposed parking lot footprint.

Effects of construction-related activities on Utah prairie dogs would be short-term minor to moderate adverse and local. Long-term effects may occur from increased traffic to and from the expanded and new parking lots, potentially increasing injury or mortality from vehicle strikes and adversely impacting dispersal corridors, and would result in long-term minor to moderate adverse impacts on prairie dogs.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect Utah prairie dogs in the park under the Highest Visitor Demand Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. Activities under the Highest Visitor Demand Management Alternative may result in negligible beneficial effects on prairie dogs due to improved parking and circulation in the park, primarily due to reduced impacts on vegetation adjacent to roadways and parking lots from inappropriate parking. Construction activities would result in adverse impacts on prairie dogs from disturbance due to noise, dust, ground vibration, and increased human presence. Impacts on Utah prairie dogs in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on Utah prairie dogs. The overall cumulative impacts on Utah prairie dogs from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be short- and long-term moderate adverse and at a local scale.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor to moderate adverse and negligible beneficial impacts on Utah prairie dogs. Conservation measures developed in consultation with the USFWS for the Utah Prairie Dog Stewardship Plan would be implemented and would include, but would not be limited to, vegetative and physical barriers, enhanced movement corridors via clearing / addition / expansion of underground culverts, temporary road closures, and speed-calming measures. The park would implement these measures to mitigate ongoing and potential additional adverse impacts such as human disturbance to habitat, habitat fragmentation, and vehicle strikes. Cumulative effects would be short- and long-term moderate adverse and at a local scale.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by

restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction in potential vehicle / wildlife strikes and would have a short- and long-term negligible to minor beneficial effect on Utah prairie dogs in the park. Restricting vehicles at Fairyland Point could result in more visitors accessing the restricted area by foot or bicycle, which would result in a reduction in the number of vehicles traveling to Fairyland Point and result in a reduction in potential vehicle / wildlife strikes. This would have a short- and long-term negligible to minor beneficial effect on Utah prairie dogs (if they are re-established in this area) in the Fairyland Point area.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have short- and long-term negligible to minor beneficial impact on Utah prairie dogs in the park by potentially reducing vehicle / wildlife strikes. In addition, Utah prairie dog conservation measures include interpretive material that would inform visitors about the status of prairie dogs and appropriate visitor activities and behavior near colonies to improve visitor awareness, with the goal of decreasing visitor disturbance.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles on park roadways. A reduction in vehicles in the park may result in minor beneficial effects on Utah prairie dogs and special status species due to reduced visitor traffic along roadways from expanded shuttle service. Reduced traffic would result in the reduction of potential injury or death of prairie dogs from vehicle strikes.

Roadway and Parking. Approximately 20.88 acres of vegetation, primarily within Ponderosa Pine / Mixed Herbaceous Woodland, could be disturbed if all proposed improvements occur (i.e., full build-out); however, proposed improvements would be minimized as much as possible under the adaptive management approach. The effects of the activities under the Adaptive Travel Management Alternative are discussed below.

Under the Adaptive Travel Management Alternative, no new or expanded development would occur within Utah prairie dog habitat; therefore, no direct impacts to prairie dog habitat, including burrows, would occur. The Dave's Hollow West colony (active colony with 11 prairie dogs in 2013) is less than 350 feet from the existing visitor center and entrance station. Proposed changes to the entrance station area would occur within existing paved and disturbed areas. Proposed changes to the entrance stations). Minimal indirect effects may occur to prairie dog dispersal between the Dave's Hallow West and East colonies during construction activities.

The proposed visitor center parking lot expansion and visitor center improvements may result in adverse impacts to Utah prairie dogs. The visitor center is adjacent to the Dave's Hollow West colony and north of the Dave's Hollow East colony (active colony with 13 prairie dogs in 2013). The proposed improvements and activities related to the visitor center would occur within the 350-foot and 0.5-mile buffer zones of the active portions of the Dave's Hollow West colony and the historic portion of the Dave's Hollow East colony, but not directly within the colonies or within meadow habitat. For the active portion of the Dave's Hollow West colony, 2.6 acres are within the 350-foot buffer and 14.9 acres (entire active colony) are within the 0.5-mile buffer area. For the active portion of the Dave's Hollow East colony, 0.2 acre is within the 350-foot buffer and 4.0 acres (entire active colony) are within the 0.5-mile buffer area. Proposed visitor center improvements may result in disturbance to individual Utah prairie dogs from noise, dust, ground vibration, and increased human presence during improvement-related construction activities. Noise and increased human activity may result in reduced prairie dog foraging, affect vigilance activities, affect dispersal activity, or result in possible temporary displacement. However, prairie dogs in this area may be acclimatized to noise and human activity due to their proximity to the existing visitor center, related traffic, and human activities. The rerouting of traffic to the east may have a beneficial long-term impact on Utah prairie dogs in the Dave's Hollow West colony due to a large reduction in private vehicles driving past the main colony area (where most vehicle strikes in the area occur). All parking lot expansions would occur within the Ponderosa Pine vegetation community and previously disturbed areas (paved, graded, and social trail areas). No meadow habitat would be disturbed.

Proposed circulation and reconfiguration improvements around the General Store and High Plateaus Institute may result in minimal indirect adverse impacts to the prairie dog. The Historic Housing colony (active colony with 5 prairie dogs found in 2013) is less than 350 feet from the General Store and High Plateaus Institute area, but it is currently buffered by Ponderosa Pine Forest. Proposed changes to the General Store and High Plateaus Institute area would occur within existing paved and disturbed areas. Proposed changes would not result in actions outside current activity areas; however, activities may result in minimal disturbance to prairie dogs during construction activities, due to noise and increased human presence similar to those detailed for actions adjacent to the visitor center. The Historic Housing and Dave's Hollow East active prairie dog colonies (13 prairie dogs found in 2013) are within 0.5 mile of the of the proposed changes to the General Store and High Plateaus Institute area. Proposed changes may result in disturbance to prairie dog dispersal; however, disturbance would likely be minimal, if any, due to the lack of dispersal habitat within and surrounding the General Store and High Plateaus Institute area.

The new parking lot and shuttle stop proposed along the main park road at the Inspiration Point and Bryce Point turnoff would not result in short-term construction-related adverse impacts (direct, indirect, or cumulative) to active prairie dog colonies within the 350-foot buffer area. The proposed Inspiration Point and Bryce Point turnoff parking lot would not be within the boundaries of any active colonies. In addition, development of a new parking lot and shuttle stop at the Inspiration Point and Bryce Point turnoff would not likely result in long-term adverse impacts to prairie dogs, because the nearest active colonies are nearly 0.5 mile away and the area is not identified as a potential future translocation site due to the proximity of the road corridor. The nearby active colonies are the Sunset colony (presumed active but no prairie dogs were found during survey) and the Mixing Circle Junction colony (4 prairie dogs were found in 2013). The Rainbow Gate historic colony is within the 350 foot buffer, but it is not within the proposed parking lot footprint.

The proposed parking and circulation reconfiguration at the Lodge area would not likely result in adverse effects on prairie dogs. Proposed changes would occur in existing paved and disturbed areas. There are no Utah prairie dog colonies within 350 feet of the Lodge parking lot area.

The proposed tour bus parking lot would likely result in short- and long-term adverse impacts on prairie dogs. The majority of the Historic Housing colony is within 350 feet of the proposed parking lot, with the entire colony within the 0.5-mile buffer. Short-term impacts may include disturbance to individual Utah prairie dogs from noise, dust, ground vibration, and increased human presence while construction activities are occurring. Construction noise and increased human activity may result in reduced prairie dog foraging or possible temporary displacement. Prairie dogs in these areas are likely acclimatized to vehicle traffic and related noise due to their proximity to the existing roadways and parking lots. The proposed tour bus parking lot would result in increased traffic in the area, an increased potential for ground attractants being deposited by tour buses and visitors, as well as increased and constant human activity in an area that is currently undeveloped. These short- and long-term adverse impacts would likely result in greater vehicle strike numbers and increase the potential for habituation and food conditioning for the prairie dogs in the Historic Housing colony. The active portions of the Historic Housing, Mixing Circle Junction, and Dave's Hollow East colonies are within the 0.5-mile buffer of the proposed parking lot. The proposed parking lot would likely also result in long-term adverse impacts on prairie dog dispersal activities in the area.

The proposed new parking lot and temporary tour bus parking across from the existing historic service station would likely result in adverse effects on prairie dogs. The Historic Housing prairie dog colony is more than 350 feet from the proposed parking lot area; however, prairie dogs were observed in this area in 2013 and multiple vehicle strikes resulting in mortality occurred. Prairie dogs forage and travel within this area.

The proposed new parking lot at the Fairyland Road entrance would not likely result in adverse effects on Utah prairie dogs. The historic Fairyland colony is more than 350 feet from the road entrance and has been inactive for several years. If Utah prairie dogs are reestablished in the historic colony along Fairyland Road, as proposed under an alternative in the Utah Prairie Dog Stewardship Plan, vehicle restrictions in this area could have a moderate long-term beneficial impact on the colony. Vehicle restrictions would result in beneficial effects on the Fairyland Road. Reduced traffic would result in the reduction of potential injury or death of prairie dogs and other special status species in the area from vehicle strikes.

The proposed parking lot expansion near Bryce Point view along Bryce Point Road would not occur within or near any currently active colony or mapped habitat (see Figure 17). The historic Paria East and West colonies (inactive colonies) occur within 0.5 mile of the proposed parking lot; however, these colonies have not shown prairie dog activity since 2005. The historic Paria East and West colonies may be considered for Utah prairie dog reestablishment in the future; however, they would not be priority areas due to their distance from other colonies (dispersal distance). The nearest active colonies are almost 2 miles away. The proposed parking lot expansion near the Bryce Point viewing area would not likely result in adverse effects to prairie dogs or their habitat.

Under the Adaptive Travel Management Alternative, effects from expanding parking near the visitor center, adding a shuttle stop, expanding parking at the Inspiration and Bryce points turnoff along the main park road, and developing a new Bryce Point parking lot would result in disturbance within vegetated as well as previously disturbed areas. The majority of disturbance would occur within Ponderosa Pine Woodlands. Under this alternative, however, parking and facility improvements would be minimized as much as possible through using an adaptive management approach. The expansion of the visitor center parking would occur along the east side of the main park road, on the opposite side of the road from the Dave's Hollow prairie dog

colony. Although the proposed parking expansion area is within 350 feet of the prairie dog colony, the vegetation community consists primarily of ponderosa pine and mixed herbaceous woodland, which is not the primary habitat for prairie dogs. The proposed visitor center parking area, along with other proposed improvements, would have minor to moderate long-term adverse effects on Utah prairie dogs in the area.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect Utah prairie dogs in the park under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. Activities under the Adaptive Travel Management Alternative may result in negligible beneficial effects on prairie dogs due to reduced impacts on vegetation adjacent to roadways and parking lots from inappropriate parking. New and expanded parking facilities, however, would increase Utah prairie dog exposure to human activity at higher numbers and in new locations, which could have a long-term adverse impact at locations such as the visitor center and the Historic Housing colonies. Construction activities would result in adverse impacts on prairie dogs from disturbance due to noise, dust, ground vibration, and increased human presence. Impacts on Utah prairie dog and special status species in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to adverse cumulative effects on Utah prairie dogs. The overall cumulative impacts on Utah prairie dogs from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be short- and long-term moderate adverse and at a local scale.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term minor to moderate adverse and minor beneficial impacts Utah prairie dogs. Conservation measures developed in consultation with the USFWS for the Utah Prairie Dog Stewardship Plan would be implemented and would include, but would not be limited to, vegetative and physical barriers, enhanced movement corridors via clearing / addition / expansion of underground culverts, temporary road closures, and speed-calming measures. The park would implement these measures to mitigate ongoing and potential additional adverse impacts such as human disturbance to habitat, habitat fragmentation, and vehicle strikes. Cumulative effects would be short- and long-term moderate adverse and at a local scale.

# CULTURAL LANDSCAPES

# Affected Environment

According to the NPS DO-28 Cultural Resource Management Guideline, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built.

Five cultural landscapes have been identified in the park, including Bryce Canyon Lodge and Deluxe Cabins area, Bryce Inn (Sunrise Camper Store), NPS Historic Housing area, Rim Road, and Bryce Canyon National Park Scenic Trails Historic District. The latter falls outside the areas proposed for improvements and will not be discussed further. Cultural landscape inventories have been completed for Bryce Canyon Lodge and Deluxe Cabins area, Bryce Inn, and NPS Historic Housing area, and Rim Road. Cultural landscape reports have been completed for the Bryce Canyon Lodge and NPS Historic Housing area.

NRHP Status. The proposed action is an undertaking as defined in Section 106 of the NHPA. Section 106 of the NHPA, as implemented (36 CFR Part 800), requires federal agencies to take

into account the effects of their undertakings on historic properties. Compliance with section 106 of the NHPA is not being subsumed under NEPA, but is being conducted separately through ongoing consultation with the Utah SHPO.

Under the Section 106 process, the NPS is obliged to identify cultural resources within the proposed project's area of potential effect (APE), to assess impacts on resources listed in, or eligible for listing in, the NRHP, and to mitigate adverse effects on such resources. A resource must qualify under one or more criteria (discussed below) to be considered eligible for NRHP listing. The APE is defined as the area where a project will have direct and indirect effects. As noted above, four of the cultural landscapes fall within the APE of the alternatives discussed below.

A property that qualifies for the NRHP is considered significant in terms of the planning process under the NHPA, NEPA, and other federal mandates. The National Register Criteria for Evaluation (36 CFR 60.4) provides guidance in determining a property's eligibility for listing on the NRHP. This states that the quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. is associated with events that have made a significant contribution to the broad patterns of our history; or
- B. is associated with the lives of persons significant in our past; or
- C. embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
- D. has yielded, or may be likely to yield, information important in prehistory or history [36 CFR 60.4].

To be eligible, sites must also have integrity. For criteria A, B, and C, integrity means that the property must evoke the resource's period of significance to a non-historian or non-archeologist. If site materials have been removed or vandalized to the extent that an ordinary citizen can no longer envision or grasp the historic activities that took place there, the site is said to lack integrity. Typically, archeological sites qualify for eligibility under criterion D, research potential, so integrity in this case means that the deposits are intact and undisturbed enough to make a meaningful data contribution to regional research issues.

Bryce Canyon Lodge Historic District is in Lodge Loop portion of the proposed plan (see Figure 13). The district was listed on the NRHP in 1995 under criterion A for its association with the development of the park's recreational facilities and under criterion C for an example of rustic building design. The district includes the lodge, 6 remaining standard cabins (originally 88 cabins); 10 deluxe duplex guest cabins, 5 deluxe quadruplex cabins, men's dormitory, and employee recreation hall. The linen house and pump house are associated buildings. Of these 26 buildings, 16 were designated as a National Historic Landmark in 1987 (Caywood 1994a). The cultural landscape report expanded the district boundary to include significant contextual landscape features such as the paved and unpaved pedestrian trails, a low knoll, meadow in front of the Lodge with a tree-lined edge, parking lots, equestrian trail, Lodge Loop Road, Lodge access

road(portions are non-contributing), Sunrise Motel (non-contributing), horse corral shed (noncontributing), wooden light posts (non-contributing), wood directional signs, trash receptacle (non-contributing), utility boxes (non-contributing), and rugged stone edging along roadways and parking areas (NPS 2006b).

Bryce Inn (also called Sunrise Camper Store and currently called General Store) is in the General Store / Sunrise Point portion of the proposed plan (see Figure 14). Bryce Inn was listed on the NRHP in 1995 under criterion C for its value as example of Gilbert Stanley Underwood's rustic architectural design. It was built in 1932 and was part of the housing complex with over 70 housekeeping cabins. It is the only building from this complex that remains and is currently being used as the camp store (Caywood 1994b). NPS evaluated the Bryce Inn / General Store area in 2011 as part of a cultural landscape inventory and determined it not to be eligible for NRHP listing as a district.

Old NPS Housing Historic District is west of the General Store / Sunrise Point and north of the Lodge Loop portions of the propose plan. It is north of Bryce Canyon Lodge Historic District along the Lodge Loop Road. The Old NPS Housing Historic District was listed on the NRHP in 1995. The district includes eight contributing buildings. It is eligible under criterion A for its association with the development of NPS administrative infrastructure in the park and under criterion C as a representative of simplified rustic design. Two new modern building (Concessionaire Dormitories) are visible from HS-10 (one-story residence cabin) but do not adversely affect the remainder of the district (Caywood 1994c). The cultural landscape report differs in this aspect and indicates that these modern buildings adversely impact the district and recommended their eventual removal with visual and spatial barrier of vegetation in the meantime (NPS 2006b). The cultural landscape report expanded the district boundary to include significant contextual landscape features such as the pedestrian trails, two low knolls, the surrounding Ponderosa Pine Forest and Highplateau Sagebrush Meadow, the Lodge Loop Road (noncontributing), two access roads, a horse trail, historic trace road, Manzanita Lodge (noncontributing), Concessionaire Dormitories (non-contributing), wood directional signs, picnic tables (non-contributing), fire pit (non-contributing), clothes line (non-contributing), low walls and steps made of roughly hewn stone pieces (NPS 2006b).

Rim Road is a linear circulation system originally designed to provide access to the main developed area in the park (the Lodge and cabin area) and to the best lookout points. The road runs from the north to the south end of the proposed plan area. The Fairyland Point, entrance station / visitor center, and Inspiration / Bryce points turnoff portions of the proposed plan contain sections of the road. Rim Road was also part of the historic "Tour Loop Road." The original 19-mile road was constructed prior to 1930. By the time of its assessment in 1998, the road was 20 miles long and had 9 pull-outs and spur roads which are part of its cultural landscape along with associated buildings. Rim Road was determined to lack integrity due to changes that have significantly altered the appearance and design of the road and its cultural landscape. These changes have resulted in the road no longer reflecting the historic road design. Changes in the road alignment and width and design of the viewing areas have also affected the integrity of design and feeling. The road was recommended not eligible for the NRHP as a cultural landscape in 1998. This changes the 1987 determination that Rim Road was eligible for the NRHP (NPS 1998). Thus, Rim Road will not be discussed below. Impact analysis is required only for listed or eligible resources.

#### **Intensity Level Definitions**

Impacts on cultural landscapes were determined based on the following impact definitions and thresholds.

Negligible. Impact is at the lowest levels of detection – barely measurable with no perceptible consequences, either adverse or beneficial.

Minor. Disturbance of a cultural landscape results in little, if any, loss of integrity and impacts would not affect the character defining pattern(s) or feature(s) of a National Register of Historic Places eligible or listed property.

Moderate. Disturbance of a cultural landscape results in a loss of integrity but does not impact character defining pattern(s) or feature(s) of a property to the extent that its National Register eligibility is jeopardized.

Major. Disturbance of a cultural landscape results in loss of integrity and impacts would alter a character defining pattern(s) or feature(s) of a property to the extent that it is no longer eligible to be listed in the National Register.

Long-term Impacts. Most resources related to cultural landscapes are non-renewable, therefore, any effects would be long term.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed, and the existing cultural landscapes would not be adversely impacted.

Travel Demand Management. Conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on the cultural landscapes. Restricting oversized vehicles could be beneficial to cultural landscapes by reducing the visual impacts that could result from oversized vehicles.

Education and Visitor Information. These activities would have long-term negligible beneficial impacts on cultural landscapes as long as the signs are compatible with the rustic style of the cultural landscapes.

Shuttle. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles and inappropriate parking. These incremental adjustments could have a long-term and negligible to minor beneficial impact on cultural landscapes.

Roadway and Parking. Reconfiguring the visitor center parking lot would result in negligible effects to the cultural landscapes. No cultural landscapes are close to the visitor center. Conducting minor improvements to the Lodge parking lot would have short-term negligible adverse effects on Bryce Canyon Lodge Historic District cultural landscape. Construction and maintenance associated with these activities would likely result in a temporary disruption of the historic scene and feeling in the cultural landscape during construction. The reconfiguring and restriping of the Lodge parking lot does not represent a change in the existing land use. The overall integrity and the eligibility of the cultural landscape for listing in the NRHP would not be affected. Following construction, visual impacts on the landscape in the historic district would be restored with the removal of construction equipment.
Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect cultural landscapes in the park include: roadway improvement projects and ongoing road maintenance activities; facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities or restoration), and utility development in the park (including transmission and sewer lines). The overall cumulative impacts on cultural landscapes from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be long-term and negligible adverse.

**Conclusion**. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible to minor adverse local impacts on cultural landscapes. Cumulative effects would be long-term negligible adverse and local.

## Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on cultural landscapes as a result of conducting the study. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day. Limiting the number of vehicles would reduce the number of vehicles that park inappropriately within cultural landscapes. These incremental adjustments could have a short-term negligible to minor beneficial impact on cultural landscapes. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. Restricting oversized vehicles could be beneficial to cultural landscapes by reducing the visual impacts that could result from oversized vehicles.

Education and Visitor Information. The wayfinding and sign plan activities would have longterm negligible beneficial impacts on cultural landscapes as long as the signs are compatible with the rustic style of the cultural landscapes.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza at the visitor center could direct more visitors to the shuttle service, leading to fewer private vehicles traveling through the park. Reducing inappropriate parking would have negligible to minor beneficial impacts on cultural landscapes.

Roadway and Parking. Expanding the visitor center parking lot and expanding parking at Sunset Point would not result in impacts on cultural landscapes. No new disturbance would occur, although there could be some disturbance in previously disturbed areas, and no new land use activities would result from the reconfiguration of the Lodge parking lot. This improvement is in keeping with the existing conditions. Construction and maintenance associated with parking area improvements would be a temporary disruption of the historic scene and feeling within the Bryce Canyon Lodge Historic District cultural landscape during construction. Following construction, visual impacts on the landscapes within the historic district would be restored with the removal of construction equipment. Activities would have a negligible adverse effect on cultural landscapes during construction. Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect cultural landscapes in the park under the impacts common to all action alternatives are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative impacts on cultural landscapes from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be long-term negligible adverse and local.

Conclusion. Implementing the improvements common to all action alternatives would result in long-term negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long-term negligible adverse and local.

# Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. The impacts common to all action alternatives would be the same under the Great Parking Supply Alternative. In addition, relocation of the entrance station, expanding Sunrise Point parking lot, expanding Sunset Point parking lot, expanding Rainbow Point / Yovimpa Point parking lot, and reconfiguring the Sunset Point Loop Road would result in no impacts on cultural landscapes. Expanding the General Store lot could have a short-term negligible impact on the Bryce Inn / General Store cultural landscape, since there would be a temporary disruption of the historic scene and feeling within the cultural landscape during construction. Following construction, visual impacts on the landscape within the historic district would be restored with the removal of construction equipment. Reconfiguring the Lodge Loop Road would result in short-term negligible adverse effect on Bryce Canyon and Old NPS Housing Districts. Increased parking availability and transportation improvements would likely result in long-term negligible to minor beneficial effects on cultural landscapes by reducing inappropriate parking.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect cultural landscapes in the park under the Greatest Parking Supply Alternative are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative impacts on cultural landscapes from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be long-term negligible adverse and local.

**Conclusion**. Implementing the Greatest Parking Supply Alternative would result in long-term negligible to minor adverse and beneficial, local impacts on cultural landscapes. Cumulative effects would be long-term negligible adverse and local.

# Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction of inappropriate parking and would have long-term negligible to minor beneficial effects on cultural landscapes. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations could provide a negligible to minor beneficial effect on cultural landscapes.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have long-term negligible to minor beneficial impacts on cultural landscapes.

Shuttle. Expanding shuttle capacity to North Campground, Bryce Amphitheater, Rainbow Point, and Inspiration and Bryce points and increasing service frequencies would decrease the number of private vehicles and inappropriate parking in the park and would have long-term minor beneficial effect on cultural landscapes within the APE.

Roadway and Parking. The impacts common to all action alternatives would be the same under the Highest Visitor Demand Management Alternative. In addition, relocation of the entrance station would result in no impacts on cultural landscapes. The development of multimodal transportation hub and a new parking lot at the turnoff to Inspiration and Bryce points would likely result in long-term negligible to minor beneficial effects on cultural landscapes by reducing parking in inappropriate places due to the increased parking availability.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect cultural landscapes the park under the Highest Visitor Demand Management Alternative are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative impacts on cultural landscapes from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be long-term negligible adverse and local.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in long-term negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long-term negligible adverse and local.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased use of alternate modes of visitor travel in the park would result in a reduction of inappropriate parking and would have long-term negligible to minor beneficial effects on cultural landscapes. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations could provide a negligible to minor beneficial effect on cultural landscapes.

Education and Visitor Information. By clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which would have long-term negligible to minor beneficial impacts on cultural landscapes.

Shuttle. Expanding shuttle capacity to North Campground and Bryce Amphitheater and increasing service frequencies would decrease the number of private vehicles and inappropriate parking in the park and would have long-term minor beneficial effect on cultural landscapes.

Roadway and Parking. Impacts common to all action alternatives would be the same under the Adaptive Travel Management Alternative. In addition, the reconfiguration of the entrance station, the road spur to the visitor center, new parking lot at the turnoff to Fairyland Point, and the multimodal transportation hub and new parking lot at the turnoff to Inspiration and Bryce points would have no effect on cultural landscapes. The reconfiguration and improvements of the General Store parking lot would result in negligible impacts on cultural landscape of Bryce Inn / General Store, because the footprint of the improvements would not extend past the existing asphalt and are within the existing conditions. Because the area is already being used for parking, additional parking would result in negligible effects to Bryce Inn / General Store. The

construction and maintenance associated with the development of the tour bus parking lot along Lodge Loop Road would likely be negligible, because the footprint of the parking area is outside the boundaries for Bryce Inn / General Store and Old NPS Housing District. The multimodal hub at the Lodge and Sunrise loops is outside the boundaries Old NPS Housing and Bryce Canyon Lodge districts; however, construction activities would most likely be visual from both districts and would result in short-term negligible adverse effects since there would be a temporary visual disruption of the historic scene and feeling of the cultural landscapes. Following construction, visual impacts on the landscapes of these historic districts would be restored with the removal of construction equipment. Increased parking availability would likely result in long-term negligible to minor beneficial effects on cultural landscapes by reducing parking in inappropriate areas.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect cultural landscapes in the park under the Adaptive Travel Management Alternative are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative impacts on cultural landscapes from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be long-term negligible adverse and local.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in longterm negligible to minor adverse and beneficial impacts on cultural landscapes at a local scale. Cumulative effects would be long-term negligible adverse and local.

## ETHNOGRAPHIC RESOURCES

## Affected Environment

Ethnographic resources are the cultural and natural features of a park that are of traditional significance to traditionally associated peoples. Ethnographic resources are defined by NPS DO 28 as a "site, substance, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it." Executive Order 13007 directs federal land managing agencies to accommodate access to, and ceremonial use of, American Indian sacred sites. Specifically, federal agencies are directed to (1) accommodate access to and ceremonial use of American Indian sacred sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites. According to DO 28 and Executive Order 13007 on sacred sites, NPS should try to preserve and protect ethnographic resources.

Ethnographic information is lacking and therefore poorly represented at Bryce Canyon National Park. NPS understands that Native Americans traditionally used the area for hunting and gathering activities and acknowledges the current importance of the area as part of the traditional homeland for several tribes. Beyond this, there is very little ethnographic information documenting the extent of the area's traditional importance and use. The archaeological record indicates that during the late Prehistoric period, Numic-speaking peoples including the Southern Paiute occupied the area of the park and its vicinity. Ethnohistorical accounts and the oral history of contemporary Southern Paiute people include the Bryce Canyon National Park area. Contemporary descendants of the Southern Paiutes are considered Native American tribes who have traditional affiliation with the park. Ongoing consultations with the Ute, Hopi, Navajo, Zuni, and other tribes that have traditional affiliation indicate traditional association with the Bryce Canyon area. Continuing consultation with American Indian tribes will yield better information and help the park protect ethnographic resources important to native people. The park will consider all input from these tribes regarding traditional resources and uses.

#### **Intensity Level Definitions**

Impacts on ethnographic resources were determined based on the following impact definitions and thresholds.

Negligible. Impact(s) would be barely perceptible and would alter neither resource conditions such as traditional access or site preservation—nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Minor. Impact(s) would be slight but noticeable, but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Moderate. Impact(s) would be apparent and would alter resource conditions. Management actions or the result of actions would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would endure.

Major. Impact(s) would alter resource conditions. Management actions or the result of actions would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that the persistence of a group's practices and / or beliefs would be jeopardized.

Short-term Impacts. Short-term impacts on a contributing feature(s) or pattern would be temporary, transitional, or construction-related. Within 5 years, effects would no longer be detectable, and the resource would be returned to its predisturbance condition or appearance.

Long-term Impacts. Impacts would last longer than 5 years or would be permanent.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed, and any existing ethnographic resource conditions, such as traditional access or site preservation, in the park would not be expected to change.

Travel Demand Management. Restricting oversized vehicles and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Education and Visitor Information. These activities would not lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park, which could increase parking in inappropriate places. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle to increase its use, which would reduce the number of private vehicles inappropriately parking. These activities would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Roadway and Parking. Construction and maintenance activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be restored. The reconfiguring and restriping of the Lodge parking lot does not represent a change in the existing land use and occurs on previously disturbed grounds. These activities would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect ethnographic resources in the park include: roadway improvement projects and ongoing road maintenance activities; facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), cultural resource management activities, vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). The overall cumulative impacts on ethnographic resources from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short term and negligible adverse.

**Conclusion**. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term negligible adverse effects on ethnographic resources. Cumulative effects would be short term and negligible adverse.

Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. Careful study would be needed to inform any decision regarding implementing any type of reservation or time-based entry system. Implementing a reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. A time-based entry system would reduce the number of vehicles in the park at a given period of day, season, or per day. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. Restricting oversized vehicles, implementing the reservation system, and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Education and Visitor Information. These activities would not lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service, leading to fewer private vehicles traveling through the park.

These activities would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Roadway and Parking. Expanding the visitor center parking lot would require disturbance and changes to the main park road. These activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be restored. There would likely be no effects on site preservation or the relationship between the resource and the affiliated group's body of practices and beliefs. No new disturbance would occur, although there could be some disturbance in previously disturbed areas, and no new land use activities would result from the reconfiguration of the Lodge parking lot. This improvement is in keeping with the existing conditions. These activities would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect ethnographic resources in the park include: roadway improvement projects and ongoing road maintenance activities; facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), cultural resource management activities, vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). The overall cumulative impacts on ethnographic resources from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short term and negligible adverse.

**Conclusion**. Implementing the improvements common to all action alternatives would result in short-term negligible adverse effects on ethnographic resources. Cumulative effects would be short term and negligible adverse.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing ample parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Construction and maintenance activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be restored. There would likely be no effects on site preservation or the relationship between the resource and the affiliated group's body of practices and beliefs. Increased parking availability and transportation improvements would likely result in long-term negligible beneficial effects on ethnographic resources by reducing inappropriate parking that causes damage to resources and improving access and circulation in the park.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect ethnographic resources in the park under the Greatest Parking Supply Alternative are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative

impacts on ethnographic resources from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term negligible adverse.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short- and long-term negligible adverse and beneficial effects on ethnographic resources. Cumulative effects would be short- and long-term negligible adverse.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days. The Intelligent Transportation System, restricting oversized vehicles, and flex-time interpretation programs would not result in new construction or disturbance that could lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term activities would help better manage visitation patterns and promote alternate transportation. These activities would not lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Shuttle. Expanding shuttle capacity and increasing service frequencies would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Roadway and Parking. These activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be restored. There would likely be no effects on site preservation or the relationship between the resource and the affiliated group's body of practices and beliefs. Increased parking availability and transportation improvements would likely result in long-term negligible beneficial effects on ethnographic resources by reducing inappropriate parking that causes damage to resources and improving access and circulation in the park.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect ethnographic resources in the park under the Highest Visitor Demand Management Alternative are the same as those detailed for the Continue Current Approach Alternative. The

overall cumulative impacts on ethnographic resources from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be short- and long-term negligible adverse.

**Conclusion**. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible adverse and beneficial, effects on ethnographic resources. Cumulative effects would be short- and long-term negligible adverse.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering certain areas of the park during the peak season. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days. The Intelligent Transportation System, restricting oversized vehicles, and flex-time interpretation programs would not result in new construction or disturbance that could lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Education and Visitor Information. By clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options, these short- and long-term activities would help better manage visitation patterns and promote alternate transportation. These activities would not lead to effects on ethnographic resource conditions nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Shuttle. Expanding shuttle capacity and increasing service frequencies would not lead to effects on traditional access or site preservation nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Roadway and Parking. Construction and maintenance activities may lead to temporary negligible adverse effects on traditional access. Following construction, traditional access would be restored. There would likely be no effects on site preservation or the relationship between the resource and the affiliated group's body of practices and beliefs. Increased parking availability and transportation improvements would likely result in long-term negligible beneficial effects on ethnographic resources by reducing inappropriate parking that causes damage to resources and improving access and circulation in the park.

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Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect ethnographic resources in the park under the Adaptive Travel Management Alternative are the same as those detailed for the Continue Current Approach Alternative. The overall cumulative impacts on ethnographic resources from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be short- and long-term negligible adverse.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term negligible adverse and beneficial effects on ethnographic resources. Cumulative effects would be short- and long-term negligible adverse.

# **RECREATION RESOURCES**

# Affected Environment

In accordance with 2006 NPS Management Policies, the park manages recreation resources to "provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources in the park."

The unique attributes of Bryce Canyon National Park attract visitors who enjoy the wide range of recreation opportunities available in the park, including sightseeing, vehicle touring, hiking, bird watching, wildlife viewing, photography, stargazing, camping, horseback riding, snowshoeing, cross-country skiing, running, bicycling, and backpacking. Ranger interpretive programs—such as geology talks, children's programs, and rim walks—are offered year-round.

The difficulty of trails in the park ranges from short, easy walks along parts of the Rim Trail to long, strenuous hikes such as Fairyland Loop. The park's day-hiking trails provide visitors the opportunity to more closely experience the hoodoos. The Under the Rim Trail is 23 miles from Bryce Point to Rainbow Point and has 8 backcountry campsites. Backcountry visitors tend to be those seeking varying degrees of solitude, and visitors enjoy natural sounds during most of their experiences (NPS 2010b).

In addition to the backcountry campsites, the park offers two developed campgrounds for visitors. North Campground, near the visitor center, has 13 RV sites available by reservation, and 86 RV and tent sites available on a first-come, first-served basis. Sunset Campground, near Sunset Point, has 20 tent sites and 1 group site available by reservation, and 80 RV and tent sites available on a first-come, first-served basis.

# **Intensity Level Definitions**

Impacts on recreation resources were determined based on the following impact definitions and thresholds.

Negligible. Visitors would likely be unaware of any effects associated with implementing the alternative. There would be no noticeable changes in recreation resources.

Minor. Changes in recreation resources would be slight but detectable, but would not be appreciably diminished or enhanced. Visitor satisfaction with recreation resources would remain stable.

Moderate. The visitor would be aware of the effects associated with implementing the alternative and would likely be able to identify the change and its effect on their visit. Visitor satisfaction with recreation resources would begin to either decline or increase as a direct result of the effect.

Major. The visitor would be aware of the effects associated with implementing the alternative and would likely be able to accurately identify the change and provide a detailed expression of its effect on their visit. Visitor satisfaction with recreation resources would markedly decline or increase.

Short-term Impacts. The impact would occur during one high-use season.

Long-term Impacts. The impact would occur during more than one high-use season.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed and visitor access to, and use of, the recreation resources available in the park would be expected to deteriorate due to an expected trend of increasing visitation. The current transportation hot spots near the visitor center, at viewpoints and destinations throughout the Amphitheater area, and at other key locations would become more congested and visitors would increasingly experience delays, particularly during peak season. Over time, the ability of visitors to access and use recreation resources would continue to decrease.

Travel Demand Management. There would be no impacts on recreation resources as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. For visitors who travel to the park in RVs and trailers, their ability to access and use recreation resources in those restricted areas of the park (e.g., for vehicle touring, sightseeing, hiking a particular trail) could be slightly diminished. In spite of the restrictions, those visitors would have the option of shuttle access to recreation resources in the restricted areas. These effects would be short-term negligible adverse. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park. The expected trend of increasing visitation would result in short- and long-term and minor adverse impacts on the ability of visitors to access and use recreation resources (e.g., vehicle touring, sightseeing, photography) due to increased vehicle congestion in the park.

Education and Visitor Information. Maintenance of deteriorating signs and upgrading signs and wayfinding would likely have a short-term negligible beneficial impact on the ability of visitors to locate and use recreation resources in the park.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles for recreational activities such as vehicle touring, sightseeing, and wildlife watching, which would increase vehicle congestion and delays and have a short-term and minor adverse impact on recreation resources. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles and congestion-

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related delays in the park and increase the ability of visitors to use and access recreation resources. These incremental adjustments could have a short-term and negligible to minor beneficial impact on recreation resources. Because no substantial expansion of the shuttle system would occur under this alternative, it is likely that vehicle congestion and delays would increase as the number of private vehicles increases in the park, which would have a short- and long-term minor adverse impact on recreation resources.

Roadway and Parking. Construction and maintenance associated with planned roadway and parking improvements under the Continue Current Approach Alternative would likely be minimal and would include best management practices and mitigation measures, if required. Any traffic delays or disruptions in recreational use of the park during construction activities would be temporary and short-term. Over the long-term continued degradation of parking availability and the existing deficiencies of the transportation system may result in moderate vehicle congestion and delays, particularly within identified hot spot areas, and could result in long-term moderate effects on recreation resources.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). The overall cumulative impacts on recreation resources from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term minor adverse.

**Conclusion**. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term and long-term negligible to moderate adverse impacts on recreation resources. Cumulative effects would be short term and negligible adverse.

# Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on recreation resources as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. For visitors who travel to the park in RVs and trailers, their ability to access and use recreation resources in those restricted areas of the park (e.g., for vehicle touring, sightseeing, hiking a particular trail) could be slightly diminished. In spite of the restrictions, those visitors would have the option of shuttle access to recreation resources in the restricted areas. These effects would be short-term negligible adverse. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park. Although exploring the feasibility of a reservation system to help better manage visitor demand has the potential to provide short- and long-term negligible beneficial impacts on recreation resources, this improvement could also have short-term negligible adverse impacts on recreation resources, particularly for those visitors who may be unable to get a reservation to visit the park during their time in the area. Implementation of a reservation system would undergo separate NEPA analysis.

Education and Visitor Information. Implementing a park sign and wayfinding plan, especially one that includes signs and wayfinding for international visitors, would result in improvements in the ability of visitors to locate and use recreation resources. These effects would be short- and long-term negligible to minor beneficial.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service. Increased use of the shuttle service would lead to fewer private vehicles, less vehicle congestion, and fewer traffic and parking delays in the park, resulting in short- and long-term minor beneficial impacts on recreation resources such as vehicle touring and sightseeing. Construction and maintenance associated with these proposed improvements would likely cause some disruptions to recreation resources, but these adverse impacts would be temporary, short term negligible.

Roadway and Parking. Construction and maintenance activities associated with proposed roadway and parking improvements common to all action alternatives would likely result in temporary and short-term disruptions to and negligible adverse impacts on recreation resources. Fully implementing the improvements, however, would offset these adverse impacts. Expanding the visitor center parking lot, reconfiguring the Lodge parking lot, and expanding parking at Sunset Point would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing the ability of visitors to participate in recreational activities such as vehicle touring, sightseeing, trail hiking, and photography. Increased parking availability would have a short- and long-term minor beneficial impact on recreation resources.

The proposed increase in parking and improved shuttle service common to all action alternatives would likely result in an increase in visitor use of recreational resources surrounding improvement areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on recreational resources in areas with a higher concentration of recreational use. Overall, impacts on recreational resources would be short- and long-term minor beneficial and adverse.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). Activities common to all action alternatives may result in beneficial effects on recreational resources due to improved parking and circulation in the park. Construction activities would result in adverse impacts on recreational resources and visitor use from disturbance due to noise, dust, ground vibration, and visitor use pattern disruptions. Impacts on recreational resources and visitor use in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on recreational resources.

The overall cumulative impacts on recreation resources from past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives, would be short- and long-term minor beneficial.

**Conclusion**. Implementing the improvements common to all action alternatives would result in short-term negligible adverse and short- and long-term negligible to minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term minor beneficial.

# Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Construction and maintenance activities associated with proposed parking improvements would likely result in temporary and short-term disruptions to and negligible adverse impacts on recreation resources. Fully implementing the improvements, however, would offset these adverse impacts. Expanding the visitor center, General Store, and Rainbow Point parking lots; reconfiguring the Lodge parking lot and General Store loop road; and consolidating dispersed parking at Sunset Point to a centralized lot would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing the ability of visitors to participate in recreational activities such as vehicle touring, sightseeing, trail hiking, and photography. Greatly increased parking availability would have a short- and longterm minor beneficial impact on recreation resources.

Under the Greatest Parking Supply Alternative, the proposed increase in parking availability would likely result in an increase in visitor use of recreational resources surrounding these areas. Increased visitation, along with minimal proposed actions related to Travel Demand Management, Education and Visitor Information, or Shuttle, may result in short- and long-term negligible to minor adverse impacts on recreational resources in areas with a higher concentration of recreational use (i.e., hot spots).

Overall, impacts on recreational use would be short- and long-term minor beneficial and negligible to minor adverse.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on recreation resources from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term negligible beneficial.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short-term negligible adverse and short- and long-term minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term negligible beneficial.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the

park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion would have short- and long-term minor beneficial impacts on recreation resources such as vehicle touring and sightseeing. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations resulting in a short-term negligible beneficial impact on recreation resources. The availability of flex-time programs such as guided park interpretive programs represents an expansion of recreation resources available to park visitors and would result in a long-term minor beneficial impact on recreation resources.

Education and Visitor Information. By clearly communicating parking, transportation, and recreation options in the park and encouraging the use of these options, these short- and long-term improvements would have short- and long-term negligible to minor beneficial impacts on recreation resources.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related delays in the park, would increase the ability of visitors to access recreation resources, and would result in short- and long-term minor to moderate beneficial impacts on recreation resources.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, construction and maintenance activities associated with proposed roadway and parking improvements would likely result in temporary and short-term disruptions to and negligible adverse impacts on recreation resources. Fully implementing the improvements, however, would offset these adverse impacts. Developing the new transportation hub lot, expanding the visitor center and Bryce and Inspiration points parking lots would increase parking availability and consequently reduce vehicle congestion and parking delays.

The proposed increase in parking and improved shuttle service under the Highest Visitor Demand Alternative would likely also result in an increase in visitor use of recreational resources surrounding improvement areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on recreational resources as well as the visitor experience in areas with a higher concentration of visitors. Adverse impacts may occur on recreational facilities, trails and other visitor amenities in high use areas.

Increased parking availability, improved shuttle service, and additional public information services would likely result in long-term minor to moderate beneficial effects on recreation resources by reducing vehicle congestion and parking delays while increasing the ability of visitors to participate in recreational activities such as vehicle touring, sightseeing, trail hiking, and photography. Adverse effects of increased visitors in areas with increased parking or shuttle service would be minimized by communicating parking, transportation, and recreation options in the park and encouraging the use of these options, as well as adaptive management related to parking restrictions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources under the Highest Visitor Demand Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on recreation resources from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be short- and long-term moderate beneficial.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short-term negligible adverse and short- and long-term negligible to minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term moderate beneficial.

# Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion would have short- and long-term minor beneficial impacts on recreation resources such as vehicle touring and sightseeing. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations resulting in a short-term negligible beneficial impact on recreation resources. The availability of flex-time programs such as guided park interpretive programs represents an expansion of recreation resources available to park visitors and would result in a long-term minor beneficial impact on recreation resources.

Although restricting vehicles at Fairyland Point would prevent some visitors from accessing the recreation opportunities in this area, recreation opportunities would be expanded for other visitors who would be able to access the restricted area by foot or bicycle. These effects on visitor use and experience would be both short- and long-term minor adverse and beneficial.

Implementing time restrictions for parking at the most heavily used lots, posting time limits on signs, and ticketing violators would likely increase parking availability in congested lots, which would result in negligible long-term beneficial impacts on recreational resources by allowing more visitors to access areas.

Education and Visitor Information. Long-term education and visitor information improvements (6 to 20 years) proposed would include improving the aforementioned materials and incorporating the use of social media and mobile information technology.

By clearly communicating parking, transportation, and recreation options in the park and encouraging the use of these options, these short- and long-term improvements would have short- and long-term negligible to minor beneficial impacts on recreation resources.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related delays in the park, would increase the ability of visitors to access recreation resources, and would result in short- and long-term minor to moderate beneficial impacts on recreation resources.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction and maintenance activities associated with proposed roadway and parking improvements would likely result in temporary and short-term disruptions to and negligible adverse impacts on recreation resources. Fully implementing the improvements, however, would offset these adverse impacts. Developing new parking lots, expanding existing lots, and reconfiguring the Lodge, General Store, and High Plateaus Institute areas would increase parking availability and consequently reduce vehicle congestion and parking delays.

Ongoing monitoring of parking issues as part of the stronger adaptive management approach would result in expansion or addition of parking as needed to meet visitor use needs. Construction and maintenance activities would be undertaken in areas where monitoring indicates visitor parking and access issues are occurring. This adaptive management approach would likely result in construction and maintenance activities within smaller areas (development footprints), spread over longer periods of time than the other action alternatives, potentially reducing the impacts on recreational resources.

Under the Adaptive Travel Management Alternative, proposed increases in parking and improved shuttle service would likely result in an increase in visitor use of recreational resources surrounding the improvement areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on recreational resources as well as to visitor experience in areas with a higher concentration of visitors. Adverse impacts may occur on recreational facilities, trails and other visitor amenities in high use areas.

Increased parking availability, improved shuttle service, additional public information services, and stronger adaptive management approach would likely result in long-term minor to moderate beneficial effects on recreation resources by reducing vehicle congestion and parking delays while increasing the ability of visitors to participate in recreational activities such as vehicle touring, sightseeing, trail hiking, and photography. Adverse effects of increased visitors in areas with increased parking or shuttle service would be minimized by communicating parking, transportation, and recreation options in the park and encouraging the use of these options, as well as adaptive management related to parking restrictions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on recreation resources from past, present, and reasonably foreseeable future projects in

combination with the Adaptive Travel Management Alternative, would be short- and long-term moderate beneficial.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortterm negligible adverse and short- and long-term minor beneficial impacts on recreation resources. Cumulative effects would be short- and long-term moderate beneficial.

# VISITOR USE AND EXPERIENCE

## **Affected Environment**

According to the 2006 NPS Management Policies, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units. The NPS is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain in the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the NPS will provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The 2006 NPS Management Policies also state that scenic views, soundscapes, and visual resources are considered highly valued associated characteristics that the NPS should strive to protect.

Bryce Canyon National Park is a high-profile national park with visitors from all over the world. Visitation at the park has steadily increased from 890, 676 in 2006 to 1,285,492 2010 (NPS 2010b). The peak visitation period for the park is April through October, and the locations visited by the majority of visitors include Sunset Point and Sunrise Point in the Bryce Amphitheater, as well as the visitor center (NPS 2010d). Visitors primarily come to the park for the scenic vistas, but many also watch wildlife, take photos, hike, camp, and stargaze while in the park.

Visitors access the park from State Route 63, which begins at the junction with State Route 12 and runs south into the park where it becomes the main park road. There are three fee booths and one fast pass lane south of the park entrance gate. According to the park's unpublished 2010 traffic counts, the entrance station averaged 55,832 vehicles a month from April to October, with a peak of 75,700 in July. Visitors may access the northeastern portion of the park via State Route 12; there are no fee booths in this section of the park. The 2010 traffic counts on State Route 12 averaged 26,363 vehicles a month from April to October. Bicyclists also can use State Route 63 and State Route 12 to access the park, but neither route has bicycle lanes or wide shoulders.

Less than half (48%) of visitors surveyed in the 2009 visitor study used the shuttle system to access and travel in the park (NPS 2010d). The free shuttle system operates during peak visitation and offers two routes—Bryce Canyon Shuttle and Rainbow Point Shuttle Tour. Service for both shuttles begins at the staging area in Bryce Canyon City; Bryce Canyon Shuttle ends at Bryce Point and Rainbow Point Shuttle Tour runs the length of the park to Rainbow Point at the southern terminus of the main park road. More information about the park's shuttle service is available in the Bryce Canyon National Park Multimodal Transportation Plan Existing Conditions Report (URS 2012).

Most visitors travel to and in the park by private vehicle, by which they experience the most common activities of visitors surveyed in 2009: sightseeing / scenic drive, photography, and day hiking. Nearly all visitors surveyed (98%) rated the park's scenic vistas as extremely or very important (NPS 2010d). As visitors travel through the park, they can access several parking areas and waysides to stop and enjoy the scenery or for trail access. The park has fewer than 1,000 parking spaces, and parking areas are striped to accommodate handicap parking, standard

vehicles, RVs, and tour buses. When these parking areas are full and when visitors park illegally or in such a way that there is not enough room for passenger unloading and the safe passage of other vehicles, visitor use and experience of the park can be compromised along with visitor safety. In addition, pavement striping or inadequate signs in some parking areas can lead to visitor confusion or hesitation in making decisions.

The wayfinding and information signs and materials in the park are available in English, which a majority of visitors surveyed in 2009 stated they preferred. Forty-three percent of visitors, however, felt that informational services such as signs, brochures / maps, the park newspaper, and park exhibits should be provided in a language other than English, with French and German being the most commonly preferred languages for speaking and reading while in the park (NPS 2010d).

Nearly all visitors surveyed had obtained information about the park prior to their visit. Travel guides / tour books, word of mouth, and the Bryce Canyon National Park website were the most used sources of information about the park. The most used visitor services or facilities were the informational park brochure / map, restrooms, and parking areas. Of those visitors staying overnight in the park, 62% stayed in one of the park's two developed campgrounds (NPS 2010d).

Increased park visitation and inadequate visitor management has had a number of consequences for visitor use and experience of the park. According to the visitor survey, crowding was the primary detraction from the visitor experience (NPS 2010d). The park's shuttle service runs at or exceeds capacity during peak visitation. The availability of parking is diminished in the heavily used areas and capacity is often exceeded during peak visitation.

#### **Intensity Level Definitions**

Impacts on visitor use and experience were determined based on the following impact definitions and thresholds.

Negligible. Visitors would not be affected or changes in visitor use and / or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.

Minor. Changes in how visitors travel to and through the park; ease of access to desired visitor experiences, park resources, and destinations; the availability of educational and interpretive opportunities; and visitor safety would be slight and detectable. Effects would be short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.

Moderate. Changes in how visitors travel to and through the park; ease of access to desired visitor experiences, park resources, and destinations; the availability of educational and interpretive opportunities; and visitor safety would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative, and would likely be able to identify the change and its effect on their visit.

Major. Changes in how visitors travel to and through the park; ease of access to desired visitor experiences, park resources, and destinations; the availability of educational and interpretive opportunities; and visitor safety would be readily apparent and have substantial long-term consequences. The visitor would be aware of the effects associated with the alternative, and

would likely be able to accurately identify the change and provide a detailed expression of its effect on their visit.

Short-term Impacts. Changes to visitor use and enjoyment of the park occurs during one high-use season.

Long-term Impacts. Changes to visitor use and enjoyment of the park occurs during more than one high-use season.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would operate and maintain the transportation network in a fashion that is essentially the same as currently managed and visitor use and experience would be expected to deteriorate due to an expected trend of increasing visitation. The current transportation hot spots near the visitor center, at viewpoints and destinations throughout the Amphitheater area, and at other key locations would become more congested and visitors would increasingly experience delays, particularly during peak season. Over time, visitor mobility, access to congested areas, and the ability of visitors to have a meaningful experience of the park and its resources would continue to decline.

Travel Demand Management. There would be no impacts on visitor use and experience as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. For visitors who travel to the park in RVs and trailers, visitor use and experience of the park could be diminished. These effects would be short-term negligible adverse and local. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park. The expected trend of increasing visitation would result in short- and long-term and minor adverse impacts on visitor use and experience due to increased vehicle congestion in the park.

Education and Visitor Information. Maintenance of deteriorating signs and upgrading signs and wayfinding would likely have a short-term negligible beneficial impact on visitor use and experience.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park, which would increase vehicle congestion and delays and have a short-term and minor adverse impact on visitor use and experience. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles and congestion-related delays in the park. These incremental adjustments could have a short-term and negligible to minor beneficial impact on visitor use and experience.

No substantial expansion of the shuttle system would occur under the Continue Current Approach Alternative and it is likely that vehicle congestion and delays would increase as the number of private vehicles increases in the park due to an expected trend of increasing visitation. Visitor use and experience would likely deteriorate due to long-term congestion-related issues at shuttle stops and shuttle capacity, resulting in long-term moderate to major adverse impacts. Roadway and Parking. Construction and maintenance associated with planned roadway and parking improvements under the Continue Current Approach Alternative would likely be minimal and would include best management practices and mitigation measures, if required. Any traffic delays or visitor use disruptions during construction activities would be temporary and short-term. Over the long term, continued degradation of parking availability and the existing deficiencies of the transportation system would likely result in moderate to major vehicle congestion and delays, particularly within identified hot spot areas, and result in long-term moderate to major adverse impacts on visitor use and experience.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect visitor use and experience include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). Impacts on visitor use and experience in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on visitor use and experience. The overall cumulative impacts on visitor use and experience from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term moderate adverse.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term and long-term minor to moderate adverse impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate adverse.

# Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on visitor use and experience as a result of conducting the transportation and visitor use management study. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. For visitors who travel to the park in RVs and trailers, visitor use and experience of the park could be diminished. These effects would be short-term and negligible adverse. Restricting oversized vehicle access would not reduce the number of private passenger vehicles entering the park. Although implementing a reservation system could help better manage visitor demand and has the potential to provide short- and long-term beneficial impacts on visitor use, this improvement could also have short-term negligible adverse impacts on visitor use and experience, particularly for those visitors who may be unable to get a reservation to visit the park during their time in the area.

Education and Visitor Information. Implementing a park sign and wayfinding plan, especially one that includes signs and wayfinding for international visitors, would result in improvements in the ability of visitors to safely and efficiently navigate the park. These effects would be short- and long-term negligible to minor beneficial.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service. Increased use of the shuttle service would lead to fewer private vehicles, less vehicle congestion, and fewer traffic and parking delays in the park, resulting

in short- and long-term minor beneficial impacts on visitor use and experience. Construction and maintenance associated with these proposed improvements would likely cause some disruptions to visitor use and experience, but these adverse impacts would be temporary, short-term negligible.

Roadway and Parking. Construction and maintenance activities associated with proposed roadway and parking improvements common to all action alternatives would likely result in temporary and short-term disruptions to and negligible adverse impacts on visitor use and experience. Fully implementing the improvements, however, would offset these adverse impacts.

Expanding the visitor center parking lot, reconfiguring the Lodge parking lot, and expanding parking at Sunset Point would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing visitor safety. Increased parking availability would have a short- and long-term minor beneficial impact on visitor use and experience.

The proposed increase in parking and improved shuttle service common to all action alternatives would likely result in an increase in visitor use of recreational areas surrounding improvement areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on visitor use and experience in areas with a higher concentration of recreational use.

Overall, impacts on visitor use and experience would be short- and long-term minor to moderate beneficial and minor adverse.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect recreation resources include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines). Activities common to all action alternatives may result in beneficial effects on visitor use and experience due to improved parking and circulation in the park. Adverse impacts on visitor use and experience may occur due to high visitor concentrations in areas with expanded parking and improved shuttle service. Construction activities would result in adverse impacts on visitor use and experience from disturbance due to noise, dust, ground vibration, and visitor use pattern disruptions. Impacts on visitor use and experience in and around the park are also occurring on adjacent lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on visitor use and experience. The overall cumulative impacts on visitor use and experience from past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives, would be short- and long-term minor beneficial.

Conclusion. Implementing the improvements common to all action alternatives would result in short-term negligible adverse and short- and long-term negligible to minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term minor beneficial.

#### Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking

facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Construction and maintenance activities associated with proposed parking improvements would likely result in temporary and short-term disruptions to and adverse impacts on visitor use and experience. Fully implementing the improvements, however, would offset these adverse impacts. Improvements to the entrance station would reduce vehicle and pedestrian conflicts. If viable options for fast-pass lanes, online purchases, and / or self-serve booths are identified, park visitors who use such options could experience reduced waiting times and greater ease of entry. These effects would be short- and long-term minor beneficial. Expanding the visitor center, General Store, and Rainbow Point parking lots; reconfiguring the Lodge parking lot and General Store loop road; and consolidating dispersed parking at Sunset Point to a centralized lot would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing visitor safety. Greatly increased parking availability would have a short- and long-term minor to moderate beneficial impact on visitor use and experience.

Under the Greatest Parking Supply Alternative, the proposed increase in parking availability would likely result in an increase in visitor use of recreational resources surrounding these areas. Increased visitation, along with minimal proposed actions related to Travel Demand Management, Education and Visitor Information, or Shuttle, may result in short- and long-term negligible to minor adverse impacts on visitor use and experience in areas with a higher concentration of recreational use (i.e., hot spots).

Overall, impacts on visitor use and experience would be short- and long-term minor to moderate beneficial and negligible to minor adverse.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect visitor use and experience under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on visitor use and experience from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term moderate beneficial.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short-term negligible adverse and short- and long-term minor to moderate beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park. Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park, which could have a short- and long-term minor beneficial effect. For visitors who travel to the park in RVs and trailers, however, visitor use and experience of the park could be diminished. These effects would be short-term and negligible adverse. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased visitor knowledge of transportation options in the park would have short- and long-term minor beneficial impacts on visitor use and experience. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations resulting in a short-term negligible beneficial impact on visitor use and experience. The availability of flex-time programs such as guided park interpretive programs could enhance the visitor experience of the park, resulting in a short-term negligible beneficial impact on visitor use and experience.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which could have short- and long-term minor beneficial impacts on visitor use and experience.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related delays in the park and would have short- and long-term minor to moderate beneficial impacts on visitor use and experience.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, construction and maintenance activities associated with proposed roadway and parking improvements would likely result in temporary and short-term disruptions to and negligible adverse impacts on visitor use and experience. Fully implementing the improvements, however, would offset these adverse impacts. Improvements to the entrance station would reduce vehicle and pedestrian conflicts. If viable options for fast-pass lanes, online purchases, and / or self-serve booths are identified, park visitors who use such options could experience reduced waiting times and greater ease of entry. These effects would be short- and long-term minor beneficial. Developing the new transportation hub lot, expanding the visitor center and Bryce and Inspiration points parking lots would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing visitor safety.

The proposed increases in parking and improved shuttle services under the Highest Visitor Demand Alternative would likely also result in an increase in visitor use of recreational areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on visitor use and experience in areas with a higher concentration of visitors. Adverse impacts may occur due to congestion at recreational facilities, trails, and other visitor amenities in high-use areas.

Increased parking availability would have a short- and long-term minor beneficial impact on visitor use and experience. With more visitors using the Bryce and Inspiration points shuttle, vehicle congestion and parking delays in this area would decrease, and safety would be improved. These impacts on visitor use and experience would be short- and long-term minor to moderate beneficial.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect visitor use and experience under the Highest Visitor Demand Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on visitor use and experience from past, present, and reasonably foreseeable future projects in combination with those associated with the Highest Visitor Demand Management Alternative and Management Alternative would be short- and long-term moderate beneficial.

Conclusion. Implementing the Highest Visitor Demand Management Alternative would result in short-term negligible adverse and short- and long-term negligible to minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The reduction in congestion and increased visitor knowledge of transportation options in the park would have short- and long-term minor beneficial impacts on visitor use and experience. Implementing the flex-time interpretation programs could disperse the vehicles in the park to less congested times and locations resulting in a short-term negligible beneficial impact on visitor use and experience. The availability of flex-time programs such as guided park interpretive programs could enhance the visitor experience of the park, resulting in a short-term negligible beneficial impact on visitor use and experience.

Although restricting vehicles at Fairyland Point would prevent visitors traveling in vehicles from accessing the area in their vehicles, visitors would be able to access the restricted Fairyland area by foot or bicycle. These effects on visitor use and experience would be both short- and long-term minor adverse and beneficial.

Implementing time restrictions for parking at the most heavily used lots, posting time limits on signs, and ticketing violators would likely increase parking availability in congested lots, which would result in negligible to minor long-term beneficial impacts on visitor use and experience by allowing greater vehicle circulation and visitors to access popular congested areas in the park. These activities would also result in adverse impacts on visitor use and experience due to

penalties related to enforcing time restrictions. Visitor information and communication would help reduce potential adverse impacts on visitor use and experience related to enforcement and mobility issues. Ongoing monitoring of parking and congestion issues as part of the adaptive management approach would determine needs for enforcement or other mitigation techniques such as those discussed below.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term improvements would help better manage traffic, parking, and visitation patterns and promote alternate transportation, which could have short- and long-term negligible to minor beneficial impacts on visitor use and experience.

Shuttle. Expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles and vehicle-related delays in the park and would have short- and long-term minor to moderate beneficial impacts on visitor use and experience.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction and maintenance activities associated with proposed roadway and parking improvements would likely result in temporary and short-term disruptions to and negligible adverse impacts on visitor use and experience. Fully implementing the improvements, however, would offset these adverse impacts. Reconfiguring the entrance station would reduce vehicle and pedestrian conflicts and would resulting in short- and long-term minor beneficial impacts on visitor use and experience. Developing new parking lots, expanding existing lots, and reconfiguring the General Store and High Plateaus Institute area would increase parking availability and consequently reduce vehicle congestion and parking delays while increasing visitor safety. Increased parking availability would have a short- and long-term minor to moderate beneficial impact on visitor use and experience.

Ongoing monitoring of parking and congestion issues as part of the stronger adaptive management approach would result in expansion or addition of parking as needed to meet visitor use needs. Construction and maintenance activities would be undertaken in areas where monitoring indicates visitor parking and access issues are occurring. This adaptive management approach would likely result in construction and maintenance activities within smaller areas (development footprints) and spread over longer periods of time than in the other action alternatives. This approach would potentially reduce adverse impacts of construction-related disruptions to visitor use and experience. A stronger adaptive management approach may also address visitor use and experience issues related to congestion more appropriately to each situation and need.

Under the Adaptive Travel Management Alternative, the proposed increases in parking and improved shuttle services would likely also result in an increase in visitor use of recreational areas. Increased visitation may result in short- and long-term negligible to minor adverse impacts on visitor use and experience in areas with a higher concentration of visitors. Adverse impacts may occur due to congestion at recreational facilities, trails, and other visitor amenities in high-use areas.

Increased parking availability, improved shuttle service, additional public information services, and stronger adaptive management approach would likely result in long-term minor to moderate beneficial effects on visitor use and experience by reducing vehicle congestion and parking delays while increasing the ability of visitors to participate in recreational activities such as vehicle touring, sightseeing, trail hiking, and photography. Adverse effects of increased visitors in areas with increased parking or shuttle service would be minimized by communicating options for

parking, transportation, and recreation in the park and encouraging the use of these options, as well as adaptive management related to parking restrictions.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect visitor use and experience under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on visitor use and experience from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be short- and long-term moderate beneficial.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortterm negligible adverse and short- and long-term minor beneficial impacts on visitor use and experience. Cumulative effects would be short- and long-term moderate beneficial.

# **GATEWAY COMMUNITIES**

## **Affected Environment**

The NPS Management Policies recognize that cooperation and consultation in concert with surrounding jurisdictions, communities, and landowners are necessary as the NPS strives to fulfill its mandate. Consultation may involve other federal agencies; tribal, state, and local governments; neighboring landowners; nongovernmental and private sector organizations; and other concerned parties. Cooperative conservation activities are not only to the benefit of the park, but assist in sustaining the natural and cultural resources of the surrounding area. NPS consultations aim to ensure park planning is compatible with plans of federal, state, and local agencies to the extent possible.

The community of Bryce Canyon City is the proximal gateway community to the park and has a robust mutually beneficial relationship with the park due to its location nearest to the park entrance. Panguitch—the Garfield County seat and largest nearby community—and Tropic host many visitor services and are particularly engaged in tourism development. Other nearby communities that have a mutually beneficial relationship with the park are Cannonville, Hatch, and Henrieville. Similarly, other nearby businesses outside of cities and towns rely on park visitors to sustain their businesses.

Recreation visits and visitor spending within the park have steadily increased since 2006. Park visits have increased from 890,676 in 2006 to 1,285,492 in 2010. Visitor spending increased from \$50,929,322 in 2006 to \$111,310,529 in 2010. Local jobs supported by the park have also steadily increased, from 1,089 in 2006 to 1,667 in 2010 (U.S. Department of the Interior 2010b). The trend of increasing visitation is expected to continue.

Incorporated in 2007, Bryce Canyon City offers lodging, restaurants, and shopping. Bryce Canyon City also hosts a transit hub for the park shuttle system, providing convenient access for visitors. The city is home to approximately 200 year-round residents. Lodging includes Ruby's Inn, Bryce Canyon Grand Hotel, and Bryce View Lodge, collectively providing nearly 700 guest rooms, and two developed commercial campgrounds. Bryce Canyon City also hosts a transit hub for the Bryce Canyon shuttle system. Park visitors can park their vehicles at the shuttle staging area and board the free park shuttle from May through October.

## **Intensity Level Definitions**

Impacts on gateway communities were determined based on the following impact definitions and thresholds.

Negligible. There would not be a perceptible change in the overall relationship with local communities or businesses. Effects would be barely detectable for visitor traveling convenience or for travel time for local residents traveling to, from, and in the park area.

Minor. Effects would be easily detectable, but local in geographic extent or number of people affected and would not be expected to alter the overall relationship with local communities or businesses or alter the visitor access or travel times for gateway communities and local residents.

Moderate. Effects would be readily detectable across a broad geographic area or segment of the community and could have an appreciable effect on the overall relationship with local communities or businesses, as well as the convenience of visitor access or travel times for gateway communities and local residents.

Major. Effects would be readily apparent, affect a substantial segment of the population, extend across the entire community, and would likely have a noticeable influence on relationships with local communities or businesses, as well as the convenience of visitor access or travel times for gateway communities and local residents.

Short-term Impacts. Impacts would occur only during construction.

Long-term Impacts. Impacts would continue after plan implementation.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would continue to operate and maintain its current transportation system, including the shuttle system, with minor improvements as needed. The park would continue to maintain, upgrade, and rehabilitate park roads and parking lots in an incremental fashion as the budget allows.

Travel Demand Management. Restricting oversized vehicles and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on visitors' traveling convenience or to travel time for local residents traveling to, from, and in the park area. There would not be a perceptible change in the overall relationship with local communities or businesses.

Education and Visitor Information. The education and visitor information improvement activities would not lead to effects on visitors traveling convenience or to travel time for local residents traveling to, from, and in the park area. The Continue Current Approach Alternative would not result in a perceptible change in visitor lodging stays, expenditures at local businesses, or the overall relationship with local communities or businesses.

Shuttle. Shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles in the park. Because no substantial expansion of the shuttle system would occur under this alternative, it is likely that peak period congestion would continue to increase as the number of private vehicles increases in the park, resulting in a diminished visitor experience within the park. Visitors may decide to spend less time within the park and adjacent communities due to congestion and diminished visitor experience.

The Continue Current Approach Alternative would result in minor to moderate short- and longterm adverse effects on visitors traveling convenience and travel time for local residents traveling to, from, and in the park area would likely occur during peak periods with high vehicle congestion. There may also be a minor adverse change in visitor stays and expenditures within local communities. There would not be a perceptible change in the overall relationship with local communities or businesses.

Roadway and Parking. Construction and maintenance associated with roadway and parking improvements would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitors traveling convenience and for travel time for local residents traveling to, from, and in the park area. Following construction and maintenance, circulation and access would be restored.

The Continue Current Approach Alternative would include minor roadway and parking improvements, as needed. Based on current estimates of increased visitation to the park, this alternative would not result in perceptible relief to congestion and parking issues, particularly during the peak visitor season. Visitor experience would continue to be adversely affected, which may also lead to reduced stays within local communities, resulting in short- and long-term minor to moderate adverse impacts on local communities and businesses. There would not likely be a perceptible change in the overall relationship with local communities or businesses.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect gateway communities include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails, visitor use path, shuttle staging area expansion), visitor use activities and improvements (hiking, biking, touring, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines).

Activities under the Continue Current Approach Alternative may result in negligible beneficial effects on gateway communities due to minor improvements to parking and circulation in the park and a minimal improvement in the visitor experience. Adverse impacts on gateway communities may occur due to diminished visitor experience from continued congestion- and parking-related issues. Gateway communities are also impacted by activities occurring within surrounding area lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on gateway communities.

The overall cumulative impacts on gateway communities from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative would be short- and long-term minor adverse.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short- and long-term minor to moderate adverse effects on gateway communities. Cumulative effects would be short- and long-term minor adverse.

## Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. There would be no impacts on gateway communities as a result of conducting the transportation and visitor use management study. The park would explore the feasibility of implementing a reservation system that would allow the park to manage the number of private vehicles in relation to the facility and its resource capacity and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Implementation of this system would require a separate NEPA analysis. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. Restricting oversized vehicles and conducting the transportation and visitor use management study would lead to improved circulation and access which could lead to minor beneficial effects on visitors traveling convenience or to travel time for local residents traveling to, from, and in the park area. There would not be a perceptible change in the overall relationship with local communities or businesses.

Education and Visitor Information. Education and visitor information improvement activities would not lead to effects on visitor traveling convenience or travel time for local residents traveling to, from, and in the park area. There would not be a perceptible change in visitor lodging stays, expenditures at local businesses, or the overall relationship with local communities or businesses.

Shuttle. Under common to all action alternatives, improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service, leading to fewer private vehicles traveling throughout the park. These activities may lead to short-term negligible adverse effects on visitors traveling convenience or to travel time for local residents traveling to, from, and in the park area during shuttle plaza development. Once the shuttle plaza is complete, improvement in pedestrian access and reduction in private vehicles traveling in the park may lead to short- and long-term moderate beneficial effects on visitor traveling convenience and negligible effects on travel time for local residents traveling to, from, and in the park area. There may also be a minor beneficial change in visitor stays and expenditures within local communities. There would not be a perceptible change in the overall relationship with local communities or businesses.

Roadway and Parking. Under common to all action alternatives, expanding the visitor center parking lot would require disturbance and changes to the main park road. Construction and maintenance associated with these proposed activities would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitors traveling convenience and for travel time for local residents traveling to, from, and in the park area. Following construction and maintenance, circulation and access would be restored.

Increased parking availability and improved circulation and access would lead to short- and longterm minor beneficial effects on visitor traveling convenience and travel time for local residents traveling to, from, and in the park area. Parking and circulation improvements would also result in beneficial effects to the visitor experience, which may also lead to extended stays or additional expenditures within local communities. Parking and circulation improvements within the park common to all action alternatives would likely result in short- and long-term minor beneficial impacts on gateway communities. There would not be a perceptible change in the overall relationship with local communities or businesses.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect gateway communities include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife-viewing pullouts, walkways, fencing, trails, visitor-use path, shuttle-staging area expansion), visitor-use activities and improvements (hiking, biking, touring, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), and utility development in the park (including transmission and sewer lines).

Activities common to all action alternatives may result in negligible to minor beneficial effects on gateway communities due to improved parking and circulation in the park and due to improvements to the visitor experience. Negligible adverse impacts on gateway communities may occur during construction and development activity periods. Gateway communities are also impacted by activities occurring within surrounding areas. Activities in and adjacent to the park contribute to both beneficial and adverse effects on gateway communities.

Past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives, would result in short- and long-term minor beneficial effects on gateway communities.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term negligible to moderate beneficial and adverse effects on gateway communities. Cumulative effects would be short- and long-term minor beneficial and negligible adverse.

Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, construction and maintenance associated with proposed improvements would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitors' traveling convenience and travel time for local residents traveling to, from, and in the park area. Following construction and maintenance, circulation and access would be restored. Over the long term, increased parking availability, and improved circulation and access would lead to short- and long-term negligible to

minor beneficial effects to visitor traveling convenience and travel time for local residents traveling to, from, and in the park area.

Increased parking availability would also result in beneficial effects to the visitor experience; however, without additional activities for Travel Demand Management, Education and Visitor Information, or Shuttle elements (other than those described under Impacts Common to All Action Alternatives) increased parking would not likely address all the circulation- and congestion-related issues affecting visitors. Increased parking would lead to improved visitor experience, which may also lead to extended stays or additional expenditures within local communities but these beneficial effects would be less than under action alternatives that include the additional key elements for Travel Demand Management, Education and Visitor Information, and Shuttle.

Parking improvements within the park under the Greatest Parking Supply Alternative would likely result in short- and long-term negligible to minor beneficial impacts on gateway communities.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect gateway communities under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on gateway communities from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term minor beneficial.

Conclusion. Implementing the Greatest Parking Supply Alternative would result in short- and long-term negligible to minor beneficial and adverse effects on gateway communities. Cumulative effects would be short- and long-term minor beneficial.

Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The Intelligent Transportation System, restricting oversized vehicles, and flex-time interpretation programs would lead to improved circulation and access which could lead to minor beneficial effects on visitors traveling convenience or for travel time for local residents traveling to, from, and in the park area. There may also be a minor beneficial change in visitor stays and expenditures within local communities.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, education and visitor information improvement short- and long-term activities would help better manage traffic, parking, and visitation patterns and promote alternate transportation. These activities would lead to improved circulation and access, which would result in minor to moderate beneficial effects on visitors traveling convenience or travel time for local residents traveling to, from, and in the park area. These improvements may lead to a minor beneficial change in visitor stays and expenditures within local communities, a short- and long-term minor to moderate beneficial effect on local communities and businesses.

Shuttle. Under the Highest Visitor Demand Management Alternative, expanding shuttle capacity and increasing service frequencies would improve pedestrian access and reduce private vehicles traveling in the park. These improvements would lead to short- and long-term minor to moderate beneficial effects to traveling convenience and travel time for local residents traveling to, from, and in the park area. There may also be a minor beneficial change in visitor stays and expenditures within local communities. Overall, shuttle service improvements would result in short- and long-term minor to moderate beneficial impacts on gateway communities due to improved visitor experience and increase in visitors using commercial facilities and local community services.

Roadway and Parking. Under the Highest Visitor Demand Management Alternative, construction and maintenance associated with proposed roadway and parking improvements and relocating the entrance station would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitors traveling convenience and travel time for local residents traveling to, from, and in the park area. Following construction and maintenance, circulation and access would be restored.

Increased parking availability and improved circulation would lead to short- and long-term minor to moderate beneficial effects to traveling convenience and travel time for local residents traveling to, from, and in the park area. Parking and circulation improvements would also result in beneficial effects to the visitor experience, which may also lead to extended stays or additional expenditures within local communities. Parking and circulation improvements within the park under this alternative would result in short- and long-term minor to moderate beneficial impacts on gateway communities due to improved visitor experience and an increase of visitors using commercial facilities and local community services.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect gateway communities under the Highest Visitor Demand Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on gateway communities from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be short- and long-term moderate beneficial.

**Conclusion**. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term minor to moderate beneficial and negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term moderate beneficial.

# Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Under the Adaptive Travel Management Alternative, using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by allowing visitors to access information prior to their arrival, encouraging visitors to park in Bryce Canyon City, and ride the shuttle or bicycle on high-visitation days or during peak- traffic periods. The Intelligent Transportation System, restricting oversized vehicles, providing non-motorized access to Fairyland Point, and flex-time interpretation programs would lead to improved circulation and access, which could lead to short- and long-term moderate beneficial effects on visitors travel convenience or travel time for local residents traveling to, from, and in the park area. These improvements would likely lead to a minor beneficial change in visitor stays and expenditures within local communities and a short- and long-term minor to moderate beneficial effect on local communities and businesses.

Education and Visitor Information. By clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options prior to and during a visit, these short- and long-term activities would help visitors better plan their trip and would allow the park to better manage traffic, parking, and visitation patterns and promote alternate transportation. These activities would lead to improved circulation and access, which would result in minor to moderate beneficial effects on visitors' travel convenience and travel time for local residents traveling to, from, and in the park area. These improvements would likely lead to a minor beneficial change in visitor stays and expenditures within local communities and a short-and long-term minor to moderate beneficial effect on local communities and businesses.

Shuttle. Under the Adaptive Travel Management Alternative, expanding shuttle capacity and increasing service frequencies would improve pedestrian access and reduce private vehicles traveling in the park. These improvements would lead to short- and long-term moderate beneficial effects to visitors' traveling convenience and travel time for local residents traveling to, from, and in the park area. There may also be a minor beneficial change in visitor stays and expenditures within local communities. Overall, shuttle service improvements would result in short- and long-term moderate beneficial impacts on gateway communities due to improved visitor experience and increase in visitors using commercial facilities and local community services.

Roadway and Parking. Under the Adaptive Travel Management Alternative, construction and maintenance associated with the proposed reconfiguration of the entrance station and roadway and parking improvements would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitors traveling convenience and travel time for local residents traveling to, from, and in the park area. Following construction and maintenance, circulation and access would be restored.

Increased parking availability and improved circulation, as well as the stronger adaptive management approach, would lead to short- and long-term moderate beneficial effects to visitors' traveling convenience and travel time for local residents traveling to, from, and in the park area. Parking and circulation improvements would also result in beneficial effects to the visitor experience, which may also lead to extended stays or additional expenditures within local communities. Parking and circulation improvements within the park under this alternative would result in short- and long-term moderate beneficial impacts on gateway communities due to improved visitor experience and an increase of visitors using commercial facilities and local community services.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect gateway communities under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on gateway communities from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be short- and long-term moderate beneficial.

Conclusion. Implementing the Adaptive Travel Management Alternative would result in shortand long-term moderate beneficial and negligible adverse effects on gateway communities. Cumulative effects would be short- and long-term moderate beneficial.

#### PARK OPERATIONS

#### **Affected Environment**

Facility operations refers to the quality and effectiveness of the infrastructure, and the ability to maintain the infrastructure used in the operation of the park to adequately protect and preserve vital resources and provide for a positive visitor experience. Buildings, roads, trails, utilities, and campgrounds require a range of operational activities from basic sanitation to snow plowing to water testing.

Bryce Canyon is a relatively small national park and employs approximately 55 permanent and term employees year-round with an additional 30 to 40 seasonal employees during the high season months (May to September). The park is organized into three divisions—Maintenance, Visitor Protection / Resource Management, and Interpretation and Visitor Services.

The current park asset management plan identifies \$620,000 per year for operation and maintenance on existing roadway and parking assets. This number includes the operation and maintenance costs for the entire transportation network, not including the cost of operating the park shuttle buses.
# **Intensity Level Definitions**

Impacts on park operations were determined based on the following impact definitions and thresholds.

Negligible. A change in operations would be local and barely perceptible or measurable. There would be no measurable difference in operating costs from existing levels, and no change in financial balance between revenue sources and operating costs.

Minor. A change in operations would be slight and local, with few measurable consequences within existing park facilities. Additions or reductions in operating costs would be less than 15% of existing levels. Slight changes in current staffing arrangements or operations would be required to reach a balance with the funding stream.

Moderate. A change would be readily apparent, with measurable consequences and would occur inside and outside park boundaries. Additions or reductions in operating costs would be between 16% and 30% of existing levels. Changes would be required in park operations or would result in a financial imbalance between available funding streams and annual operating costs.

Major. A change would be readily apparent, with measurable consequences over a regional area. Additions or reductions in operating costs would be more that 30% of existing levels. Changes would require new administrative structures and / or would result in a significant financial imbalance between available funding streams and annual operating costs.

Short-term Impacts. The impact would occur only during the construction period.

Long-term Impacts. The impact would occur or continue after construction was completed.

Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

See Table 8 for a summary of the Continue Current Approach Alternative.

Under the Continue Current Approach Alternative, the park would continue to operate and maintain its current transportation system, including the shuttle system, with minor improvements as needed. The park would continue to maintain, upgrade, and rehabilitate park roads and parking lots in an incremental fashion as the budget allows. A summary of costs (both initial costs and total cost of ownership), as well as additional staff required for implementation of the Continue Current Approach Alternative are presented in Table 2 in "Alternatives."

Travel Demand Management. Restricting oversized vehicles and conducting the transportation and visitor use management study would result in a negligible to minor adverse effect on operations and operating costs as compared to existing levels due to staffing needed and operation costs of vehicle restrictions, and costs related to conducting the transportation and visitor use management study. Restricting oversized vehicles may also result in a negligible beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues related to oversized vehicles during peak visitation. A small change in financial balance between revenue sources and operating costs would occur. Education and Visitor Information. Under the Continue Current Approach Alternative, education and visitor information activities would result in a negligible change in operations and operating costs as compared to existing levels from costs associated with maintenance and upgrades. A small change in financial balance between revenue sources and operating costs would occur.

Shuttle. The Bryce Canyon Shuttle and Rainbow Point Tour shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles in the park. Because no substantial expansion of the shuttle system would occur under this alternative, it is likely that peak period congestion would continue to increase as the number of private vehicles increases in the park. Adjustments to the shuttle service along with the increased need for staff to assist with the anticipated increase in peak period congestion would result in a minor to moderate adverse effect on operations and operating costs as compared to existing levels due to staffing needed and operation costs of shuttle adjustments. Adjustments to the shuttle service may also result in a negligible beneficial effect on operations and operations and operating staff time needed to address circulation and parking issues during peak visitation. A change in financial balance between revenue sources and operating costs would also occur.

Roadway and Parking. Construction and maintenance associated with proposed roadway and parking activities would result in a short-term minor to moderate adverse effect on operations and operating costs as compared to existing levels due to construction and improvement costs. Parking reconfiguration and shuttle stop relocation may result in a negligible beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. A change in financial balance between revenue sources and operating costs would also occur.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect park operations include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails, multi-use trail), visitor use activities (visitor travel in private vehicles primarily), vegetation management activities (such as vegetation removal activities and prescribed burns), cultural resource management activities, utility development in and adjacent to park (including transmission and sewer lines), habitat conservation planning, and prairie dog translocations and flea dusting activities, and urban development adjacent to park (primarily within Bryce Canyon City). Impacts on park operations may occur from activities occurring on adjacent lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on park operations. The overall cumulative impacts on park operations from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term moderate adverse and local.

Conclusion. Under the Continue Current Approach Alternative, ongoing and planned transportation management activities would result in short-term and long-term negligible to moderate adverse and negligible beneficial effects on park operations. Cumulative effects would be short- and long-term moderate adverse and local. A change in financial balance between revenue sources and operating costs would also occur.

# Impacts Common to All Action Alternatives

See Table 8 for a summary of the improvement strategies common to all action alternatives.

Travel Demand Management. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. Restricting oversized vehicles, implementing the reservation system, and conducting the transportation and visitor use management study would result in a negligible to minor adverse effect on operations and operating costs as compared to existing levels due to staffing needed and operation costs of vehicle restrictions, costs related to implementation, and costs to conduct the transportation and visitor use management study. Restricting oversized vehicles and implementing the reservation system would result in a minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. A small change in financial balance between revenue sources and operating costs would occur.

Education and Visitor Information. Education and visitor information improvement activities would result in a negligible change in operations and operating costs as compared to existing levels from costs associated with maintenance, sign upgrades, and wayfinding plan. A small change in financial balance between revenue sources and operating costs would occur.

Shuttle. Developing a shuttle plaza at the visitor center and improving pedestrian access to the park shuttle service would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to development costs and operation costs of shuttle adjustments. The shuttle plaza and improvements would result in a minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. A change in financial balance between revenue sources and operating costs would also occur.

Roadway and Parking. Expanding the visitor center parking lot would require disturbance and changes to the main park road. New parking areas, improvements and reconfiguration activities would result in moderate adverse effects on operations and operating costs as compared to existing levels due to construction and improvement costs. These activities would also result in a negligible to minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. A change in financial balance between revenue sources and operating costs would also occur.

The proposed increase in parking and improved shuttle service common to all action alternatives would likely result in an increase in visitor use of recreational areas and associated facilities. Increased visitation may result in short- and long-term minor adverse impacts on park operations due to increased maintenance costs (materials and staff time) related to facilities and trails.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect park operations include: roadway improvement projects and ongoing road maintenance activities (inside and adjacent to park), facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails, multi-use trail), visitor use activities (visitor travel in private vehicles primarily), vegetation management activities (such as vegetation removal activities and prescribed burns), cultural resource management activities,

utility development in and adjacent to park (including transmission and sewer lines), habitat conservation planning, prairie dog translocations and flea-dusting activities, and urban development adjacent to park (primarily within Bryce Canyon City). Impacts on park operations may occur from activities occurring on adjacent lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on park operations. The overall cumulative impacts on park operations from past, present, and reasonably foreseeable future projects in combination with the impacts common to all alternatives would be short- and long-term minor adverse and local.

Conclusion. Implementing the improvements common to all action alternatives would result in short- and long-term minor to moderate adverse and minor beneficial impacts on park operations. Cumulative effects would be short- and long-term minor adverse and at a local scale. A change in financial balance between revenue sources and operating costs would also occur.

# Alternative 2: Impacts of the Greatest Parking Supply Alternative

See Table 8 for a summary of the Greatest Parking Supply Alternative.

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives. A summary of costs (both initial costs and total cost of ownership), as well as additional staff required for implementation of the Greatest Parking Supply Alternative are presented in Table 4 in "Alternatives."

Roadway and Parking. Under the Greatest Parking Supple Alternative, new parking areas, improvements and reconfiguration activities would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to construction and improvement costs. These activities would also result in a minor to moderate beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. The proposed increase in parking availability would also likely result in an increase in visitor use of recreational resources surrounding parking areas. Increased visitation, with only minimal actions related to Travel Demand Management, Education and Visitor Information, or Shuttle may result in short- and long-term negligible adverse impact to park operations due to increased maintenance costs (materials and staff time) related to roadway and parking facilities and associated trails. A change in financial balance between revenue sources and operating costs would also occur.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect park operations under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on park operations from past, present, and reasonably foreseeable future projects in combination with the impacts of the Greatest Parking Supply Alternative, would be short- and long-term negligible beneficial and local.

**Conclusion**. Implementing the Greatest Parking Supply Alternative would result in short- and long-term negligible to moderate adverse and negligible to minor beneficial effects on park

operations. Cumulative effects would be short- and long-term beneficial and local. A change in financial balance between revenue sources and operating costs would also occur.

# Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

See Table 8 for a summary of the Highest Visitor Demand Management Alternative.

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park. A summary of costs (both initial costs and total cost of ownership), as well as additional staff required for implementation of the Highest Visitor Demand Management Alternative are presented in Table 5 in "Alternatives."

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. The Intelligent Transportation System, restricting oversized vehicles, and flex-time interpretation programs would result in a negligible to minor adverse effect on operations and operating costs as compared to existing levels due to staffing needed and operation costs of vehicle restrictions, costs related to implementation, and costs related to the flex-time programs. Restricting oversized vehicles and implementing the flex-time interpretation programs would result in a negligible to minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues during peak visitation. A small change in financial balance between revenue sources and operating costs would occur.

Education and Visitor Information. Under the Highest Visitor Demand Alternative, clearly communicating parking and transportation options in the park and encouraging the use of these options would be short- and long-term activities resulting in better management of visitation patterns and promotion of alternate transportation. These activities would result in a negligible change in operations and operating costs as compared to existing levels from costs associated with development of information sources, education materials, and staff time needed to implement social media communication. Improved visitor education and communication would also result in a minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues in the park. A small change in financial balance between revenue sources and operating costs would occur.

Shuttle. Under the Highest Visitor Demand Alternative, expanding shuttle service and capacity, and increasing service frequencies would decrease the number of private vehicles in the park. Increasing and extending shuttle service would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to costs of shuttles and time expansions. Expanding shuttle capacity and increasing service frequencies would also result in a minor to moderate beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues in the park throughout the year. A change in financial balance between revenue sources and operating costs would also occur.

Roadway and Parking. Under the Highest Visitor Demand Alternative, new parking areas, improvements, and reconfiguration activities would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to construction and improvement costs. These activities would also result in a minor to moderate beneficial effect on

operations and operating costs by reducing staff time needed to address circulation and parking issues throughout the Bryce Amphitheater area. A change in financial balance between revenue sources and operating costs would also occur.

The proposed increase in parking and improved shuttle service would likely also result in an increase in visitor use of recreational areas and associated facilities. Increased visitation may result in short- and long-term negligible to minor adverse impact to park operations due to increased maintenance costs (materials and staff time) related to roadway and parking facilities and associated trails.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect park operations under the Highest Visitor Demand Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on park operations from past, present, and reasonably foreseeable future projects in combination with the impacts of the Highest Visitor Demand Management Alternative, would be short- and long-term minor adverse and local.

**Conclusion**. Implementing the Highest Visitor Demand Management Alternative would result in short- and long-term negligible to moderate adverse and negligible to moderate beneficial effects on park operations. Cumulative effects would be short- and long-term minor adverse and local. A change in financial balance between revenue sources and operating costs would also occur.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

See Table 8 for a summary of the Adaptive Travel Management Alternative.

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures. A summary of costs (both initial costs and total cost of ownership), as well as additional staff required for implementation of the Adaptive Travel Management Alternative are presented in Table 6 in "Alternatives."

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion in the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak- traffic periods. The Intelligent Transportation System, restricting oversized vehicles, vehicle restrictions to Fairyland Point, and flex-time interpretation programs would result in a negligible to minor adverse effect on operations and operating costs as compared to existing levels due to staffing needed and operation costs of vehicle restrictions, costs related to implementation, and costs related to the flex-time programs. Vehicle restrictions and implementing the flex-time interpretation programs would result in a minor beneficial effect on

operations and operating costs by reducing staff time needed to address circulation and parking issues. A small change in financial balance between revenue sources and operating costs would occur.

Education and Visitor Information. Under the Adaptive Travel Management Alternative, clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options would be short- and long-term activities resulting in better management of visitation patterns and promotion of alternate transportation. These activities would result in a negligible change in operations and operating costs as compared to existing levels from costs associated with development of information sources, education materials, and staff time needed to implement social media communication. Improved visitor education and communication would also result in a minor beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues in the park. A small change in financial balance between revenue sources and operating costs would occur.

Shuttle. Under the Adaptive Travel Management Alternative, expanding shuttle capacity and increasing service frequencies would decrease the number of private vehicles in the park. Increasing and extending shuttle service would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to costs of shuttles and time expansions. Expanding shuttle capacity and increasing service frequencies would also result in a minor to moderate beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues in the park throughout the year. A change in financial balance between revenue sources and operating costs would also occur.

Roadway and Parking. Under the Adaptive Travel Management Alternative, new parking areas (including the expanded visitor center parking and Bryce Point parking), improvements and reconfiguration activities would result in minor to moderate adverse effects on operations and operating costs as compared to existing levels due to construction and improvement costs. These activities would also result in a minor to moderate beneficial effect on operations and operating costs by reducing staff time needed to address circulation and parking issues throughout the year. A change in financial balance between revenue sources and operating costs would also occur.

The proposed increase in parking and improved shuttle service would likely also result in an increase in visitor use of recreational areas and associated facilities. Increased visitation may result in short- and long-term negligible to minor adverse impact to park operations due to increased maintenance costs (materials and staff time) related to roadway and parking facilities and associated trails.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect park operations under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on park operations from past, present, and reasonably foreseeable future projects in combination with the impacts of the Adaptive Travel Management Alternative would be short- and long-term minor adverse and local.

## SOCIOECONOMICS

# **Affected Environment**

Bryce Canyon National Park is in Garfield and Kane counties, Utah (see Figure 2). Approximately 75 percent of the park land area and its visitor entrance are in Garfield County. The majority of visitor access to the park is from State Highways 12 and 63 in Garfield County. The southern portion of the park, consisting of the remaining 25 percent, is in Kane County.

Bryce Canyon City is the closest community to the park that provides visitor services. Panguitch the Garfield County seat and largest nearby community—and Tropic host many visitor services and are particularly engaged in tourism development. Other nearby communities that have a socioeconomic relationship with the park include Cannonville, Hatch, and Henrieville. Similarly, other nearby businesses outside of cities and towns rely on park visitors to sustain their businesses.

Social Setting. Garfield and Kane counties consist of extensive rangelands and forest, where cattle ranching and the lumber industry have been traditionally important economic activities since the pioneer period. The national forest, monument, and state and national park lands also provide multiple recreational activities and economic opportunities. Nearly 95 percent of Garfield County and nearly 95 percent of Kane County consist of public lands (U.S. Forest Service, NPS, and Bureau of Land Management; Utah Governor's Office of Planning and Budget 2003a–b).

The first Euro-American settlers, which consisted of Mormon pioneers, arrived in the Panguitch area of Garfield County in 1864. Settlements were established in Hatch in 1872, Cannonville in 1876, Henrieville in 1878, and Tropic in 1892 (Murphy 2012). Kane County shares many of the same industries and settlement history as Garfield County. Mormon pioneers also settled Kane County in the 1860s, but then abandoned their settlements. Towns within the county were resettled by Mormon pioneers in the 1870s (Utah State Historical Society 1988). Garfield and Kane counties both remain predominantly Mormon, with 99.5 percent and 88.9 percent, respectively, of the populations consisting of adherents to the Church of Jesus Christ of Latter-day Saints (Mormon Church; Jones 2002a–b).

An area near Bryce Canyon was settled by Mormon families in 1874, including Ebenezer Bryce and his family. Bryce Canyon was named after Ebenezer Bryce after he helped complete a road to the cliffs to make timber more accessible. Families began visiting the later named park in the late 1800s. Bryce Canyon became a national park in 1928. Bryce Canyon City, the closest community to Bryce Canyon National Park, was incorporated in 2007. The primary local profile is rural with economies based on agriculture / livestock production and tourism. Currently, visitors to the park generate a significant contribution to the local area economy.

Population. Garfield County is the fifth largest county in Utah geographically, but has the fifth smallest population in the state, with just over 5,000 residents. Most of the county population is clustered near the west side of the county, where the majority of water and private land is found. The growth rate for the county was projected to continue to increase (Utah Governor's Office of Planning and Budget 2003a); however, between 2010 and 2012 the population experienced a 1.5 percent decline (U.S. Census Bureau 2013a).

Kane County has shown an increase in retirement communities, and older segments of the population are expected to continue growing. Water and economic infrastructure limitations have been noted as potential constraints to future growth. The county anticipated a growth rate of approximately 2 percent (Utah Governor's Office of Planning and Budget 2003b). The growth rate between 2010 and 2012 was 1.3 percent (U.S. Census Bureau 2013b).

Population information for Garfield and Kane counties, and area cities and towns are shown in Table 13.

County or City	Population <sup>1</sup>	Population Change Since 2000
Garfield County (2012 estimate)	5,095	15%
Kane County (2012 estimate)	7,221	8%
Bryce Canyon City (2010 data)	198	66%
Cannonville (2012 data)	167	10.1%
Hatch (2012 data)	129	1.6%
Henrieville (2012 data)	224	40.9%
Panguitch	1,520	-7.1%
Тгоріс	530	2.6%

TABLE 13. POPULATION FOR GARFIELD AND KANE COUNTIES AND AREA CITIES AND TOWNS,
Итан

<sup>1</sup>U.S. Census Bureau 2013a–b

Within Garfield County, over 95% of the population is Caucasian, slightly higher than the state average of approximately 92%. The remaining population consists of 0.4% Black or African American, 1.7% American Indian, 0.5% Asian, 0.1% Native Hawaiian or Other Pacific Islander, and 4.1% Hispanic or Latino (U.S. Census Bureau 2013a).

Within Kane County, over 96% of the population is Caucasian, slightly higher than the state average of approximately 92%. The remaining population consists of 0.6% Black or African American, 2.0% American Indian, 0.9% Asian, 0.2% Native Hawaiian or Other Pacific Islander, and 5.0% Hispanic or Latino (U.S. Census Bureau 2013b).

Employment and Income. Labor force characteristics for Garfield and Kane counties are shown in Table 14. Garfield County has a higher unemployment rate (10.5%) than Kane County (7.2%).

County	Labor Force <sup>1</sup>	Employed	Unemployed	Percentage Unemployment Rate
Garfield County (2012)	2,741	2,454	287	10.5%
Kane County (2012)	3,339	3,098	241	7.2%

TABLE 14. LABOR CHARACTERISTICS FOR GARFIELD AND KANE COUNTIES, UTAH

<sup>1</sup>U.S. Census Bureau 2013a–b

The distribution of employment by sector for Garfield and Kane counties is shown in Table 15. For both Garfield and Kane counties, the predominant industry employer is the leisure and hospitality sector. Garfield County has the highest percentage (42%) of its labor force employed by the leisure and hospitality section. As previously mentioned in the Gateway Communities section, Bryce Canyon City, which is within Garfield County, provides lodging, restaurants, shops, shuttle bus facilities, and guided tours for visitors to the area. One of the largest employers in Garfield County is Ruby's Inn, with other tourism-based employers in the county consisting of lodging, restaurant, and similar facilities in nearby communities or unincorporated areas near the park.

In Kane County, the leisure and hospitality sector consists of 30% of the workforce, also the highest percentage employment sector, followed by government (24.6%). Lake Powell Resorts is one of the largest employers in the county.

Industry Sector	Garfield County	Kane County
Natural Resources and Mining	9 (0.4%)	5 (0.2%)
Construction	41 (1.8%)	88 (2.9%)
Manufacturing	40 (1.7%)	99 (3.3%)
Trade/Transportation Utilities	259 (11.2%)	413 (13.8%)
Information	91 (3.9%)	17 (0.6%)
Financial Activities	27 (1.2%)	109 (3.6%)
Professional/Business Services	18 (0.8%)	52 (1.7%)
Education/Health/Social Services	231 (10.0%)	113 (3.8%)
Leisure/Hospitality (Tourism)	964 (41.6%)	906 (30.2%)
Other Services	17 (0.7%)	462 (15.4%)
Government	620 (26.8%)	740 (24.6%)

# TABLE 15. EMPLOYMENT AND PERCENTAGE SHARE BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM SECTORS FOR GARFIELD AND KANE COUNTIES AND AREA CITIES AND TOWNS, UTAH

Source: Utah Department of Workforce Services 2013

# Median income, employment rate, and tourism related spending for Garfield and Kane counties are shown in Table 16.

#### TABLE 16. POPULATION, MEDIAN INCOME, AND TOURISM SPENDING FOR GARFIELD AND KANE COUNTIES, UTAH

County or City	Population <sup>1</sup>	Median Income <sup>1</sup>	Employment Rate <sup>2</sup>	Tourism Related Spending (2009) <sup>2</sup>
Garfield County (2012 estimate)	5,095	\$46,029	82.8%	\$65.8 million
Kane County (2012 estimate)	7,221	\$45,439	91.1%	\$100.7 million
Bryce Canyon City (2010 data)	198	\$36,875	100%	Data not available, assumed high percentage.

<sup>1</sup>U.S. Census Bureau 2013a–b <sup>2</sup>State of Utah 2009a–b The National Park Service has conducted research on the economic impacts of national parks on adjacent communities (NPS 2011a). Data for Bryce Canyon National Park show the following (fiscal year 2010):

- 1,285,492 recreation visits to the park
- 146,965 overnight stays
- \$107,905,000 in visitor spending (for all visitors), \$106,864,000 for non-local visitors
- 1,667 jobs from non-local visitor spending
- \$34,869,000 in labor income from non-local visitors
- \$57,707,000 in value added from non-local visitors

Socioeconomic effects from park payroll include: \$3,327,000 in salaries; \$886,000 in payroll benefits; and 87 NPS jobs.

# **Intensity Level Definitions**

Impacts on socioeconomics were determined based on the following impact definitions and thresholds.

Negligible. No effects would occur, or the effects on socioeconomic conditions would be below or at the level of detection and with no discernible effect on the character of the social and economic environment.

Minor. The effects on socioeconomic conditions would be detectable. Any effects would be small and, if mitigation is needed to offset potential adverse effects, would be simple and successful and not expected to alter the character of the established social and economic environment.

Moderate. The effects on socioeconomic conditions would be readily apparent. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive but would likely be successful and could have an appreciable effect on the social and economic environment.

Major. The effects on socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed and are likely to have a noticeable influence on the social and economic environment.

Short-term Impacts. Occurs only during the short-term project phase (0 to 5 years).

Long-term Impacts. Occurs beyond the short-term project phase.

# Alternative 1: Impacts of the Continue Current Approach Alternative (No-action Alternative)

Under the Continue Current Approach Alternative, the park would continue to operate and maintain its current transportation system, including the shuttle bus system, with minor improvements as needed and if funding is available. The park would continue to maintain, upgrade, and rehabilitate park roads and parking lots in an incremental fashion as the budget allows.

Travel Demand Management. Restricting oversized vehicles and conducting the transportation and visitor use management study would not result in new construction or disturbance that could lead to effects on visitors, no effects on visitors or tourist-related spending would likely occur. No discernible effect on the character of the social and economic environment would occur.

Education and Visitor Information. Under the Continue Current Approach Alternative, education and visitor information activities would not result in effects on visitors or tourist-related spending. No discernible effect on the character of the social and economic environment would occur.

Shuttle. Under the Continue Current Approach Alternative, the Bryce Canyon Shuttle and Rainbow Point Tour shuttles currently run at capacity or exceed capacity between May and October. During this period, more park visitors may instead use their personal vehicles to tour the park. Over time, incremental adjustments would be made to the schedule, frequency, and routing of the Bryce Canyon Shuttle, which would reduce the number of private vehicles within the park. Because no substantial expansion of the shuttle system would occur under this alternative, it is likely that peak period congestion would continue to increase as the number of private vehicles increases in the park. Over the long term, the existing deficiencies of the transportation system would be expected to deteriorate, resulting in impacts on the visitor experience and safety which may have long-term adverse effects on visitor attendance, particularly within hot spot areas, and the social and economic condition in the area. Deteriorated visitor experience and long-term adverse effects on visitor attendance may also impact the local communities supported by park tourism.

Roadway and Parking. Under the Continue Current Approach Alternative, construction and maintenance associated with these planned activities would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park. These activities may lead to short-term negligible adverse effects on visitor attendance and the social and economic condition. Following construction and maintenance, circulation and access would be restored and improved, resulting in short-term negligible beneficial effects to the social and economic condition. Over the long term, continued degradation of parking availability, and circulation and access would be expected to deteriorate, resulting in impacts on the visitor experience which may have long-term minor to moderate adverse effects on visitor attendance may also impact the local communities supported by park tourism.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect socioeconomics include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns),

cultural resource management activities, habitat conservation planning, and utility replacement and rehabilitation within the park (including water and sewer lines).

Activities under the Continue Current Approach Alternative may result in negligible beneficial effects on socioeconomics due to minor improvements to parking and circulation in the park and a minimal improvement in the visitor experience. Adverse impacts on socioeconomics may occur due to diminished visitor experience from continued congestion- and parking-related issues. Socioeconomic conditions are also impacted by activities occurring within surrounding area lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on socioeconomics. The overall cumulative impacts on socioeconomics from past, present, and reasonably foreseeable future projects in combination with the Continue Current Approach Alternative, would be short- and long-term minor adverse and at a local scale.

# Impacts Common to All Action Alternatives

Travel Demand Management. Implementing the reservation system would limit access to a certain number of private vehicles and would not affect shuttle users or visitors entering by tour bus, bicycle, or on foot. Such a time-based entry system would reduce the number of vehicles in the park at a time or per day. Restricting oversized vehicles could result in more visitors using the existing shuttle service to access those restricted areas of the park. Restricting oversized vehicles, implementing the reservation system, and conducting the transportation and visitor use management study would lead to improved circulation and access. This improvement would lead to an improved visitor experience which would likely result in short- and long-term negligible beneficial effects on social and economic conditions.

Education and Visitor Information. Education and visitor information improvement activities would not likely have a perceptible effect on visitors or tourist-related spending. No discernible effect on the character of the social and economic environment would occur.

Shuttle. Improving access to the shuttle service and developing the shuttle plaza could direct more visitors to the shuttle service. Developing a shuttle plaza at the visitor center and improving pedestrian access to the park shuttle service would result in improved access and circulation. These improvements would lead to an improved visitor experience which would likely result in short- and long-term minor beneficial effects on social and economic conditions. Development associated with the shuttle plaza would also result in short-term negligible beneficial effects to the regional community from construction spending by the park.

Roadway and Parking. Expanding the visitor center parking lot would require disturbance and changes to the main park road. Construction and maintenance of new parking lots, improvements and reconfigurations would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park, leading to short-term negligible to minor adverse effects on the social and economic condition. Parking and circulation improvements would also result in beneficial effects to the visitor experience, which may also lead to extended stays and additional expenditures within local communities. Parking and circulation improvements within the park common to all action alternatives would likely result in short- and long-term minor beneficial impacts on the social and economic condition from construction spending by the park.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect socioeconomics include: roadway improvement projects and ongoing road maintenance activities, facility and visitor service improvement construction projects (such as wildlife viewing

pullouts, walkways, fencing, trails), visitor use activities (hiking, biking, vehicle use), vegetation management activities (such as vegetation removal activities, restoration, and controlled burns), cultural resource management activities, habitat conservation planning, and utility replacement and rehabilitation within the park (including water and sewer lines).

Activities common to all action alternatives may result in negligible to minor beneficial effects on socioeconomics due to improvements to parking and circulation in the park and improvements in the visitor experience. Short-term adverse impacts on socioeconomics may occur due to construction and development activities within the park until projects are completed and may be offset by short-term beneficial effects to the regional community from construction spending by the park. Socioeconomic conditions are also impacted by activities occurring within surrounding area lands. Activities in and adjacent to the park contribute to both beneficial and adverse effects on socioeconomics. The overall cumulative impacts on social and economic conditions from past, present, and reasonably foreseeable future projects in combination with the impacts common to all action alternatives, would be short- and long-term minor beneficial and local.

# Alternative 2: Impacts of the Greatest Parking Supply Alternative

Under the Greatest Parking Supply Alternative, the park would seek to improve vehicle parking and movement through the park with less traffic congestion. By providing additional parking facilities, there would be a decrease in waiting time for a parking space. Expanding the supply of roadway facilities—primarily parking—would also reduce vehicle delays and associated vehicle idling. There would be no additional activities proposed for Travel Demand Management, Education and Visitor Information, or Shuttle other than those analyzed under Impacts Common to All Action Alternatives.

Roadway and Parking. Under the Greatest Parking Supply Alternative, construction and maintenance of new parking lots, improvements, relocation of the entrance station, and reconfigurations would likely result in temporary disruptions in the ability of visitors to circulate and access portions of the park, leading to short-term negligible to minor adverse effects on the social and economic condition. Short-term minor beneficial effects on visitor experience and tourist-related spending would likely occur due to the proposed infrastructure expansion, which would almost double available parking spaces. Construction and maintenance related spending within the park would likely increase in the short-term as well, leading to short-term negligible to minor beneficial effects to the local economic condition. Over the long term, increased parking availability and improvements in the transportation elements would likely result in minor beneficial effects on visitor attendance and socioeconomics of the park and local communities due to extended stays or additional expenditures. These beneficial effects would be less than under action alternatives that include the additional key elements for Travel Demand Management, Education and Visitor Information, and Shuttle.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect socioeconomics under the Greatest Parking Supply Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on social and economic conditions from past, present, and reasonably foreseeable future projects in combination with the Greatest Parking Supply Alternative, would be short- and long-term minor beneficial and local.

# Alternative 3: Impacts of the Highest Visitor Demand Management Alternative

Under the Highest Visitor Demand Management Alternative, visitor mobility and congestion would be improved by removing private vehicles from the most heavily congested areas in the park and providing efficient visitor access into and through the park via alternate modes of travel, including increased shuttle service and development of multimodal transportation hubs with expanded parking at more locations throughout the park.

Travel Demand Management. Restricting oversized vehicles in conjunction with providing parking condition information could result in more visitors using the shuttle service to access those restricted areas of the park. Although restricting oversized vehicle access would not greatly reduce the number of private passenger vehicles entering the park, using electronic technology to communicate transportation options based on real-time information would reduce congestion within the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The Intelligent Transportation System, restricting oversized vehicles, and flex-time interpretation programs would lead to improved circulation and access. These improvements would lead to an improved visitor experience which would likely result in short- and long-term minor beneficial effects on social and economic conditions.

Education and Visitor Information. By clearly communicating parking and transportation options in the park and encouraging the use of these options, these short- and long-term activities would help better manage visitation patterns and promote alternate transportation. These activities would lead to improved circulation and access, resulting in minor beneficial effects on visitor experience. Overall, improved education and visitor information would likely result in short- and long-term minor beneficial effects on social and economic conditions.

Shuttle. Expanding shuttle capacity and increasing service frequencies would improve pedestrian access and reduce private vehicles traveling within the park. The tourist-related spending would likely increase due to improved mobility and circulation of a larger volume of visitors within the park. These improvements would result in short- and long-term minor to moderate beneficial effects on social and economic conditions. An increase in the shuttle fleet would also result in long-term minor to moderate beneficial effects from the need for additional drivers and vehicle-related services.

Roadway and Parking. Under the Highest Visitor Demand Alternative, construction and maintenance of new parking lots, improvements, relocation of the entrance station, and reconfigurations would likely result in temporary disruptions in visitors ability to circulate and access portions of the park, leading to short-term negligible to minor adverse effects on the social and economic condition. Short-term minor to moderate beneficial effects on visitor experience and tourist-related spending would likely occur due to the proposed infrastructure expansions. Construction and maintenance related spending within the park would likely increase in the short-term as well, leading to short-term minor to moderate beneficial effects to the local economic condition. Over the long term, increased parking availability and improvements in the transportation elements would result in minor to moderate beneficial effects on visitor attendance and socioeconomics of the park and local communities due to an improved visitor experience, potentially leading to extended stays and additional expenditures within local communities.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect socioeconomics under the Highest Visitor Demand Management Alternative are the same

as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on the social and economic condition from past, present, and reasonably foreseeable future projects in combination with the Highest Visitor Demand Management Alternative, would be short- and long-term moderate beneficial and local.

Alternative 4: Impacts of the Adaptive Travel Management Alternative—the Preferred Alternative

The Adaptive Travel Management Alternative, which is the park's Preferred Alternative, would improve visitor mobility by promoting a wide range of access and circulation choices. The park would seek to reduce congestion by removing private vehicles from the Bryce Point area and by restricting oversized vehicles without a campground permit or a Lodge reservation from entering normally traffic-congested areas of the park during the peak season. Visitors driving oversized vehicles who have a campground permit or a Lodge reservation would be permitted to enter the campground or Lodge area to park and then ride the shuttle. This alternative would also include multimodal hubs, improved visitor information, and expanded travel choices. The Adaptive Travel Management Alternative would incorporate a stronger adaptive management framework than other alternatives in order to meet the goals of the transportation plan. Each transportation improvement would be considered in phases over time and would only be implemented if determined necessary based on performance measures.

Travel Demand Management. Using electronic technology to communicate transportation options based on real-time information would reduce congestion within the park by encouraging visitors to park in Bryce Canyon City and ride the shuttle or bicycle on high-visitation days or during peak-traffic periods. The Intelligent Transportation System, restricting oversized vehicles, vehicle restrictions to Fairyland Point, and flex-time interpretation programs would lead to improved circulation and access which would lead to an improved visitor experience. These activities would result in short- and long-term minor beneficial effects on social and economic conditions.

Education and Visitor Information. By clearly communicating parking, transportation, and visitation options in the park and encouraging the use of these options, these short- and long-term activities would help better manage visitation patterns and promote alternate transportation. These activities would lead to improved circulation and access, leading to minor beneficial effects on visitor experience. Overall, improved education and visitor information would likely result in short- and long-term minor beneficial effects on social and economic conditions.

Shuttle. Expanding shuttle capacity and increasing service frequencies would improve pedestrian access and reduce private vehicles traveling within the park. The tourist-related spending would likely increase due to improved mobility and circulation of a larger volume of visitors within the park. These improvements would result in short- and long-term moderate beneficial effects on social and economic conditions. An increase in the shuttle fleet would also result long-term moderate beneficial effects from the need for additional drivers and vehicle-related services.

Roadway and Parking. Under the Adaptive Travel Management Approach Alternative, construction and maintenance of new parking lots, improvements, and reconfigurations would likely result in temporary disruptions in visitors ability to circulate and access portions of the park, leading to short-term negligible to minor adverse effects on the social and economic condition. Short-term moderate beneficial effects on visitor experience and tourist-related spending would likely occur due to the proposed infrastructure expansion, which would almost double available parking spaces. The proposed expansion of visitor center parking and shuttle

#### Environmental Assessment

service would improve circulation and access in the area and increase the number of visitors accessing visitor center services, including the bookstore. Construction and maintenance related spending within the park would likely increase in the short-term as well, leading to short-term moderate beneficial effects to the local economic condition. Over the long term, increased parking availability and improvements in the transportation elements would result in moderate beneficial effects on visitor attendance and socioeconomics of the park and local communities due to an improved visitor experience, potentially leading to extended stays and additional expenditures within local communities.

Cumulative Effects. Past, present, and reasonably foreseeable future actions with the potential to affect socioeconomics under the Adaptive Travel Management Alternative are the same as those detailed under Impacts Common to All Action Alternatives. The overall cumulative impacts on gateway communities from past, present, and reasonably foreseeable future projects in combination with the Adaptive Travel Management Alternative, would be short- and long-term moderate beneficial and local.

# CONSULTATION AND COORDINATION

## **INTERNAL SCOPING**

Internal scoping was conducted by an interdisciplinary team of professionals including park staff and project stakeholders, including representatives from Utah Department of Transportation, Highway 12 Scenic Byway, Bryce Canyon City, Tropic City, Ruby's Inn, and McDonald Transit. At the outset of the planning process in August 2011, the project team collected relevant transportation data and conducted an internal scoping / project planning workshop on August 17 and 18, 2011 with park staff and project stakeholders to identify issues and opportunities for consideration related to the park's transportation system. A public open house was held on the evening of August 18, 2011, allowing members of the public to view results from the two-day internal scoping session and to identify any additional issues, concerns, and potential solutions.

# **EXTERNAL SCOPING**

External scoping was conducted to inform the public about the proposal to develop a multimodal transportation plan for the park, ask for comments on the proposed undertaking, and request input on the proposed undertaking and preparation of this environmental assessment. The public scoping notice was mailed to approximately 129 contacts including local government offices, some chambers of commerce, and a few non-profits. Newspapers included the Southern Ute News and Desert News in Richfield, Utah. Letters were also mailed to representatives of 23 park-affiliated tribes. Two tribes have provided comments requesting continued consultation for any action that may adversely affect prehistoric cultural resources in the park and about inadvertent discoveries. The Hopi tribe also requested copies of the cultural resources survey report and proposed treatment plans for review and comment.

The park held a public scoping meeting in Bryce Canyon City during which attendees were encouraged to review results of the prior meetings and identify issues and provide information to the NPS that should be considered in development of the plan. The issues raised ranged from very general issues, such as congested conditions within the park, to very specific issues, such as a lack of incentive for visitors to use the shuttle. Input received during this period was categorized and used to inform the discussion and analysis of existing conditions, transportation issues "hot spots," as well as the development of alternatives (NPS 2012). Following the public scoping meeting, the Cedar City Daily News reported on the meeting and provided project contact information in an article titled "Bryce Canyon Seeks Input for Transportation Proposal." The project team received additional input during the 30-day public scoping period between November 15 and December 15, 2011.

After the project team completed the development of alternatives, the park hosted a third public open house on April 16, 2013, to provide an update on the Multimodal Transportation Plan alternatives and gather public input. The park issued a press release on April 4, 2013, inviting the public to participate in this part of the planning process. The press release was issued to cooperating agencies and other park partners, the local newspaper, and the NPS PEPC website. On April 12, 2013, the Salt Lake Tribune reported on the issues facing the park and how the Multimodal Transportation Plan is intended to respond to those issues in an article titled "Bryce Canyon: So many visitors, so few parking stalls, shuttles." The article also announced the upcoming open house. The park invited the public to provide comments at the meeting and via the PEPC website. The public comment period for this open house ended May 15, 2013. All public scoping comments received by the park have been considered in the scoping stage of the planning process.

# AGENCY CONSULTATION

In accordance with the Endangered Species Act, the park consulted with the USFWS with regards to federally listed species.

Bryce Canyon National Park superintendent Jeff Bradybaugh contacted the USFWS Utah Ecological Services office on December 5, 2012, requesting that the USFWS to be a cooperating agency for the development of the Bryce Canyon Multimodal Transportation Plan. The NPS, park, and USFWS discussed the cooperating agency Memorandum of Understanding and USFWS responsibilities on a December 18, 2012, conference call. The USFWS also provided information on projects occurring within 5 miles of the park for the cumulative impacts discussion. The Memorandum of Understanding was signed in January, 2013. The USFWS provided comments on the Multimodal Transportation Plan draft alternatives on March 13, 2013. The NPS, park, and USFWS reviewed and determined impact topics for the Multimodal Transportation Plan EA on an April 10, 2013, conference call. Effects of the preferred alternative on Utah prairie dog were also discussed.

A biological assessment has been developed for submittal to the USFWS as part of Endangered Species Act formal Section 7 consultation for this species. Implementing the Preferred Alternative would result in a may affect, likely to adversely affect determination for the Utah prairie dog. The biological assessment will be sent to the USFWS for their review and concurrence.

Compliance with section 106 of the NHPA is not being subsumed under NEPA, but will be conducted separately through ongoing consultation with the Utah SHPO, park-affiliated American Indian tribes, and the ACHP.

# NATIVE AMERICAN CONSULTATION

The park initiated consultation with 23 American Indian tribes and organizations (see list below), on October 25, 2011 informing them of the proposed project and soliciting comments. Information from the tribes was also requested to determine if any ethnographic resources are in the project area and if the tribes wanted to be involved in the environmental compliance process. The park did not receive any comments from any of the American Indian tribes traditionally associated with the lands of the park.

Because the park has so little information regarding traditional uses and ethnographic resources, the park with the assistance from the Intermountain Region Indian Affairs and American Culture staff sent a second letter (October 30, 2013) requesting information regarding ethnographic resources and traditional uses in the park that might be impacted by the plan. After the second mailing Intermountain Region staff Cultural Anthropologist placed individual calls to everyone on the tribal mailing list to follow up on the request for information. To date no concerns have been expressed and no additional information regarding ethnographic resources or traditional uses has been provided by any of the American Indian tribal representatives. American Indian tribes traditionally associated with the lands of the park will have an opportunity to review and comment on this EA. The park will provide the tribes with the NHPA Programmatic Agreement for review and comment and invite their participation as concurring parties. The NPS will continue to consult with the tribes throughout the planning and implementation of this plan and if any additional information regarding ethnographic resources or traditional uses is provided, the park will work with the concerned parties to mitigate any potential impacts to ethnographic resources and traditional uses associated with any element of the plan. The following 23 Native American tribes were contacted:

- Aneth Chapter, Navajo Tribe
- Chemehuevi Indian Tribe
- Confederated Tribes of Goshute
- Dennehotso Chapter, Navajo Tribe
- Kaibab Paiute Tribe
- Las Vegas Paiute Tribe
- Moapa Paiute Tribe
- Navajo Nation
- Navajo Nation, Utah Commission
- Northwestern Band of Shoshone Indians
- Oljato Chapter, Navajo Tribe
- Paiute Indian Tribe of Utah
- Pueblo of Zuni
- Red Mesa Chapter, Navajo Tribe
- San Juan Southern Paiute Tribe
- Shivwits Paiute Band
- Skull Valley Band of Goshute Indians
- Teec Nos Pos Chapter, Navajo Tribe
- Hopi Tribe
- Utah Navajo Trust Fund
- Ute Indian Tribe
- Ute Mountain Ute Tribe
- White Mesa Ute Council

The letters sent to the tribes on October 25, 2011, informed them of the project, and NPS requested the tribes' preliminary comments regarding ethnographic concerns by December 15, 2011. Each tribe will be given further opportunity to review the EA and to provide additional comments. Tribes will be consulted prior to conducting any archeological testing, as well as in the development of site treatment plans, as appropriate.

# ENVIRONMENTAL ASSESSMENT REVIEW AND RECIPIENTS

This EA will be released for public review. To inform the public of the availability of the EA, the NPS will publish and distribute a letter or press release to various agencies, tribes, and members of the public on the park's mailing list, as well as place a notice in the local newspaper. Copies of the EA will be provided to interested individuals, upon request. Copies of the document will also be available for review at the park visitor center and on the internet at http://parkplanning.nps.gov/brca.

The EA is available for a 30-day public comment period. During this time, the park will hold an open house to inform the public of the proposed plan and alternatives and present the benefits and consequences of proposed improvements under the plan. The public is encouraged to submit their written comments to the NPS, as described in the instructions at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to the release of a decision document. The NPS will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the EA, as needed.

# LIST OF PREPARERS

The following persons assisted with the preparation of the EA.

National Park Service – Denver Service Center

Richard Boston, Cultural Resource Specialist, reviewed EA

Ginger Molitor, Natural Resource Specialist, prepared Alternatives, reviewed EA

Deryn Wagner, Community Planner / Landscape Architect, reviewed EA

Bryce Canyon National Park

Jeff Bradybaugh, Superintendent, reviewed EA

Daniel Cloud, Facility Manager, reviewed EA

Sarah Haas, Biologist, reviewed EA

Kim Hyatt, Historic Architect, reviewed EA

Katie Johnson, Natural Resources Specialist, reviewed EA

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Eija Blocker, Production Specialist, reviewed EA

Helen Cordier, Environmental Coordinator, conducted research for Affected Environment

Vince Martinez, Graphic Designer, prepared figures

Susy Morales, Senior Environmental Planner / Wildlife Biologist, prepared or revised Purpose and Need and Affected Environment / Environmental Consequences

Sharon Wright, Environmental Analyst and Writer / Editor, prepared or revised all sections of EA

Carmen Zepeda-Herman, Archeologist, prepared sections on Cultural Landscapes and Ethnographic Resources

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# ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CLI	Cultural Landscape Inventory
dBA	A-weighted decibel
DO	Director's Order
EA	environmental assessment
GHG	greenhouse gas
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
PEPC	Planning, Environment, and Public Comment
RV	recreational vehicle
SHPO	State Historic Preservation Office
USC	United States Code
USFWS	U.S. Fish and Wildlife Service





As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

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