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rater ake National Park was authorized by an act of ongress on May 22, 02 Public aw 32 Stat. 20 . The last comprehensive management plan for the park was completed in . Much has changed since visitor use patterns and demographics have changed, there are new demands for various recreational e periences and activities, and 22,400 acres were added to the park. ach of these changes has implications for how visitors access and use the national park and the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations. A new plan is needed.

This document e amines four alternatives for managing the national park for the ne t to 20 years. It also analyzes the impacts of implementing each of the alternatives. The no-action alternative, alternative describes the e isting conditions and trends of park management and serves as a basis for comparison in evaluating the other alternatives. The emphasis of alternative 2 would be on increased opportunities in recreational diversity and resource education. Under alternative 3 visitors would e perience a greater range of natural and cultural resources through recreational opportunities and education. The focus of alternative 4 would be on preservation and restoration of natural processes. Alternative 2 is the National Park Service's preferred alternative.

Impacts resulting from the no-action alternative would be negligible to minor on natural resources, park operations, and concession operations, with no adverse impact on most cultural resources. Under alternative 2 there would generally be moderate to major beneficial impacts. Impacts from alternative 3 would be beneficial, e cept for possible adverse impacts on concession operations. Alternative 4 would offer moderate beneficial impacts to natural and cultural resources, with a moderate, adverse impact on visitor use.

This *raft eneral anagement lan nvironmental Impact tatement* has been distributed to other agencies and interested organizations and individuals for their review and comment. The public comment period for this document will last for 0 days after the PA's notice of availability has been published in the *e eral egister*.

O TO CO E TO T IS L

If you wish to respond to the material in this document you may submit your comments, with your name and address, by any one of several methods. ou may mail written comments to

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ou may also email comments to the following address A- MP nps.gov. Include your name and return address in your Internet message, and if possible, re uest a return receipt.
ou may also email directly to terri urbanowski nps.gov.

ou may hand-deliver comments to rater ake National Park head uarters in the park.

ur practice is to make comments, including names and addresses of respondents, available for public review during regular business hours. Individual respondents may re uest that we withhold their address from the planning record, which we will honor to the e tent allowable by law. There also may be circumstances in which we will withhold from the record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. e will make all submissions from organizations or businesses, and from individuals identifying themselves as representative or officials of organizations or business, available for public inspection in their entirety.

This method for public comment submittal listed above stems from court rulings concerning the release of public comments, and it is included as recommended by the ffice of the Solicitor, Department of the Interior D I .

S Y

The purpose of this *raft eneral anagement lan nvironmental Impact tatement* for rater ake National Park is to present a direction for resource preservation and visitor use and a basic foundation for decision making for the park for the ne t to 20 years. The general management plan provides a comprehensive direction for managing resource activities, visitor activities, and development that would be appropriate at the park in the future.

An important element in determining the desired resource and visitor e perience conditions for the park has been public participation. Many issues and concerns were identified by the general public and NPS staff as part of the initial planning efforts, and comments were solicited at public meetings, in planning newsletters, and on the internet.

nce public input was received the planning team identified four alternatives for managing the park a no-action and three action alternatives, including the preferred alternative. The plan also analyzes and presents the environmental and socioeconomic impacts or conse uences of implementing each of those alternatives — the environmental impact statement part of this document. A summary of the alternatives and the important impacts is given below.

LTE TI E O CTIO

The no-action alternative represents continuation of the current management direction and approach at the park. It is a way of evaluating the proposed actions of the other three alternatives.

Under the no-action alternative, archeological and ethnographic resources in the park would continue to be surveyed, inventoried, and evaluated as National Park Service staff and funding permitted. Natural resource management protection, preservation, and restoration activities would also continue as staffing and funding allowed.

isting buildings and facilities in the park would remain; some historic structures would be adaptively used. Munson alley would continue to serve as the center of NPS administration, maintenance, and housing.

The e isting road access and circulation system within the park would continue, and visitor recreational opportunities and interpretive programs in the park would continue.

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Impacts resulting from the no-action alternative would be negligible to minor on natural resources, park operations, and concession operations. Most cultural resources, archeological sites, cultural landscapes, ethnographic resources, or museum collections would have no adverse impacts. ehabilitation of the superintendent's residence would result in minor adverse impacts due to some loss of historic fabric. owever, adaptive use of the structure as a science and learning center would ensure its long-term preservation and therefore provide a moderate beneficial impact.

isitor access, recreational and educational opportunities, and visitor facilities and services would remain relatively unchanged, and the park would continue

to be an important visitor attraction, contributing to the tourism industry in the region. owever, potential increases in visitation over the life of the plan could impact the ability to access some areas of the park and enjoy those areas in relative solitude and tran uility.

LTE TI E EFE E E SIS O I C E SE O O T ITIES

Management of the park would emphasize increased opportunities for recreational diversity and research and education. Most recreational opportunities would remain, but new opportunities along im Drive would allow visitors to directly e perience the primary resource of rater ake in ways other than driving. Any new uses around the rim would be nonmotorized and low impact. pportunities to e perience the lake by hiking and biking in a uieter setting would be e plored by e perimental seasonal road closures of ast im Drive. ther frontcountry opportunities, such as short trails and picnic areas, would be along the roadways. These new opportunities would provide transitional e periences between the developed areas or transportations corridors and the backcountry and also provide for enhanced interpretation, new research, and access the backcountry. inter snowmobile and snowcoach access would remain along North unction to the rim.

esearch and educational opportunities would be enhanced. A new science and learning center would form the core of the new research. The park would e pand and encourage partnerships with universities, scientists, and educational groups. The information gathered would be disseminated throughout the park to rangers, interpretive staff, and visitors. As a result, special in-depth tours would be available to interest groups such as birdwatchers or geology clubs.

As described under the no-action alternative, e isting buildings and facilities in the park would remain, but some structures would be adaptively used.

urrent and future needs for office and administrative space would be accommodated without additional construction. Administrative and other organizational functions, which are not by necessity park-based, would be moved to surrounding communities as demand for space within the park increased.

Parking and road congestion at the park would be managed by improving e isting pullouts, parking areas, and overlooks. If, in the future, crowding conditions developed, shuttles and other alternative transportation systems would be used to solve the problems, rather than e panding road and parking capacities.

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This alternative increases visitor opportunities for recreation, education and interpretation, and access to park facilities and services, creating major beneficial impacts on the visitor e perience.

Impacts on cultural resources, including the superintendent's house, would be the same as the no-action alternative, with the e ception of museum collections, which would have minor to moderate, long-term benefits.

reater emphasis on research, partnering, and visitor education would also indirectly

promote moderate beneficial effects on biotic communities and could result in some adverse impacts on some threatened and endangered species.

As in alternative , some benefits would result from reconfiguration of im illage and adaptive reuse of e isting buildings. owever, under alternative 2, increasing staffing and moving some functions out of the park to nearby communities would result in beneficial impacts on park operations and on the local economy. Although the impact regionally would be negligible, the park would continue to be an important visitor attraction and contribute to the tourism industry in the three-county region. Alternative 2 is the environmentally preferred alternative as evaluated according to the National nvironmental Policy Act.

LTE TI E E SIS O E OY E T OF T E T L E I O E T

The emphasis of this alternative would be to allow visitors to e perience a greater range of natural and cultural resources significant and uni ue to the park through recreational opportunities and education. A wider range of visitor e periences would reach out to greater diversity of visitor groups. ecreational programs, which would focus on minimizing impact, would provide the focus for interpretation and education.

esources would be managed to permit recreation while protecting the resources. pportunities for recreation would be viewed in a regional conte t, where the park could serve as a source of information for regional recreational opportunities. inter access would be improved by grooming along North unction oad. During the summer season use of a shuttle bus system would be e plored.

Use of most current facilities would continue. Treatment of historic structures and cultural landscapes would be similar to the no-action alternative, although such resources could be affected by construction of additional trails, installation of new interpretive signs and other media, and e panded tour programs under alternative 3.

Ade uate space in an onsite facility would be provided for the curation and storage of the park's museum collections .

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This alternative's emphasis on increasing the diversity of visitor e perience would create major beneficial impacts on the visitor e perience. The shift toward a diverse visitor program also would decrease the range of interpretive programs, resulting in a moderate adverse impact on those preferring interpretive programs over e perience.

Impacts on cultural resources would be the same as alternative 2.

Actions resulting from this alternative would result in some adverse impacts on some threatened and endangered species or biotic communities.

As described under alternative 2, the reconfiguration of im illage, adaptive reuse of e isting buildings, increased staffing, and moving some functions outside the park would result in beneficial impacts. The park also would continue to be an important visitor attraction and

contribute to the tourism industry in the three-county region.

LTE TI E E SIS O ESE TIO ESTO TIO OF T L ESO CES

Park management would be focused on the preservation of native species and natural processes and the restoration of biodiversity and natural processes where altered. The park would be an active partner in a regional conservation strategy that would include other agencies and environmental groups. Most park operations and visitor contact facilities would be outside the park and shared with other agencies and communities.

esource preservation and restoration would be the overriding consideration in the park. Areas that have been altered would be restored to their natural conditions. ultural resources would be preserved at the highest level possible. Museum collections would be increased but would be stored in an offsite facility that met professional and National Park Service museum standards.

The visitor e perience would stress activities that have low environmental impacts on and are harmonious with the resources. More emphasis would be place on self-guided and discover y education, and interpretive programs would focus on stewardship.

ehicular transportation would be altered to reinforce the visitor e perience. The im oad would be closed between leetwood ove and err Notch. inter use of the park would change to allow natural processes to proceed with less disturbance than current management practices allow. inter plowing of the road to the rim would stop, e cept for spring opening. Snowmobiling along North unction oad would no longer be allowed.

acilities that are not historic and not essential to park functions would be removed and the area rehabilitated. unctions that are, by necessity park-based, would be retained in the park.

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Impacts resulting from this alternative would include overall beneficial impacts to natural and cultural resources. The decrease in diversity of opportunities, accessibility, and number of interpretive programs would have a moderate adverse impact on the visitor e perience.

A decrease in buildings and facilities in the park, along with reduced winter operations, would have moderate beneficial impacts on park operations. The addition of a shuttle and snowcoach would result in moderate, long- term, adverse impacts on concession operations.

Moving operations out of the park would have a beneficial impact on the local economy. Although the impact regionally would be negligible, the park would continue to be an important visitor attraction and contribute to the tourism industry in the three-county region.

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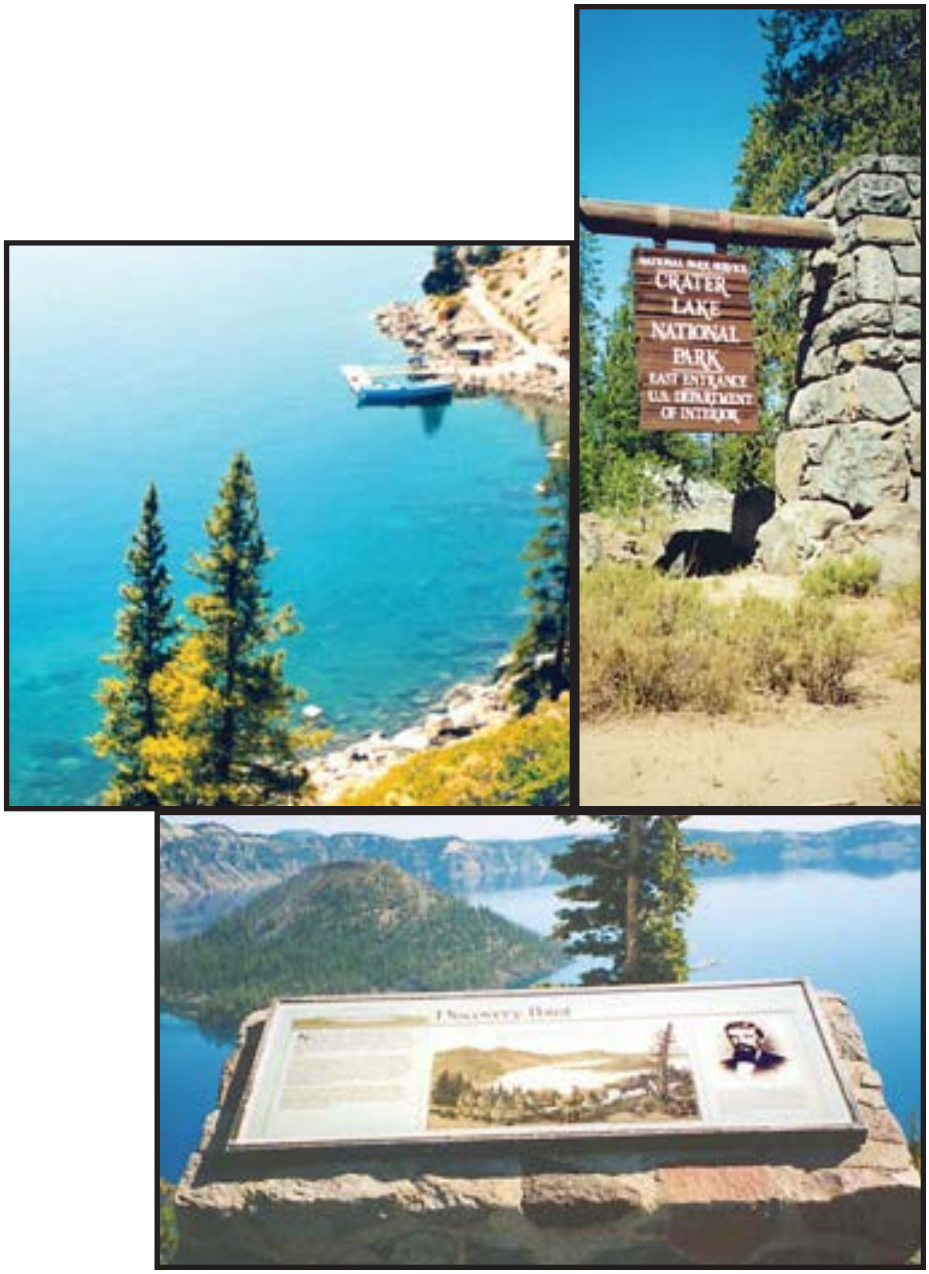
PURPOSE OF AND NEED FOR THE PLAN



OSE EE SCO I

I T O CTIO

eneral management plans are intended to be long-term documents that establish and articulate a management philosophy and framework for decision making and problem solving in the parks. eneral management plans usually provide guidance during a - to 20-year period

This *raft eneral anagement lan nvironmental Impact tatement* presents four alternative future directions for the management and use of rater ake National Park. The plan also analyzes and presents the environmental and socioeconomic impacts or conse uences of implementing each of those alternatives the environmental impact statement part of the document. An important element in determining the future directions is public participation throughout the planning process. ne of the alternatives, alternative 2, is the National Park Service's preferred alternative. The potential environmental impacts of all alternatives have been identified and assessed. Actions directed by general management plans or in subse uent implementation plans are accomplished over time. udget restrictions, re uirements for additional data or regulatory compliance, and competing national park system priorities prevent immediate implementation of many actions. Major or especially costly actions could be implemented 0 or more years into the future.

IEF ESC I TIO OF T E

rater ake National Park is in southwest regon in the south-central portion of the ascade ange see icinity map . The park ranges in elevation from about 3, 00 feet in the southwest corner of the park to just over , 00 feet at Mount Scott. The flora of rater ake National Park is typical of the vegetation found throughout the Southern ascades. enerally, the vegetation reflects a mosaic of forested and open nonforested areas. egetation ranges from a mi ed conifer forest dominated by ponderosa pine at the south to high elevation mountain hemlock and whitebark pine forest at the rim. The park is regarded by many as a sanctuary for native forest and meadow communities.

Near the center of the park is the park's most spectacular resource, rater ake. It is , 43 feet deep, the deepest lake in the United States. The lake is in a caldera which was formed when the top of the 2,000-foot volcano erupted and collapsed. ver the centuries, the caldera has collected water from rain and snow to form the lake. It is about miles in diameter and is surrounded by the jagged, steep-walled cliffs of the caldera left by the climatic eruption and collapse of Mt. Mazama about , 00 years ago. The cliffs surrounding the lake rise from 00 to 2,000 feet above the lake's surface.

rom the rimmed summit, the land slopes gradually downward in all directions. There are no inlets or outlets to the lake. vaporation and seepage prevent the lake from becoming deeper. Due to the topography, rater ake has no influent or effluent streams to provide continuing supplies of o ygen, nutrients, and fresh water. rater ake is considered a youthful lake with a high level of purity. The purity can be attributed to the absence of inflowing streams introducing minerals and other debris. The lack of dissolved minerals greatly restricts the growth of

a uatic plants and the absence of sufficient carbonates inhibits the development of large shelled animals. The result is a high level of light penetration that e ceeds other alpine lakes. rater ake holds the world record for clarity among lakes.

isitors primarily come to rater ake National Park to view the lake. The inherit ualities of the lake and its setting provide breathtaking views from the rim of the caldera. The uality of the lake's water enables sunlight to penetrate and create the reknown blue coloration. The steep caldera wells and mirror-like reflections tinted in subtle shades. At times brilliantly blue; at other times buried in a mass of brooding clouds, rater ake has a mystic and inspiring uality.

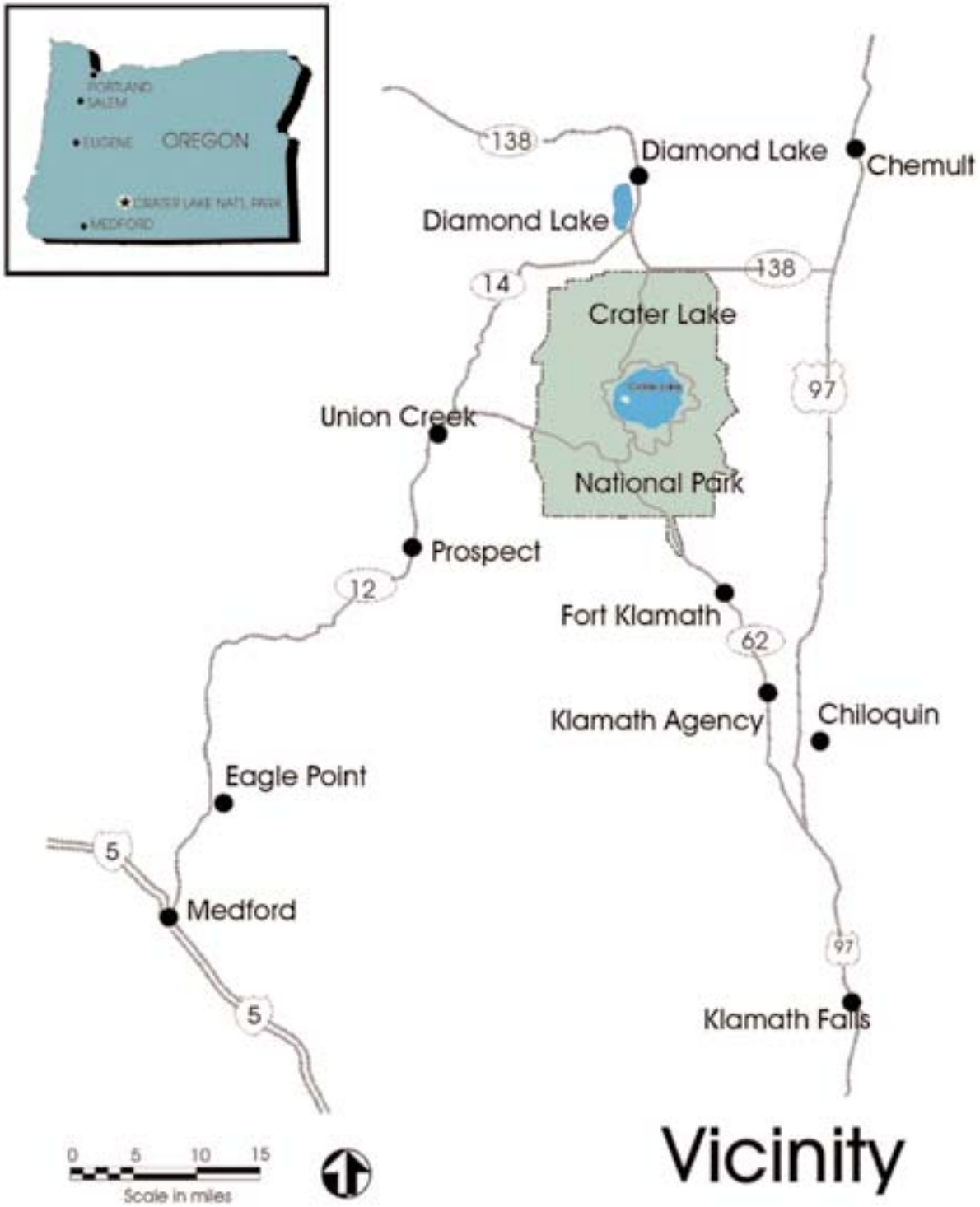
The park encompasses appro imately 2,304 acres and is heavily forested, e cept for a number of treeless and pumice-covered flats. The topography ranges in elevation from about 3, 00 feet in the southwest corner of the park to , 00 feet at Mount Scott, which is the highest point in the park. Streams originating on the slopes of the caldera form headwaters of the ogue iver to the west or join the lamath asin to the south and east. Steep-walled canyons cut in pumice, such as at Annie, astle, and Sun reeks, contribute to the ruggedness of the terrain.

Some of the nation's best e amples of blending rustic architecture and other built features within a national park setting can be seen in the park at im illage and at park head uarters in Munson alley. This designed landscape was constructed over years, beginning in 2 . Most of the features in these two areas are listed on the National egister of istoric Places. The rater ake superintendent's residence at Munson alley was designated a national historic landmark N because it is an outstanding e ample of rustic architectural design.

rater ake National Park is a vital element in a diverse regional recreation comple . Many visitors stop at the park as part of a north-south trip to various parks and scenic areas in regon and northern alifornia. In southern regon, rater ake has historically been the leading visitor draw.

The park's southern entrance station at Mazama illage is miles from Medford and miles from lamath alls and can be reached by regon State oute 2. During summer the park can also be reached from the north by 3 . oth the south and north access roads lead to im Drive, a 33-mile roadway that circles the caldera rim. Pullouts along im Drive provide scenic lake views. im Drive is in the process of being nominated to the National egister of istoric Places and has been designated as part of an All-American oad as are south ighway 2, Munson alley oad, and the North ntrance oad . inter access is maintained only from the south and west on 2 through the Munson alley head uarters area and up to im illage. oad closures, particularly between head uarters and the rim, are common during the winter because of fre uent snowstorms.

im illage, at an elevation of , 00 feet on the south edge of the rater ake caldera, has functioned as a year-round operation since 4 , although services are limited in the winter. Summer interpretive activities are provided from a small visitor contact facility near the rim and at the Sinnott Memorial overlook. The Sinnott Memorial is 2 feet below the rim on a precipitous cliff overlooking the lake. It has architectural significance as an


PORTLAND
SALEM
EUGENE
OREGON
CRATER LAKE NATL PARK
MEDFORD
138
Diamond Lake
Chemult
Diamond Lake
14
138
Crater Lake
97
Union Creek
National Park
Prospect
12
Fort Klamath
62
Klamath Agency
Chiloquin
Eagle Point
5
Medford
5
97
Klamath Falls
0 5 10 15
Scale in miles

Vicinity

PU P S AND N D T P AN

e pression of park rustic style in which the use of materials and siting blends seamlessly into the rim of the caldera. The Sinnott Memorial offers visitors a spectacular view of rater ake and is an ideal place to interpret the lake and caldera. Seasonal hotel accommodations are available at rater ake odge. ood services, gift sales, a picnic area, geology talks summer only , and interpretive e hibits are also available at im illage.

Mazama illage is about miles south of im illage and is the primary overnight visitor use area in the summer. A campground, motel accommodations, a camper services store, shower and laundry facilities, a gas station, interpretive walks, and evening campfire programs are all available during the summer. The nearby Annie Spring entrance station is the first contact station where visitors arriving by way of 2 might encounter NPS staff during the summer.

leetwood is on the north shore of rater ake and is accessed from im Drive. It is about miles east of the north junction where im Drive intersects the north entrance road. leetwood contains a parking area, a nonpermanent ticket sales structure, and a portable restroom at the rim. A trail descends the side of the caldera to the lake. The concessioner offers commercial boat tours of the lake, accompanied by NPS interpreters.

Park headquarters is about 3 miles south of Rim Village and serves as the center of NPS administration, maintenance, and housing. It also serves as the year-round visitor interpretation and orientation point. Park headquarters is in a historic complex of buildings at the central portion of the Munson Valley development area. Visitor information services and interpretive exhibits are provided in this complex at the visitor information center. Primary park administrative services are in the administration building. Storage and maintenance facilities are also in the park headquarters area. OSE EE

The purpose of this *raft eneral an agement lan nvironmental Impact tatement* is to clearly define a direction for resource preservation and visitor e perience at rater ake National Park over the ne t to 20 years. The approved plan would provide a framework for proactive decision-making, including decisions on visitor use, natural and cultural resource management, park development, and addressing future opportunities and problems.

This document will not describe how particular programs or projects will be implemented or prioritized. Those decisions will be deferred to more detailed implementation planning, which will follow the broad, long-range decision making presented in this document.

The National Parks and ecreation Act of P - 2 re uires the preparation and timely revision of general management plans for each unit of the national park system. The previous *aster lan* for rater ake was approved in . A number of subse uent planning efforts were initiated, each undertaken to enhance the visitor e perience and resource protection at the developed areas of rater ake National Park. The park has implemented significant portions of the plans for specific developed areas. or e ample, rater ake odge has been rehabilitated and reopened in May . A new dormitory for concession employees has been built near Mazama illage. This *eneral anagement lan* will provide an

opportunity to consolidate these past decisions that are spread throughout several documents into a single document. The *raft eneral anagement lan nvironmental Impact tatement* takes a new look at the management of the park based on the changes that have occurred since and current issues and concerns confronting the park, with the intent of building on the park's previous planning accomplishments. isitor use patterns and demographics have changed, there are new demands for recreational e periences and activities, and 22,400 acres were added to the park. ach of these changes has implications for how visitors access and use the national park and the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations.

T E SCO I OCESS

Public meetings and newsletters were used to keep the public informed and involved in the planning process for rater ake National Park. A mailing list was compiled that consisted of members of government agencies, nongovernmental groups, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *e eral egister* on May 2 , 200 . A newsletter issued anuary 200 described the planning effort. Public meetings were held during April 200 in lamath alls, Medford, oseburg, and Salem and were attended by people. A total of 2 written comments were received in response to that newsletter. A second newsletter issued in uly 200 summarized the comments received in the meetings and in response to newsletter . These comments were used to complete the park purpose and significance statements that serve as the foundation for the rest of the planning. omments on various issues facing the park were referred to during development of the general management plan.

In spring of 2002 a total of comments were received in response to a third newsletter describing draft alternative concepts and managing zoning. In general opinions were fairly divided in support of individual alternatives and how to address the issues. A number of letters favored continued snowmobile use while other people favored elimination of snowmobiles in the park. pinions were divided on managing traffic on im Drive maintaining current two-way traffic, converting part of the road to one-way traffic, or closure of the road to traffic. Most respondents favored use of shuttles. A number of people who opposed partnering with private industry were concerned with large-scale commercialization within the park.

L I I ECTIO I CE

OSE SI IFIC CE ISSIO I TE ETI E T E ES

The purposes, significance, and mission goals of rater ake National Park are three of the key elements that shaped the development of the *eneral anagement lan*. These elements underlie how the park is managed. Park purpose statements are based on park legislation and legislative history, other special designations, and NPS policies. The statements reaffirm the reasons rater ake National Park was established as part of the national park system and provide the foundation for park management and use.

Significance statements identify the resources and values that are central to managing the area and e press the importance of the park to our natural and cultural heritage. Understanding the park's significance helps managers make decisions that preserve the resources and values necessary to accomplish the area's purposes. rater ake's mission goals articulate the ideal future conditions the National Park Service is striving to attain. All of the alternatives and management prescriptions in this management plan are consistent with and support the park's purpose and significance statements and the park's mission.

Interpretive themes are the key stories or concepts that every visitor to the park should have the opportunity to learn. They include the ideas that are critical to a visitor's understanding of the park's purpose and significance. These themes provide the foundation for the park's interpretation and education programs and direction for interpretive media e.g., e hibits, films, brochures, etc. at the park.

ased on rater ake National Park's enabling legislation, legislative history, agency management policies, public input, and the knowledge and insights of park staff, the planning team identified the following purpose and significance statements, mission, and interpretive themes for rater ake National Park.

The NPS rganic Act of directs that the fundamental purpose of all parks is to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. rater ake National Park was established in 02, dedicated and set apart forever as a public park or pleasure ground for the benefit and enjoyment of the people of the United States. In managing this park, the Park Service was originally charged with the protection and preservation of the game, fish, timber, and all other natural objects therein. In 0, ongress updated the park purpose to preserve for the benefit, education, and inspiration of the people of the United States certain uni ue and ancient volcanic features, including rater ake, together with significant forest and fish and wildlife resources Public aw - 3 .

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- rater ake is one of the most renowned lakes on earth, principally because of the beauty imparted by its large size, blue color, mountain setting, and ever-changing character.
- rater ake lies in a caldera that was left by the climactic eruption

and collapse of Mount Mazama more than , 00 years ago. The circular lake, which formed in the caldera is considered by scientists to be a uni ue model for how small calderas evolve in geologic time. At a depth of , 43 feet, rater ake is the th deepest lake in the world, and holds the world record for clarity among lakes.

- In addition to the lake, most of the forests that surround rater ake have never been logged and are largely preserved in their pristine condition. These mature forests harbor a variety of plant and animal life which are characteristic of higher elevations in the ascade ange. ecause e tensive alteration of forestland has taken place elsewhere in the ascade ange, some of these plants and animals are rare. Those forests within the park boundary add uni ue opportunities for solitary and wilderness e periences.

- Some of the nation s best e amples of blending rustic architecture and other built features within a national park setting can be seen at im illage, park head uarters in Munson alley, and along im Drive. Much of im illage, park head uarters, and im Drive are within districts listed on the National egister of istoric Places.

- rater ake is of enduring importance to contemporary members of American Indian tribes because of its centrality to long-standing cultural traditions and resource harvesting activities, as well as its symbolic significance as a sacred site. The park is part of a larger cultural landscape that e tends well beyond park boundaries.

- rater ake has been the object of scientific study for more than a century, and is uni ue for the scientific research related to its pristine waters, associated geothermal activities, and unusual a uatic organisms.

- The uni ue natural and cultural resources of rater ake National Park provide e emplary opportunities for students and educators.

rater ake National Park's mission is

to forever preserve t e ea t of rater a e ational ar its ni e ecological an c lt ral eritage an to foster n erstan ing an appreciation t ro g en o ment e cation an inspiration

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C vidence left behind by a continuum of different land uses for thousands of years helps us imagine past human interaction with these resources and instills appreciation for the continuing challenge of balancing human use with preservation.

E or more than 00 years, rater ake has been a landscape of e ploration and discovery. Today scientists are studying the lake and surrounding resources to better understand natural systems and improve future

management of the national park and the uality of life in this country and the world.

eologic processes, primarily vulcanism, that created the rater ake caldera and the ascade Mountains provides important lessons about the evolution of our planet.

The ascades ecosystem at and around rater ake National Park supports an e traordinarily rich biological diversity.

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The serenity and beauty of rater ake National Park offers its visitors a wide range of recreational activities and opportunities to e perience natural beauty, uiet, solitude, reflection, and inspiration.

SE ICE I E L S OLICIES

As with all units of the National Park Service, the management of rater ake National Park is guided by a number of legal mandates and park policies in addition to the enabling legislation. These include the rganic Act which created the National Park Service , the eneral Authorities Act of 0, the act of March 2 , relating to the management of the national park system , and other applicable federal laws and regulations, such as the ndangered Species Act and the National istoric Preservation Act. The National Park Service has also established management policies for all units under its stewardship. These are identified and e plained in *anagement olicies* 200 .

These legal mandates and policies prescribe many resource conditions and some aspects of the visitor e perience. This plan is not needed to decide, for instance, whether or not it is appropriate to protect endangered species, control e otic species, protect archeological sites, or provide access for visitors with disabilities. Although attaining some of these conditions set forth in these laws and policies has been temporarily deferred in the park because of funding or staffing limitations, the National Park Service will continue to strive to implement these re uirements with or without a new general management plan.

The conditions prescribed by laws, regulations, and policies most pertinent to the planning and management of the park are summarized below.

Desired ondition	Source
egetation	
The preservation of the natural objects the protection of the timber, and the preservation of all kinds of game and fish.	rater ake National Park enabling legislation
The preservation of the park's uni ue ecological and cultural heritage	
NPS-managed natural systems, and the human influences upon them, will be monitored to detect any significant changes. Action will be taken in the case of such changes, based on the type and e tent of change.	NPS *anagement olicies*
Maintain all the components and processes of naturally evolving park ecosystems.	
The National Park Service will re-establish natural functions and processes in human-disturbed natural systems in parks unless otherwise directed by ongress.	
The Park Service will, within park boundaries, identify, conserve, and attempt to recover all federally listed threatened, endangered, or special-concern species and their essential habitats. As necessary, the Service will control visitor access to and use of essential habitats, and may close such areas to entry for other than official purposes. Active management programs such as monitoring, surveying populations, restorations, e otic species control will be conducted as necessary to perpetuate, to the e tent possible, the natural distribution and abundance of threatened or endangered species, and the ecosystems upon which they depend.	ndangered Species Act US 3 , et se . ; NPS *anagement olicies*
The Park Service will identify all state and locally listed threatened, endangered, rare, declining, sensitive, or special concern species and their essential habitats that are native to and present in the parks. These species and their essential habitats will be considered in NPS planning and management activities.	NPS *anagement olicies*
Plant and animal species considered to be rare or uni ue to a park will be identified, and their distributions within the park will be mapped.	
Management of populations of e otic plant and animal species, up to and including eradication, will be undertaken whenever such species threaten park resources or public health and wherever control is prudent and feasible	
evegetation efforts will use seeds, cuttings, or transplants representing species and gene pools native to the ecological portion of the park in which the restoration project is occurring.	
ater esources and A uatic cosystems	
Surface and ground waters are restored or enhanced; water uality meets as a minimum the standard for contact recreation.	lean ater Act; ecutive order 4; NPS *anagement olicies*
NPS and NPS-permitted programs and facilities are maintained and operated to avoid pollution of surface and ground waters	lean ater Act; ecutive rder 20 ; NPS *anagement olicies*

Desired ondition	Source
Natural floodplain values are preserved or restored.	ecutive order ; ivers and arbors Act; lean ater Act; NPS *anagement olicies* Director's rder -
The natural and beneficial values of wetlands are preserved and enhanced.	ecutive order 0; ivers and arbors Act; lean ater Act; NPS *anagement olicies* Director's rder -2
Protection of stream features will primarily be accomplished by avoiding impacts to watershed and riparian vegetation, and by allowing natural fluvial processes to proceed unimpeded.	NPS *anagement olicies*
ildlife	
ederal- and state-listed threatened and endangered species and their habitat are sustained.	ndangered Species Act; NPS *anagement olicies*
Populations of native plant and animal species function in as natural condition as possible e cept where special management considerations are warranted.	NPS *anagement olicies*
Native species populations that have been severally reduced or e tirpated from the park are restored where feasible and sustainable.	
Management of populations of e otic plant and animal species, up to and including eradication, will be undertaken whenever such species threaten park resources or public health and when control is prudent and feasible.	
Air esources, Soundscapes, and ightscapes	
Air uality in the parks meets national ambient air uality standards NAA S for specified pollutants. Park activities do not contribute to deterioration in air uality.	lean Air Act; NPS *anagement olicies*
The National Park Service will preserve the natural ambient soundscapes of parks, which e ist in the absence of human-caused sound.	NPS *anagement olicies*
The Park Service will protect natural darkness and other components of the natural lightscape in parks.	NPS *anagement olicies*
eological, Soils, and Paleontological esources	
Management of significant thermal features, including assessment, monitoring, data collection and protection from significant adverse effects due to geothermal development.	eothermal Steam Act Amendment of
Natural geologic processes proceed unimpeded.	NPS *anagement olicies*
Paleontological resources, including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education , interpretation, and scientific research.	
Natural soil resources and processes function in as natural condition as possible, e cept where special management considerations are allowable under policy.	
The Park Service will actively seek to understand and preserve the soil resources of parks, and to prevent, to the e tent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.	
esearch, esource Inventory and Monitoring	

Desired ondition	Source
Management of the resources will be enhanced by the availability and utilization of a broad program of the highest uality science and research. The Park Service will undertake a program of inventory and monitoring to provide baseline and long-term trends in the condition of resources. The Park Service will encourage publication and dissemination of information derived from studies.	National Park mnibus Management Act of , Title II National Park System esource Inventory and Management
ilderness	
The Park Service seeks to retain wilderness potential in areas proposed as wilderness until enacted or rejected. The administration of wilderness meets the standards within the ilderness Act Protection of these areas in an unimpaired state for future use and enjoyment as wilderness Preservation of the wilderness character of these areas	NPS *anagement olicies*; ilderness Act of 4; Director's rder 4
ilderness is protected and managed so as to preserve its natural conditions and which • generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable. • has outstanding opportunities for solitude or a primitive and unconfined type of recreation.	ilderness Act of 4; Director's rder 4
ire Management	
ach park is re uired to have a fire management plan / environmental assessment that addresses wildland and prescribed fires. ildland fires are naturally ignited and part of natural systems that are being sustained by parks. Prescribed fires are human ignited to achieve resource management or fuel treatment objectives.	NPS *anagement olicies irector s r er*
ire suppression within proposed wilderness will be consistent with the minimum re uirement concept. minimum tool or administrative practice to successfully and safely accomplish the objective with the least adverse impact on wilderness character or values	

C

Desired ondition	Source
Prehistoric and istoric Archeological Sites	
Archeological sites are identified and inventoried, and their significance is determined and documented.	National istoric Preservation Act
Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable.	Archeological and istoric Preservation Act Archeological esources Protection Act
In cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged.	*ecretar of t e Interior s tan ar s an i elines for Arc eolog an istoric reservation* 2 Programmatic Memorandum of Agreement among the National Park Service, Advisory ouncil on istoric Preservation, and national ouncil of State istoric Preservation fficers NPS *anagement olicies*
istoric Structures and ultural andscapes	
istoric structures and cultural landscapes are inventoried and their significance and integrity are evaluated under national register criteria.	National istoric Preservation Act Archeological and istoric Preservation Act
The ualities of historic structures and cultural landscapes that contribute to their actual listing or their eligibility for listing on the National egister of istoric Places are protected in accordance with the *ecretar of t e Interior s tan ar s*, unless it is determined through a formal process that disturbance or natural deterioration is unavoidable.	*ecretar of t e Interior s tan ar s an i elines for Arc eolog an istoric reservation* 2 Programmatic Memorandum of Agreement among the National Park Service, Advisory ouncil on istoric Preservation, and national ouncil of State istoric Preservation fficers NPS *anagement olicies*
ects an Arc ival an scripts ollections	
Manage parks to provide for the protection of historic, prehistoric, and scientific features.	The Anti uities Act of 0 .
Manage parks to maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance and establish and maintain museums in connection therewith.	The istoric Sites Act of 3 .
All museum objects and manuscripts are identified and inventoried, and their significance is determined and documented. The ualities that contribute to the significance of collections are protected in accordance with established standards. nsure that objects housed in repositories/institutions outside the park are preserved, protected, and documented according to NPS standards and guidelines.	American Indian eligious reedom Act Archeological esources Protection Act Native American raves Protection and epatriation Act NPS *anagement olicies* NPS *se m an oo irector s r er* 24
thnographic esources	
Manage parks to provide for the protection of historic, prehistoric and scientific features.	Anti uities Act of 0

Desired ondition	Source
ontinue to recognize the past and present e istence of peoples in the region and the traces of their use as an important part of the cultural environment to be preserved and interpreted. onsult with associated American Indian tribes to develop and accomplish the programs of rater ake National Park in a way that respects the beliefs, traditions, and other cultural values of the American Indians who have ancestral ties to park lands. Accommodate access to and ceremonial use of traditional use areas in a manner that is consistent with park purposes and avoid adversely affecting the physical integrity of these sites and resources. American Indians linked by ties of kinship or culture to ethnically identifiable human remains would be consulted when remains may be disturbed or are encountered on park lands.	American Indian eligious reedom Act and as amended in 4 Native American raves Protection and epatriation Act 0 Presidential Memorandum of April 2 , 4, overnment-to- overnment elations ith Native American Tribal overnments ecutive rder 300 of May 24, , Indian Sacred Sites

Desired ondition	Source
isitor perience and Park Use e uirements	
isitor and employee safety and health are protected.	NPS *anagement olicies*
isitors understand and appreciate park values and resources and have the information necessary to adapt to the park environments. isitors have opportunities to enjoy the park in ways that leave park resources unimpaired for future generations.	NPS rganic Act rater ake National Park enabling legislation NPS *anagement olicies*
Park recreational uses are promoted and regulated. asic visitor needs are met in keeping with park purposes.	NPS rganic Act Title 3 of the ode of ederal egulations NPS *anagement olicies*
New and remodeled buildings, outdoor developed areas, and features are accessible to all visitors, including those with disabilities, in compliance with federal standards. owever, it may not be possible to make all sites or historic buildings accessible because the re uired changes would affect the integrity of the feature or the historic structure. In these cases interpretive brochures or programs could help convey an e perience to visitors.	Americans with Disabilities Act Architectural arriers Act ehabilitation Act NPS *anagement olicies*

S

Desired ondition	Source
New and remodeled buildings and facilities reflect the NPS commitment to energy and resource conservation, as well as durability.	ecutive rder 2 3 ecutive rder 2 02 uiding Principles of Sustainable Design NPS 3

S ECI L TES I IST TI E CO IT E TS

Special mandates and administrative commitments refer to park-specific re uirements. Those most directly related to the *eneral anagement lan* or that may potentially affect it are listed below.

The ilderness Act of 4 established a National ilderness Preservation System to be composed of federally owned areas designated by ongress as wilderness areas,' and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment

as wilderness. The 4 National Park Service wilderness proposal recommended wilderness designation for appro imately 22,400 acres of lands within the park. This recommendation was transmitted to ongress by the president.

The legislative process has not been completed for the rater ake National Park ilderness Designation proposal. owever, it is the policy of the National Park Service 200 NPS *anagement olicies*, hapter ilderness Preservation and Management to take no action that would diminish the wilderness suitability of an area possessing wilderness characteristics until the legislative process has been completed. Until that time, management decisions pertaining to lands ualifying as wilderness will be made in e pectation of eventual wilderness designation. This policy also applies to potential wilderness, re uiring it to be managed as wilderness

Among other mandates are the protection of wilderness areas and the preservation of their wilderness character. ilderness characteristics are defined in the ilderness Act as

- The earth and its community of life are untrammeled by humans, where humans are visitors and do not remain.
- The area is undeveloped and retains its primeval character and influence, without permanent improvements or human habitation.
- The area generally appears to have been affected primarily by the forces of nature, with the imprint of humans' work substantially unnoticeable.
- The area is protected and managed so as to preserve its natural conditions.
- The area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

T E S

The federal ndangered Species Act and NPS policy provide special protection to all federally listed and threatened and endangered species. Species appearing on state lists of endangered, threatened, and special concern are also considered in planning and management activities. The park supports and provides habitat for a number of federal or state listed species. The Park Service would continue to prepare and periodically update specific management plans and programs e.g., fire management plan; bull trout restoration program; threatened and endangered species inventory, monitoring, and research programs . These initiatives are directed by servicewide laws and policies,

and the *eneral anagement lan* will not e plore alternatives to these plans and programs. Nothing in this *eneral anagement lan* would conflict with these initiatives.

Although these plans and programs would benefit threatened and endangered species and their habitat within the park, it should be noted that some adverse effects, including taking of individuals, such as loss of some individual fish during bull trout restoration operations, have and would likely continue to occur. The Park Service would continue to consult the U.S. ish and ildlife Service as these plans and programs are prepared and updated to ensure the conservation of these species. hile these beneficial and adverse effects would not result from the implementation of any of the *eneral anagement lan* alternatives, they are considered in the cumulative impacts analysis see nvironmental onse uences, umulative Impacts section .

The rater ake ong-Term imnological Monitoring Program T MP began with a congressionally mandated Public aw -2 0 0-year study 2 - 2 . The 0-year program was established to determine whether the lake was undergoing what appeared to be a long-term decline in water clarity. The National Park Service did not have an ade uate limnological data base to interpret the apparent changes in clarity for managing this nationally and internationally treasured resource. During the 0-year program scientists and park managers built a high uality limnology program. The program documented that the lake clarity was within normal inter-annual variation, it also provided valuable data and recommendations on a number of other management issues.

In 4 the National Park Service received ongressional funding to continue a long-term monitoring program as part of park base operations. The purpose of the long-term program is to develop a limnological database to evaluate long-term trends; to develop an understanding of the interrelationships among ecosystem components to evaluate change, and; to contribute to the preservation and management of rater ake, and other international a uatic resources through publication of peer reviewed program results.

Title II National Park System esources Inventory and Management of the National Parks mnibus Management Act of had the following purposes

- More effectively achieve the mission of the National Park Service
- nhance management and protection of park resources by providing clear authority and direction for scientific study
- nsure appropriate documentation of resource conditions
- ncourage use of the national park system for the benefit of park management as well as broader scientific value
- ncourage the publication and dissemination of information derived from studies in the national park system
-

The act directs that management of park units is enhanced by the highest uality science and information. It further establishes a program of inventory and monitoring resources to establish baseline information and provide information on

the long-term trends in the conditions of national park resources.

S

The State of regon, lamath asin eneral Stream Adjudication, is currently active and includes rater ake National Park. The adjudication is a legal process that will determine the uantities and relative priorities associated with the park's use of water from rater ake and the streams flowing within the park. The United States of America, National Park Service, has filed twenty-one federal reserved water rights claims laim Nos. on behalf of rater ake National Park for instream, lake level, and out-of-stream uses. n August 2, 200 , the hearing officer ordered laim Nos. 0 , for instream and lake level uses, referred back to the adjudicator for final disposition. n ebruary 2 , 2002, the hearing officer signed a inal Proposed rder and recommended that the Adjudicator enter a inal rder for laim Nos. 02 , for out-of-stream uses. inal adjudication of the park's federal reserved water rights claims will occur when the claims of the other federal agencies included in the adjudication are settled. Ac uisition of the federal reserved water rights would not eliminate the risk of rater ake's administrative uses being called out by downstream senior water rights holders during dry years. The National Park Service is negotiating with local water users for senior water rights that would augment the park's federal reserved water rights during dry years.

S

lamath alls, Medford, and oseburg are the gateways to rater ake National Park providing the primary business, transportation, and service centers in their respective counties. lamath alls is the closest of these, located 0 miles south of the park. A number of smaller unincorporated communities — eaver Marsh, Diamond ake, ort lamath, Prospect and Union reek — are much closer to the park. These provide some visitor services, not all of which are year-round.

verall guidance for actions at the major developed areas is provided as part of the *rater a e ational ar isitor ervices lan*. The plan is a blend of actions intended to improve the protection of park resources while providing enjoyable visitor e periences. The *isitor ervices lan* analyzed the appropriate level and location of interpretive and visitor services in the park, considering both National Park Service and commercial services. It stated that NPS interpretive services would be emphasized. ommercial services, considered to be necessary and appropriate due to the park's distance from sizable communities, would be modified to better serve visitors.

The *isitor ervices lan* identifies the appropriate and necessary levels and kinds of NPS and concession services desired at im illage as well as the other major developed areas within the park. This *eneral anagement lan* builds on the previous planning effort. lements of the *isitor ervices lan* include the following

- ehabilitate historic cafeteria building
- elocate parking and road to area behind cafeteria building
- onvert e isting parking lot to pedestrian open space

- onstruct new visitor contact station for year-round information and interpretation
- emove im illage dormitory

- etain Mazama illage Motor Inn
- onstruct new restaurant and e pand parking lot
- emove public laundries
- Increase space for sale of gift and sundry items and camping supplies
- etain gasoline sales
- etain limited food service
- etain public showers
- etain amphitheater
- Develop two group campsites
- onstruct concession maintenance facility
- etain park administration, maintenance and housing facilities
- Provide interpretive services
- Provide backup of winter visitor contact station and post office

C C

- ehabilitate Trail and add wayside e hibits
- eplace dock and improve bulkhead
- onstruct seasonal shade structure
- onstruct storage structure for supplies and e uipment
- etain vault toilets
- Define trail entry and crosswalk

L I ISS ES

I T O CTIO

The general public, NPS staff, and other agencies and organizations identified issues and concerns during scoping for this general management plan see Scoping Issues in the Purpose, Need, and Scoping section . esource protection, visitor e pectations, tolerance for greater crowding, the amount of park resources devoted to snowplowing, and the current limitations on staff and budget to provide interpretive presentations and outreach activities were the starting point of issues for this *eneral anagement lan* omments received during scoping demonstrated that snowmobile use, boundary enlargement, impacts on surrounding communities and the region, and use were important to visitors, organization, and other agencies.

The general management plan provides a framework or strategy for addressing the issues within the conte t of rater National Park's mission, purpose, and significance goals; it also proposes resource conditions for summer and winter use on the land within the park boundary and desired visitor e periences.

ISS ES

A variety of issues that the National Park Service currently faces were identified. The issues were identified and refined through discussions with park staff, interested agencies and organizations, and the general public.

Some of the issues, such as modifying fees, are outside the scope of this plan. Some concerns identified during the planning process are already prescribed by law, regulation, or policy and were addressed in the preceding section, Servicewide aws and Policies. The key issues addressed in this plan are identified below along with the underlying uestions and concerns identified during scoping.

T

- Should historic structures in the park be adapted for administrative use or educational or interpretive purposes
- Is the park ade uately addressing the potential resource protection concerns associated with visitor use e.g., disturbance to wildlife; trampling of soils and vegetation; the effects of vehicle emissions on air and water uality , including winter use within the park
- To what e tent can visitor opportunities be provided without adverse impacts to resources

I E

- Should the park e pand its educational program and educational outreach In what ways should this be done
- Is the park providing an ade uate range of visitor information services
- Is the park currently providing an appropriate range of visitor e periences Should the park consider increased bicycle, hiking, camping, and pedestrian access Should any of these activities be decreased

- Should alternative means of transportation be considered for visitor access at rater ake If so, what type Should parts of im Drive be closed to vehicular access to improve bicycle and pedestrian access
- hat types of winter access and use should be accommodated within the park Should winter lake-viewing be limited panded

T

S

- The clear waters of rater ake and the pristine surrounding forest areas in the park offer uni ue opportunities for scientific research and education. As a part of its mission, the park promotes and encourages research. Should the park emphasize and encourage research activities and partnerships that facilitate research and learning
- Staff and budget levels limit onsite interpretive presentations and outreach activities. Should the park develop and e pand its partnerships with other agencies or commercial operators to enhance orientation and education opportunities

O T

- isting facilities have inade uate space for administrative and support functions. They lack ade uate employee workspace and collections storage. Should these functions remain in the park or be relocated outside the park
- A substantial portion of park resources is devoted to plowing the road to the im illage each winter. Are there other ways to accommodate winter lake-viewing

I CTS TO ICS ESO CES L ES T ST E I T E L I OCESS

I CTS TO ICS

Impact topics allow comparison of the environmental conse uences of implementing each alternative. These impact topics were identified based on federal laws and other legal re uirements, NPS subject-matter e pertise and knowledge of limited or easily impacted resources, and concerns e pressed by other agencies or members of the public during scoping. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

To focus the environmental impact analysis, and to ensure that the alternatives were evaluated against relevant topics, the planning team selected the following specific impact topics for further analysis and eliminated others from evaluation. These topics are described in the subse uent Affected nvironment section and analyzed in the nvironmental onse uences section.

C

ultural resource impact topics were selected on the basis of major values identified in the park's enabling legislation, values identified in the scoping process, and applicable laws and e ecutive orders pertaining to cultural resources e.g., the National istoric Preservation Act and the National nvironmental Policy Act . The topics are archeological resources, historic buildings/structures, cultural landscapes, ethnographic resources, and museum collections.

Natural resource impact topics were selected for analysis based on the major values identified in the park's enabling legislation, values or issues identified in the planning process, NPS knowledge of limited or easily impacted resources, as well as applicable laws and regulations e.g., ndangered Species Act of 3, as amended, and NPS *anagement olicies* . The topics are biotic communities includes the interrelated components of vegetation, wildlife and their habitat, and soils , threatened, endangered, and sensitive species selected species , water resources, and air uality.

E

The planning team identified visitor e perience as an important issue that could be appreciably affected under the alternatives. The rganic Act and *anagement olicies* both direct the Park Service to provide enjoyment opportunities for visitors that are uni uely suited and appropriate to the superlative resources found within the park. The different aspects of visitation and enjoyment that are evaluated include orientation, interpretation, education, soundscapes, scenic uality, and access and circulation

C O

Actions proposed in the alternatives could adversely or beneficially affect both park and concession operations. or e ample, eliminating winter snow plowing to the rim and implementation of a snowcoach

operation would affect operations for both the park and concessioner.

S E

The planning team selected the socioeconomic environment as an impact topic because the park plays an important role in recreation in the region, which in turn contributes to the economy of the surrounding communities. Analyzing the regional economic impacts provides the conte t for evaluating the possible impacts the alternatives may have on the surrounding area.

I CT TO ICS ELI I TE F O F T E E L TIO

The following topics were dismissed from further analysis because the alternatives being considered would have no discernable effect on the resource or topic, or the resource does not occur in the park.

F

ecutive rders loodplain Management and 0 Protection of etlands re uire an e amination of impacts to floodplains and wetlands, of potential risk involved in placing facilities within floodplains, and protecting wetlands. The 200 NPS *anagement olicies* , D - *etlan rotection* , D -2 *loo plain anagement* , and D - 2 *onservation lanning nvironmental Impact Anal sis an ecision a ing* provide direction for development proposed in floodplains and wetlands. It is NPS policy to avoid affecting floodplains and wetlands and to minimize impacts when they are unavoidable. Permanent streams in the park generally have steep-sided channels, and associated floodplains and riparian areas are narrow. The term wetlands include wet environments such as marshes, swamps, and bogs. They may be covered in shallow water most of the year, or be wet only seasonally. Plants and animals found in these areas are uni uely adapted to wet conditions. rater ake National Park wetlands include Sphagnum og, Thousand Springs, oundary Springs, seeps, and creeks.

acilities proposed for development under the alternatives would be sited to avoid floodplains and wetlands. ased on the prevalence of upland sites both within the park and nearby communities, it is e pected that wetlands and floodplains would be avoided. Mitigation measures would be re uired as part of construction to minimize any potential indirect effects. or e ample, erosion control measures would be used to minimize siltation or sedimentation of nearby waters or wetlands from construction site runoff. efore initiating any ground-disturbing projects, further investigation would be conducted to ensure that these resources would not be appreciably affected. loodplains and wetlands will be addressed at the project level to ensure that projects are consistent with NPS policy and and 0, and any potential impacts would be negligible.

E C S O

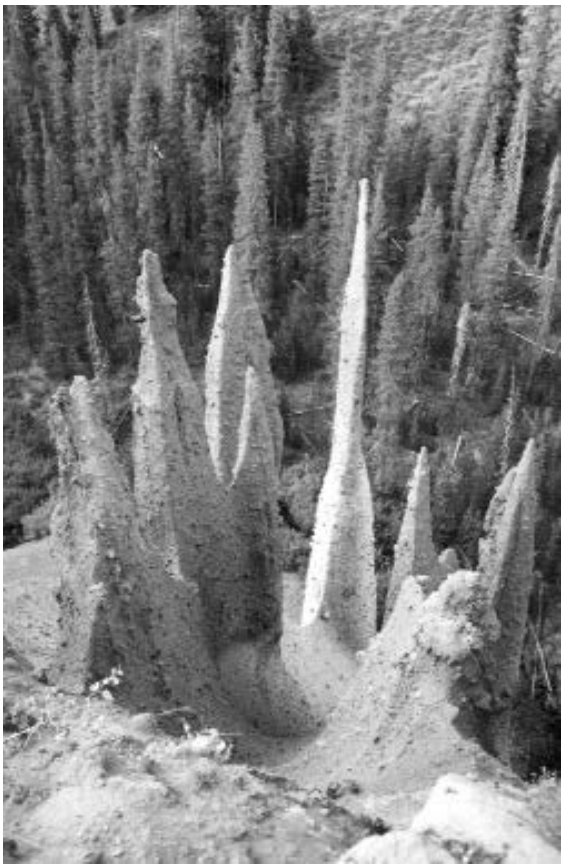
our distinct natural areas within the boundaries of rater ake National Park have been designated as research natural areas Sphagnum og, lao ock, Pumice Desert, and Desert reek. These four areas illustrate uni ue ecosystems and represent outstanding habitats of the regon ascades Province, as defined in the *regon at ral eritage lan* .

Several other areas within the park contain important ecological communities.
oundary Springs is in the northwest corner of the park and is one of the headwater sources of the ogue iver. The spring produces a reliable, year-round flow in an otherwise arid area, resulting in a lush moss and herb flora Applegate 3 . Thousand Springs is appro imately mile south of the west entrance 2 of rater ake National Park. The Thousand Springs site is a comple of freshwater springs that flow west into Union reek and eventually into the ogue iver.

These research natural areas and important ecological communities would continue to be preserved and managed to minimize human disturbance under all of the alternatives. Negligible disturbance to these areas has occurred or is e pected to occur under any of the alternatives.

No actions proposed in the alternatives would affect the eligibility or designation of a wild and scenic river.

rater ake National Park lies within a north-south chain of large volcanic cones built during the last few hundred thousand years along the crest of the ascade ange Schaffer 3 . The current landscape was formed after the eruption and collapse of Mt. Mazama. The park landscape displays a large range of volcanic rocks and remnant glacial material as well as a variety of geologic features. The steep-walled cliffs of the caldera left by the eruption of Mt. Mazama display the geologic layering of lava flows over time.
izard Island is an e ample of a cinder cone and lava flows that erupted soon after the one which formed the caldera. Several more post caldera volcanoes are



hidden by the lake. Studies of the lake bottom have shown the presence of hydrothermal activity on the lake floor. The Sand reek/Pinnacles area in the southeast corner of the park is a site of uni ue geological importance. The canyon formed by Sand reek has sloping walls of scoria and pumice. Along the walls are numerous pinnacle formations, many 0 feet or taller.

No actions proposed in the alternatives would affect these geologic resources.

T E S
S S S

There are a number of species that are considered threatened or endangered in regon, according to lists maintained by the U.S. ish and ildlife Service, regon Department of Agriculture, and the

regon Natural eritage Program N P that inhabit, or for which potential habitat e ists in the park. The alternatives would have no effect on some of these species as discussed below. Surveys would be conducted and potential new development or trails proposed under any of the alternatives would be sited to avoid disturbing sensitive species.

ost iver sucker *eltistes l at s* and shortnose sucker *asmistes revirostris* are federal and state endangered species. oth species are primarily lake residents that spawn in rivers, streams, or springs associated with lake habitats. ood iver, which flows south of the park in the upper lamath ake watershed, provides spawning habitat for these species. Neither species is known to inhabit the park at present, and it is not known if they have historically inhabited the park. The alternatives would have negligible effects on water use from Annie Spring, which joins with the ood iver south of the park. There would be no measurable effect on ood iver flows; and, therefore, may affect, but would not be likely to adversely affect spawning habitat for these species would occur.

ellow-billed cuckoo *occ s american s* is a federal candidate and listed by N P under species threatened or endangered or possibly e tirpated from regon but secure elsewhere. Populations of this species have declined in portions of their range in the United States, particularly west of the ontinental Divide. estern yellow-billed cuckoos appear to re uire large blocks of riparian habitat for nesting. oss and degradation of western riparian habitats appears to be a primary factor in their decline. A survey in eastern regon and lamath ounty located no birds but identified potential breeding habitat along the lower wyhee

iver ittlefield . This species is not known to inhabit the park, nor would the alternatives adversely affect large blocks of riparian habitat. No effect on this species is anticipated under any of the alternatives.

regon spotted frog *ana pretiosa* is a federal candidate and listed by N P under species threatened or endangered throughout their range. The tailed frog *Ascap cs tr ei* and ascade frog *ana casca ae* are both federal species of concern and listed by the state under species threatened or endangered or possibly e tirpated from regon but secure elsewhere. Spotted frogs are highly a uatic and live in or near permanent bodies of water, including lakes, ponds,

slow streams and marshes. Tailed frogs are stream dwellers that do not inhabit ponds or lakes. The ascade frog is found in small pools adjacent to streams flowing through subalpine meadows. They can also be found in sphagnum bogs and fens, seasonally-flooded, forested swamps, small lakes, ponds, and marshy areas adjacent to streams. These species are not known to inhabit the park, nor are the alternatives e pected to affect potentially suitable habitat.

rater ake newt *aric a gran losa* ssp. *ma amae* is listed by N P under species threatened or endangered throughout their range. This species is endemic to rater ake and is found in the shoreline ecosystem of the lake. None of the actions within the alternatives would affect areas of known populations. The Park Service would continue to take management actions as necessary to avoid impacts from continuing visitor and research activities that occur within the caldera.

Mt. Mazama collomia, *ollomia ma ama* is listed by the N P under ta a that are endangered or threatened throughout their range or which are presumed e tinct. This species inhabits high elevation 4, 00 - ,300 forest-meadow ecotones in the red fir/mountain hemlock and lodgepole pine forest zones and occasionally along riparian areas. ithin the park it is found north of Sphagnum og, along Pacific rest Trail and Dutton reek, and in scattered open woods and meadows of the lodgepole pine and true fir forest zones along the west side of park. None of the actions under the alternatives would affect areas of known populations within the park. The Park Service would continue to take management actions as necessary to avoid impacts by backcountry visitors.

rawford s sedge *are crafor ii* , abrupt-beaked sedge *are a r pta* , and lesser bladderwort *tric laria minor* are listed by the N P under species that are threatened, endangered, or possibly e tirpated from regon, but are stable or more common elsewhere. These species occur within the park and are associated with wetlands and/or springs. The alternatives would not affect habitat where these species are found.

F

In 0 the ouncil on nvironmental uality directed that federal agencies assess the effects of their actions on farmland soils classified as prime or uni ue by the Natural esources onservation Service, U.S. Department of Agriculture. Prime or uni ue farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; uni ue farmland produces specialty crops such as fruits, vegetables, and nuts. There are no prime or uni ue farmlands associated within the park, and this impact topic was dismissed from further analysis.

L

NPS *anagement olicies* 200 state that the National Park Service will preserve, to the greatest e tent possible, the natural lightscapes of parks, including natural darkness. The agency strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety re uirements, shielding the lights when possible, and using minimal impact lighting techni ues. The actions proposed in the alternatives could result in new facilities, some of which could necessitate some night-time lighting. owever, the effects of this lighting would be localized and minimized by the mitigation techni ues described above. nly a small area would

C

None of the alternatives being considered would result in the e traction of resources from the park. Under all of the alternatives ecological principles would be applied to ensure that the park's natural resources were maintained and not impaired.

E C

The National Park Service would pursue sustainable practices whenever possible in all decisions regarding national park operations, facilities management, and development in rater ake National Park. henever possible, the Park Service would use energy conservation technologies and renewable energy sources. onse uently, the alternatives would negligibly affect energy consumption compared to current conditions.

L

There are no anticipated conflicts with local land use planning. The proposed management zones and creation of additional recreation and visitor service opportunities in the park as proposed under certain alternatives would not be inconsistent with local land use plans. Potential development of NPS facilities in local communities outside the park would conform with any local land use plans such as the *lamat o nt ompre ensive lan*. None of the alternatives would be e pected to induce changes in land use

outside the park, and there are no private in holdings within the park.

E

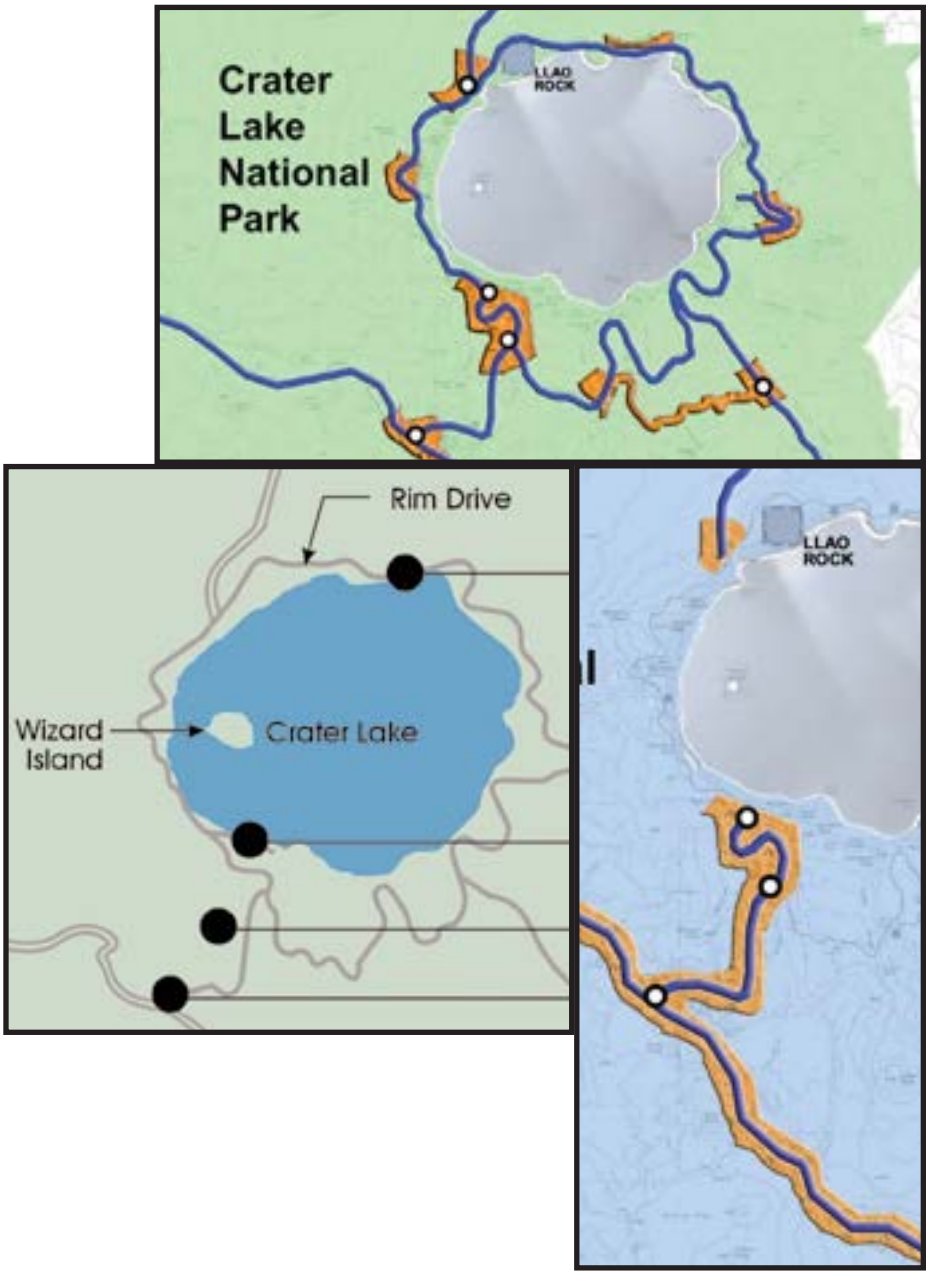
ecutive rder 2 , eneral Actions to Address nvironmental ustice in Minority Populations and ow-Income Populations, re uires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. No alternative would have health or environmental effects on minorities including American Indian tribes or low-income populations or communities as defined in the nvironmental Protection Agency's *nvironmental stice i ance* . Therefore, this impact topic has been dismissed as an impact topic in this document.

I T

The lands comprising rater ake National Park are not held in trust by the secretary of the interior for the benefit of Indians due to their status. Therefore, this topic was dismissed.

The alternatives place all lands within the 4 wilderness proposal within the backcountry zone and would allow only uses and development compatible with the protection of wilderness characteristics and values. All new development proposed under any of the alternatives would occur within the e clusions, and proposed wilderness lands would be avoided during construction activities. ackcountry opportunities for visitors to e perience solitude and unconfined recreation in the backcountry would remain unchanged. pportunities for primitive recreation, primarily hiking and backpacking, in the wilderness would remain. In most wilderness areas of the park, visitors would continue to find what they perceive as pristine natural conditions. or e ample, visitors would continue to find a landscape generally untrammeled by people with few signs of disturbance or alteration. elatively few visitors use the backcountry in the park, and although this number is e pected to increase, negligible impacts to backcountry visitor e periences are anticipated under alternative no-action alternative .

ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE



T E LTE TI ES

This *raft eneral anagement lan nvironmental Impact tatement* presents four alternatives, including the National Park Service's preferred alternative, for future management of rater ake National Park. Alternative , the no-action alternative, describes the continuation of current management and trends and serves as a basis for comparing the other alternatives. Alternative 2 is the National Park Service's preferred alternative. It would provide additional opportunities while providing for the research and protection of resources. Alternative 3 would allow visitors to e perience the entire range of natural and cultural resources significant and uni ue to the park through recreational opportunities and education. Alternative 4 would have a greater emphasis on resource preservation and restoration than the other alternatives.

The preferred alternative was developed following an initial assessment of the impacts of the preliminary alternatives. An evaluation process, called hoosing by Advantages A , was then used to evaluate and compare the alternatives and to develop a preliminary preferred alternative. As part of the A process, the planning team looked at comparative costs of the alternatives see appendi for these comparative costs .

CTIO S CO O TO LL LTE TI ES

All alternatives to be considered in the *eneral anagement lan* must be consistent with and contribute to sideboards within which all management actions must fall. These sideboards are the purpose and significance statements, along with the mission goal. All alternatives must also be within NPS legal mandates and park policies.

At rater ake National Park the lake and the surrounding environment led to the initial creation of the park. esearch and information since the legislation creating the park have highlighted the uni ue and scientific aspects of the lake. In addition to the beauty of its large size, blue color, and mountain setting, the lake holds the world record for clarity among lakes and has been the object of scientific study for more than a century due to its pristine waters, associated geothermal activities, and unusual a uatic organisms. The ongoing rater ake ong-Term imnological Program has indicated that the chemical and physical parameters measured in the lake are within their e pected range of variation.

All alternatives in this *eneral anage ment lan* would provide for resource protection and visitor use. The park would manage its ecosystems for the sustainability of the resources found in the park. Protection, preservation, and monitoring of the primary and most uni ue resource in the park, rater ake, would occur in all alternatives.

All alternatives in this general management plan discuss resource condition, the visitor e perience, and appropriate activities and facilities. Prior to this general management plan, the *rater a e ational ar isitor ervices lan* established the basis for a new concession contract. This new 0- year contract went into effect in 2003. The concession projects proposed in the *isitor ervices lan* are consistent with the alternatives. Any future commercial actions or operations would need to be

within the defined visitor e perience, level of activity, and facilities as defined in the preferred alternative.

E ELO E T OF T E LTE TI ES

efore the alternatives were developed, information on park resources, visitor use, and visitor preferences was gathered and analyzed. Information about the issues and scope of the project was solicited from the public, other agencies, special interest groups, and park staff through newsletters, meetings, and personal contacts. This information helped with developing the preliminary alternatives. The alternatives were further refined based on public comments on an alternatives newsletter.

ach of the alternatives support the park's purpose, significance, and mission; address issues; avoid unacceptable resource impacts; and respond to differing public desires and concerns.

Using the information described above, the planning team developed eight management zones for guiding preservation, use, understanding, and development of rater ake National Park and its resources. These zones form the basis of the alternatives and reflect the range of ideas proposed by the Park Service and public

E E T O ES

An important tool in planning and management is the establishment of management zones for various areas in the park. These zones identify how different areas could be managed to achieve a variety of resource conditions and visitor e periences. ach zone specifies a particular combination of resource, social, and management conditions see the following chart . Under the action alternatives, the National Park Service would take different actions in different zones concerning uses and facilities.

Summer and winter scenarios and maps follow each alternative description because the park landscape changes so dramatically from winter to summer. These scenarios help distinguish when visitor activities and access are possible and allowed.

T

O E		ESO CE CO ITIO O C CTE	ISTO E E IE CE	O I TE CTI ITIES O F CILITIES
T L E IT E O ES	C CO T Y	• Managed for wilderness character and values • Moderate level of management for resource protection and visitor safety • Minimal evidence of modern civilization • Subtle onsite controls and restrictions • esource modifications would harmonize with the natural environment. Tolerance for resource degradation in this zone would be very low	I • pportunities for solitude • ew other visitors • igh level of independence, challenge, adventure and application of outdoor skills • onger time commitment • ow tolerance for noise and visual intrusions • enerally re uires higher level of physical e ertion	• Primitive trails • Small designated campsites • Small facilities, including antennas • No motorized vehicles e cept to attain management objectives when determined necessary • If any, facilities in the zone would avoid sensitive resources
	F O T CO T Y	T • Managed predominately for natural values • Subtle site modifications to accommodate use that harmonizes with natural environment • Moderate level of management for resource protection Tolerance for resource degradation would be low to moderate	I • ommon to encounter other visitors • Some physical e ertion re uired • Short to moderate time commitment • Moderate tolerance for noise and visual intrusions	S • Trails, possibly paved • acilities for visitor comfort and convenience may include restrooms, trash cans, benches, tables, kiosks, signage or drinking fountains • icycling and other nonmotorized recreation

O E		ESO CE CO ITIO O C CTE	ISTO E E IE CE	O I TE CTI ITIES O F CILITIES
	L E C L E	• ighest level of resource protection • ow levels of management for access, resource protection and visitor safety would be appropriate in these areas • Any resource modifications would be minimal and would harmonize with the natural environment	F • Access would re uire a moderate to high level of challenge • isitors would access the resource as part of a guided boat tour • Intimacy with resources, learning, and access to a large portion of the lake would be key elements of this e perience • Probability of encountering other boats would be low, and there would be some opportunities for individual solitude	• oat touring with a guide would be the predominant activity • Swimming, fishing, and scuba diving are permitted. Any other activities would re uire park approval • omfort stations, boat dock and storage, and access trail • iking would be necessary to access the area
	ESE C L T	• Managed to allow natural processes to occur without disturbance or impacts from humans • Tolerance for resource degradation in this zone would be very low	O • isitors may or may not be allowed, depending on specific resource goals. • If allowed, visitation would be education-oriented and an NPS guide could be re uired	• esearch, observation, and other activities which would not impact the zone s specific objectives

O E	ESO CE CO ITIO O C CTE	ISTO E E IE CE	O I TE CTI ITIES O F CILITIES
C LT L E IT E O E	• vidence of management activity and resource preservation could be visible to visitors. • Setting would be predominantly historic • National register-listed or eligible properties would be managed to preserve their documented values. • istoric scene and the landscape would be managed to ma imize their integrity and to support visitor use • Some minor aspects of the natural and cultural landscape could be modified to protect resources and accommodate use	I • ich in architectural and cultural history • Interpretive and educational services and media would be greatest • pportunities to understand and appreciate resources • isitor activities would occur in both structured such as interpretive talks and unstructured ways self-guided tours and waysides • Probability of encountering other people and NPS staff would be high • pportunities for physical challenge would be low • Moderate intrusions on the natural soundscape by cars and other people	L • iewing rater ake, birdwatching, photography, walking, and picnicking • A range of interpretive, educational, and orientation programs would be provided, with orientation and interpretation of resources taking place mostly onsite • acilities could include visitor contact, restrooms, e hibits, and facilities related to park administration and operations • Trails and picnic areas
T S O T TIO O E	• Minimize impacts to resources • Minimize landscape and visual impacts • esources modified for essential visitor and park operational needs	T • isitor attractions would be convenient and easily accessible • isitors would have little need to e ert themselves, apply outdoor skills, or spend a long time in the area • Probability of encountering other visitors and NPS staff would be high	S • Paved roads, pullouts, overlooks, and associated short trails and picnic areas, parking areas and other facilities such as restrooms, picnic tables, kiosks, wayside e hibits that support visitor touring • Most facilities and some trails would be accessible in this area • oad realignment could occur within a road corridor measuring 200 feet from the centerline of the road

O E	ESO CE CO ITIO O C CTE	ISTO E E IE CE	O I TE CTI ITIES O F CILITIES
E ELO E O E	• Not in designated wilderness nor near sensitive resources • isitors and facilities would be intensively managed • Signs of human activity would be fairly obvious	C • pportunities for adventure would be relatively unimportant • Promotes social e periences • Probability of encountering other visitors or NPS staff would be high	• isitor centers, lodges, administrative offices, maintenance areas, and residences • Paved paths, roads, parking, and other walkways connecting facilities could be appropriate • ampground

LTE TI E O CTIO

The no-action alternative represents continuation of the current management direction and approach currently used at the park. This alternative is presented as a way of evaluating the proposed actions of the other three alternatives and is useful in understanding why the National Park Service or the public may believe that future changes are necessary.

ngoing and planned actions and projects in the park are included under projects that make up the cumulative impact scenario and are not included as part of this alternative. The impacts of these actions are analyzed as part of the cumulative impact analysis.

The e isting road access and circulation system within the park would continue. Two-way traffic and e isting pullouts along im Drive that provide scenic lake views would be maintained. Several pullouts that are heavily used would likely continue to have crowding problems during peak times and problems with newer, larger vehicles and s. rayback oad would remain unpaved and open to one-way traffic. During winter, private vehicular access would be maintained from the south and west on 2 through park head uarters and up to im illage. inter snowmobile and snowcoach access would continue along North unction to the rim. ther winter visitor activities in the park, including cross-country skiing and snow play on unplowed roads, would also continue. The Park Service would initiate a data collection and monitoring program to gather information on winter use and resource conditions to ensure long-term protection and sustainable use of park resources.

isting buildings and facilities in the park would remain. Preservation and maintenance of e isting historic structures would continue based on available staff and funding. Some historic structures would be adaptively used for visitor use and administrative functions. The superintendent's residence, a national historic landmark, would be rehabilitated for use as a science and learning center. Munson alley would continue to serve as the center of NPS administration, maintenance, and housing. It would also serve as the year-round visitor interpretation and orientation point. There would continue to be inade uate storage and workspace for park collections that meets NPS museum standards. Due to limited staffing, the cataloging backlog would continue to increase .

isting visitor recreational opportunities and interpretive programs in the park would continue. im illage would continue to function as a year-round operation with limited services in the winter. Seasonal interpretive activities would be provided at the rim. Mazama illage would be the primary overnight visitor use area in the summer. Development at leetwood would continue to provide access to rater ake and the commercial boat tours of the lake.

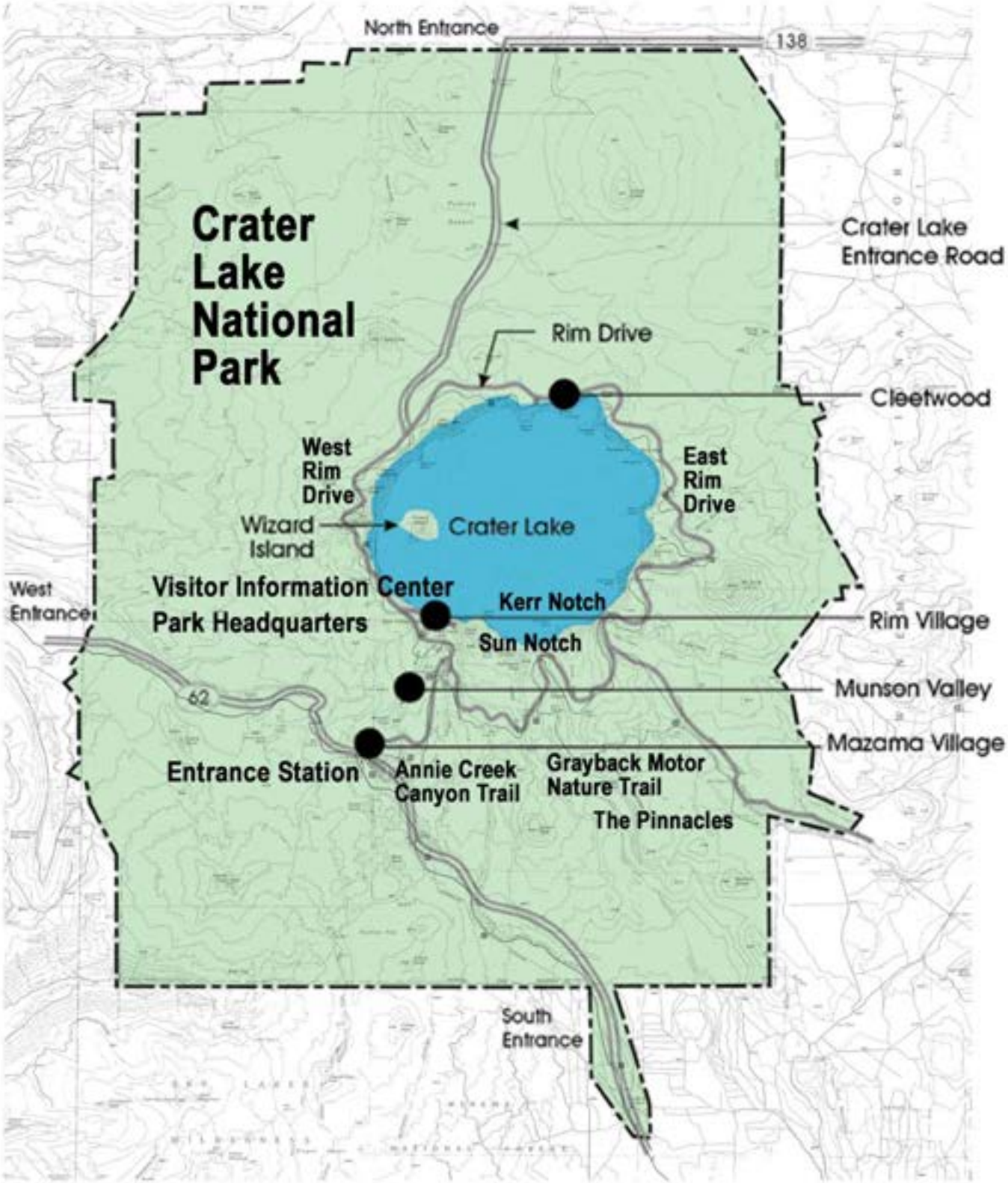
ultural resources in the national park would continue to be surveyed, inventoried, and evaluated under National egister of istoric Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staff and funding permitted.

Natural resource management protection, preservation, and restoration activities would also continue as staffing and funding allowed. The following protection

measures to protect the lake would also continue

- minimal development would be allowed within the caldera and lake drainage area
- operations would be managed to prevent contaminants from draining into the lake
- only essential visitor service would be provided at im illage
- the number and types of boats would be controlled
- a single access trail would be provided to the lake

The rater ake ong-term imnological Program would continue to research and monitor rater ake as well as determine periodic recommendations for resource preservation. Partnerships with academia and other outside research interests would continue in support of inventorying and monitoring of resources.



Legend

Park Boundary

0 1.5 3 6

Scale in Miles

Alternative 1

No Action

LTE TI E EFE E LTE TI E E SIS O I C E SE O O T ITIES

CO CE T EL TE CTIO S

Management of the park would emphasize increased opportunities for visitors in both recreational diversity and learning about park resources. Most visitor recreational opportunities would remain.

This alternative would e plore a greater diversity of uses along im Drive. New opportunities would allow visitors to directly e perience the primary resource of rater ake in ways other than driving. Any new uses would be nonmotorized and low impact and be limited to areas that would have space to accommodate them; new trails could be included. Additional opportunities may be provided by seasonal closures of sections of east im Drive to allow hiking and biking along im Drive. These closures would also provide opportunities to e perience the lake in a uieter setting without re uiring physical changes to the historic im Drive. losure of im Drive would be e perimental to determine how well this approach worked, and the road may be reopened if warranted. The rayback oad would no longer be used for motorized transportation. It would function as a nonpaved trail to accommodate hikers, bicyclists, and stock use. inter snowmobile and snowcoach access would remain along North unction to the rim. inter access in private vehicles to im illage would continue via plowing the road. The Park Service would initiate a data collection and monitoring program to gather information on winter use and resource conditions to ensure long-term protection and sustainable use of park resources.

ther current opportunities would still be available but with a greater depth and range of information. Some additional frontcountry opportunities would be in areas along the rim and along the roadways. Transitional e periences such as short trails and picnic areas would be provided between the developed areas or transportations corridors and the backcountry. Areas for enhanced interpretation, new research, and access to the backcountry would also be provided.

pportunities would be added for research, learning, and conveying of information to park visitors. The goal would be to facilitate research that was focused, purposeful, and significant to the resources of rater ake National Park or that would further basic natural, cultural, and social science understanding. A new science and learning center would form the core of the new research. The park would e pand and encourage partnerships with universities, scientists, and educational groups. esearch would provide information that is relative to and could be compared to larger regional and global conte ts, which would then form the basis of a more substantive interpretive and educational e perience for visitors.

The park, through its partnerships, would invite scientists, educators, students, and researchers to study mutually beneficial subjects at rater ake. oint conferences and seminars could be held on related topics with partnering universities or with other agencies or at the park's science and learning center. The information gathered would be disseminated throughout the park to rangers, interpretive staff, and visitors. Park staff would use new and e panding sources of information to manage resources and to analyze impacts to the resources and incorporate the newest research into their interpretive

talks. esearchers would interpret their research through field trips, seminars, and workshops. isitors would have the opportunity to participate in e tended workshops to support research and resource management. Special in-depth tours would be available to interest groups, such as bird groups or geology clubs. An underlying theme would be the environment, especially its connection beyond park boundaries. Methods for disseminating information about park resources would go beyond the current level. adio information would be provided for visitors in private cars, and interpreters would provide research-based programs for buses and tour boats. New technology would be used to provide information to virtual visitors who may never step within the boundary of the park.

The park's museum collections would be increased as a result of the e panded research activities. Pertinent park-related collection materials not currently owned or managed by the National Park Service would be ac uired and stored in onsite and offsite facilities that met professional and National Park Service museum standards. Thus, ade uate storage and workspace would be provided for improvement of curation, protection, and access to the collections, and staffing would be upgraded to reduce the cataloging backlog.

isting buildings and facilities in the park would remain, but some structures would be adaptively used for new functions and uses, including the rehabilitation of the superintendent's residence as a science and learning center. hile researchers, scientists, and artists may be invited and encouraged to visit and stay in the park, it is anticipated to be small numbers and relatively short term a few days to a month. Space would be provided within e isting facilities for educational groups classes, clubs, and tour groups. urrent and future needs for office and administrative space would be accommodated without additional construction. Administrative and other organizational functions, which were not by necessity park-based, would be moved to surrounding communities as demand for space within the park increased. ommunity- based employees would strengthen ties to nearby communities as well as provide greater choices of living situations for employees, thereby improving recruitment and retention. unctions could be dispersed to more than one community in the area, locating close to institutions partnering with the park to strengthen and solidify those relationships.

A greater emphasis on research, education, and interpretation would re uire an increase in staffing in those areas.

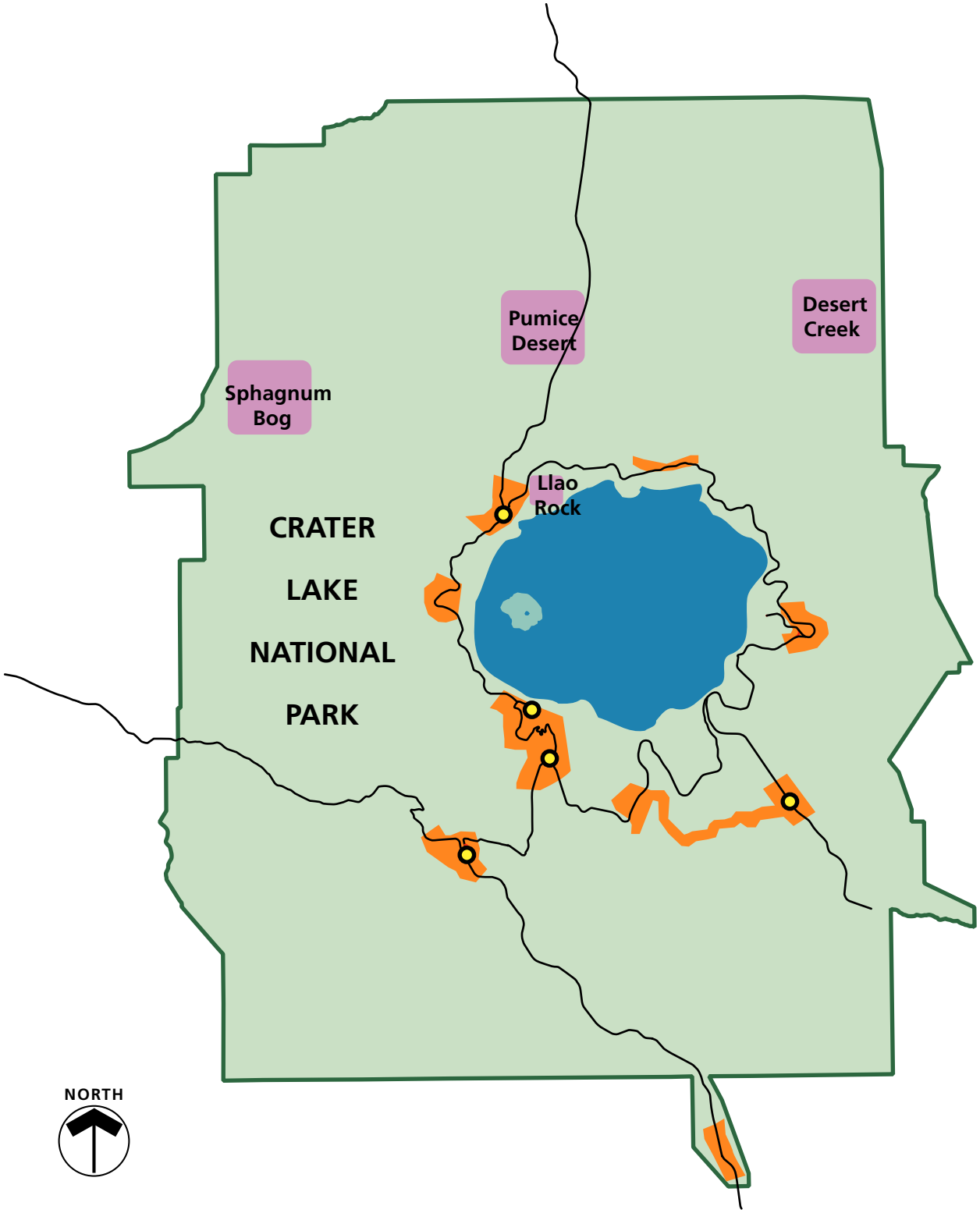
Parking and road congestion at the park would be managed by improving e isting pullouts, parking areas, and overlooks. Minor changes could include signing, marking parking spaces, and minor pavement alterations. If, in the future, crowding conditions developed, shuttles and other alternative transportation systems would be used to solve the problems, rather than e panding road and parking capacities. At that time, a feasibility analysis would determine whether the alternative transportation would be a concession, Park Service operated, or a service contract.

E E T O I

S

Most of the lands within the park would be managed under the backcountry management zone, which includes most lands contained in the 4 wilderness recommendation. This zone would preserve the park's pristine landscape and provide visitor opportunities for solitude and a primitive e perience. The research natural zone would be applied to the four research natural areas shown on the Alternative 2 Summer map in the park that posses uni ue habitats and e traordinary ecological values. This zone includes the remaining lands contained in the 4 wilderness recommendation not zoned as backcountry. rater ake would be zoned lake and caldera. Management would emphasize continued resource protection and the learning opportunities associated with this uni ue environment. The developed zone would include visitor and administrative facilities at im illage, Munson alley, Mazama illage, North unction, and ost reek. The transportation zone would include corridors along the park road system. The frontcountry zone would be in a number of areas along the im Drive and other park roadways to support e panded frontcountry opportunities. The rayback oad, which would become a nonpaved trail, would also be included in this zone.

In the winter, the backcountry zone would be e panded to include those portions of the park's road system and visitor facilities that would be closed in the winter.



Legend

- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Front Country
- Research
- Back Country (Summer)

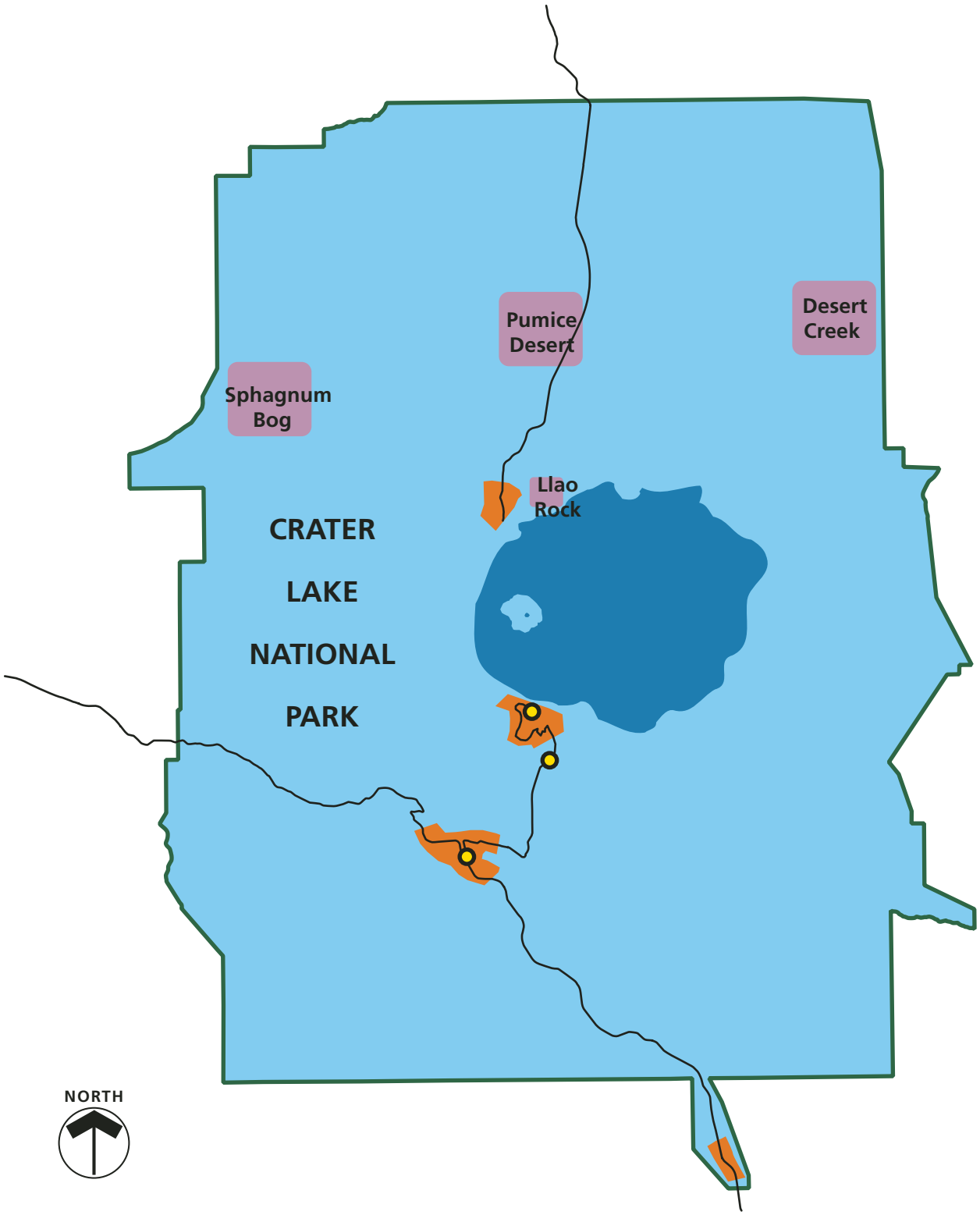
Alternative 2 - Preferred

Summer

Emphasis on Increased Visitor Opportunities

Crater Lake National Park

United States Department of the Interior ▪ National Park Service
DSC / MAR 04 / 106 / 20141



Legend

- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Front Country
- Research
- Back Country (Winter)

Alternative 2 - Preferred

Winter

Emphasis on Increased Visitor Opportunities

Crater Lake National Park

United States Department of the Interior ■ National Park Service
DSC / MAR 04 / 106 / 20142

LTE TI E E SIS O E OY E T OF T E T LE I O E T

CO CE T EL TE CTIO S

The emphasis of this alternative would be to allow visitors to e perience a greater range of natural and cultural resources significant and uni ue to the park through recreational opportunities and education. The park would be managed to provide a wider range of visitor e periences and would reach out to a greater diversity of visitor groups different ages, abilities, economic, and ethnic groups. ecreational opportunities would provide the base for interpretation and education. These programs would focus on minimizing impact, leaving no trace and ac uisition of skills for outdoor recreation. Programs would include a broader range to provide appropriate levels of education and interpretation for a variety of groups. Trails would be located to introduce visitors to a diverse range of ecosystems and terrain and to accommodate ability and e perience levels.

esources would be managed to permit recreation while protecting resources. The park would partner with a range of tourism, hospitality, and recreation clubs, along with private contractors and related agencies, to provide orientation and education. Some orientation and education efforts could occur offsite in local hotels and/or on tours to prepare visitors for and teach stewardship to groups before getting to the park. Partnering with commercial operators to provide interpretation on guided van tours would be encouraged. Interpretive programs for less physically fit visitors would be provided; possibly on tours or in community facilities. pportunities for recreation would be viewed in a regional conte t.

hile not all recreational activities are appropriate for, nor would be allowed within the boundaries, the park could serve as a source of information for regional recreational opportunities.

inter access would be improved by grooming along North unction oad to accommodate both snowmobiling and snowcoaches. Plowed vehicle access would continue from Mazama illage to im illage. Increases in numbers or impacts to resources or visitors could warrant changes in management actions.

In addition to reaching out to groups in nearby communities and those on tours, use of a shuttle bus system would be e plored. The shuttle would be integrated with recreational opportunities to create a wide range of visitor opportunities. The shuttle would also be integrated with the interpretive program to e pand the park e perience. or e ample, visitors could park at Mazama and take a shuttle to and around im Drive. The shuttle stops could be connected with the trail system, allowing visitors to have short stops, short hikes, or successively longer outings, as they chose. The road section between leetwood ove and err Notch could be one way for private vehicles. This could create an area where visitors could ride bikes in one lane with a high degree of safety.

Increases in visitor contact and contact with the resource would stimulate a shift toward increased interpretive and ranger services. Some interpretive functions could be based in nearby communities where partnerships with the tourism industry have established off site interpretive programs or e ample,

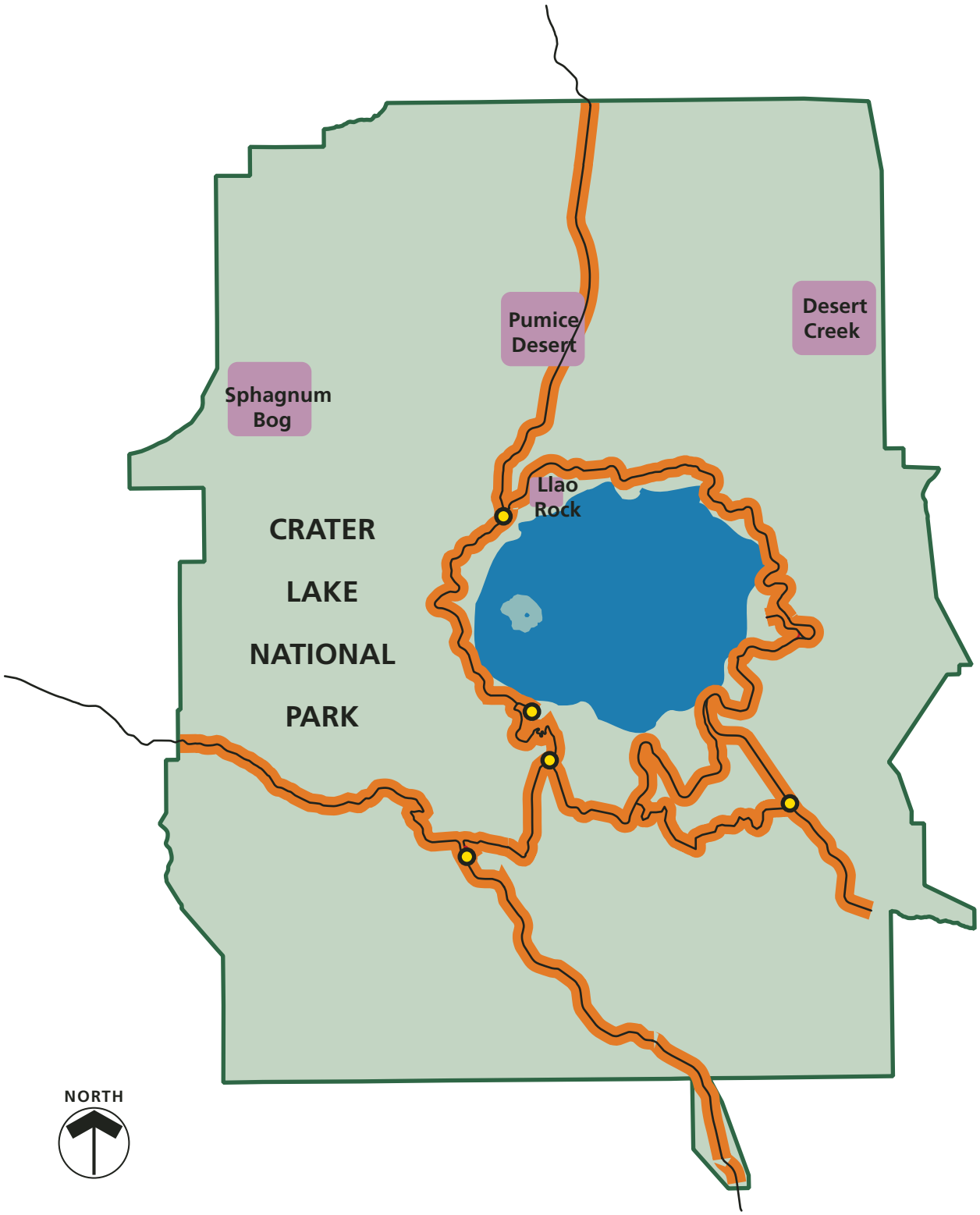
interpretive programs could be presented in local hotel meeting rooms, schools, or community buildings. Use of most current facilities would continue. Treatment of historic structures and cultural landscapes under this alternative would be similar to the no-action alternative, although such resources could be affected by construction of additional trails, installation of new interpretive signs and other media, and e panded tour programs.

Ade uate space would be provided for the curation and storage of the park's museum collections, which would be stored in an onsite facility that met professional and National Park Service museum standards. Although ade uate storage and workspace would be provided to improve curation and protection of the collections, and staffing would be upgraded to reduce the cataloging backlog, park-related collection materials not currently owned or managed by the National Park Service would generally not be ac uired. Access to the collections, both for NPS and non-NPS researchers, would be limited by availability of museum staff to assist in use of the collections.

E E T O I S

The zone allocation would be similar to alternative 2, with the following e ceptions. The rayback oad would be included in the transportation zone to accommodate continued motorized recreational opportunities. In addition, a corridor along the park's road system would be zoned frontcountry to allow for increased visitor opportunities, such as hiking and picnicking, in these corridors. Please see the Alternative 3 Summer map.

The zone allocation would be similar to alternative 2, where the backcountry zone would be e panded to include those portions of the park's road system and visitor facilities that would be closed in the winter. owever, the frontcountry zone would be applied along the entire 2 and south access road corridors to support increased winter use opportunities.



Legend

- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Front Country
- Research
- Back Country (Summer)

Alternative 3
Summer
Emphasis on Enjoyment of the Natural Environment

Crater Lake National Park

United States Department of the Interior ■ National Park Service
DSC / MAR 04 / 106 / 20143

Legend

- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Front Country
- Research
- Back Country (Winter)

Alternative 3
Winter
Emphasis on Enjoyment of the Natural Environment

Crater Lake National Park

United States Department of the Interior ■ National Park Service
DSC / MAR 04 / 106 / 20144

A T NATI S, IN UDIN T P DA T NATI

LTE TI E E SIS O ESE TIO ESTO TIO OF T L ESO CES

CO CE T EL TE CTIO S

Park management would be focused on the preservation of native species and natural processes and the restoration of biodiversity and natural processes where altered. The park would be an active partner in a regional conservation strategy that would include other agencies and environmental groups. Most park operations and visitor contact facilities could be outside the park and shared with other agencies and communities.

esource preservation and restoration would be the overriding consideration in the park. valuations, surveys, and monitoring would be conducted to ensure protection of park resources. Areas that have been altered would be restored to their natural conditions. esearch within the park would be nonmanipulative.

ultural resources would be preserved at the highest level possible. Preservation of historic fabric would be an overriding factor. Adaptive reuse, which permits additions or alterations to a historic structure to accommodate a compatible contemporary use, would occur only where it can be accomplished in accordance with the *ecretar of Interior s tan ar s an i elines for Arc eolog an istoric reservation*

The volume of the park's museum collections would be increased as a result of the e panded park research activities as well as ac uisition of pertinent park-related collection materials not currently owned or managed by the National Park Service. The museum collections would be stored in an offsite facility that met professional and National Park Service museum standards. Thus, provision for ade uate storage and workspace would be provided to improve curation, protection, and access to the collections, and staffing would be increased to reduce the cataloging backlog.

The visitor e perience would stress activities that have low environmental impact on and are harmonious with the resources. isting trails would be routed away from sensitive areas. The trail system would be reviewed and new trails may be provided e.g., low elevation nature trails . Some trails could be eliminated and the area rehabilitated. If not eligible for the National egister of istoric Places, the rayback oad would be closed and restored to natural conditions. isting services would continue, however, there would be more emphasis on self-guided and discovery education. nvironmental sensitivity would serve as a strong theme. Interpretive programs would focus on stewardship within the park and on the protection of resources, while incorporating this philosophy into everyday life.

ehicular transportation would be altered to reinforce the visitor e perience. The im oad would be closed between leetwood ove and err Notch . The area between the two sides would provide visitors with opportunities for hiking and solitude along the rim.

To reduce the human presence on the natural landscape, the trend would be toward fewer buildings and facilities. acilities that are not historic and not essential to park functions would be removed and the area rehabilitated. unctions that are by necessity park-based, such as maintenance and law

enforcement, would be retained in the park. The composition of the staff would increase in the areas of resource preservation, restoration, protection, and education activities.

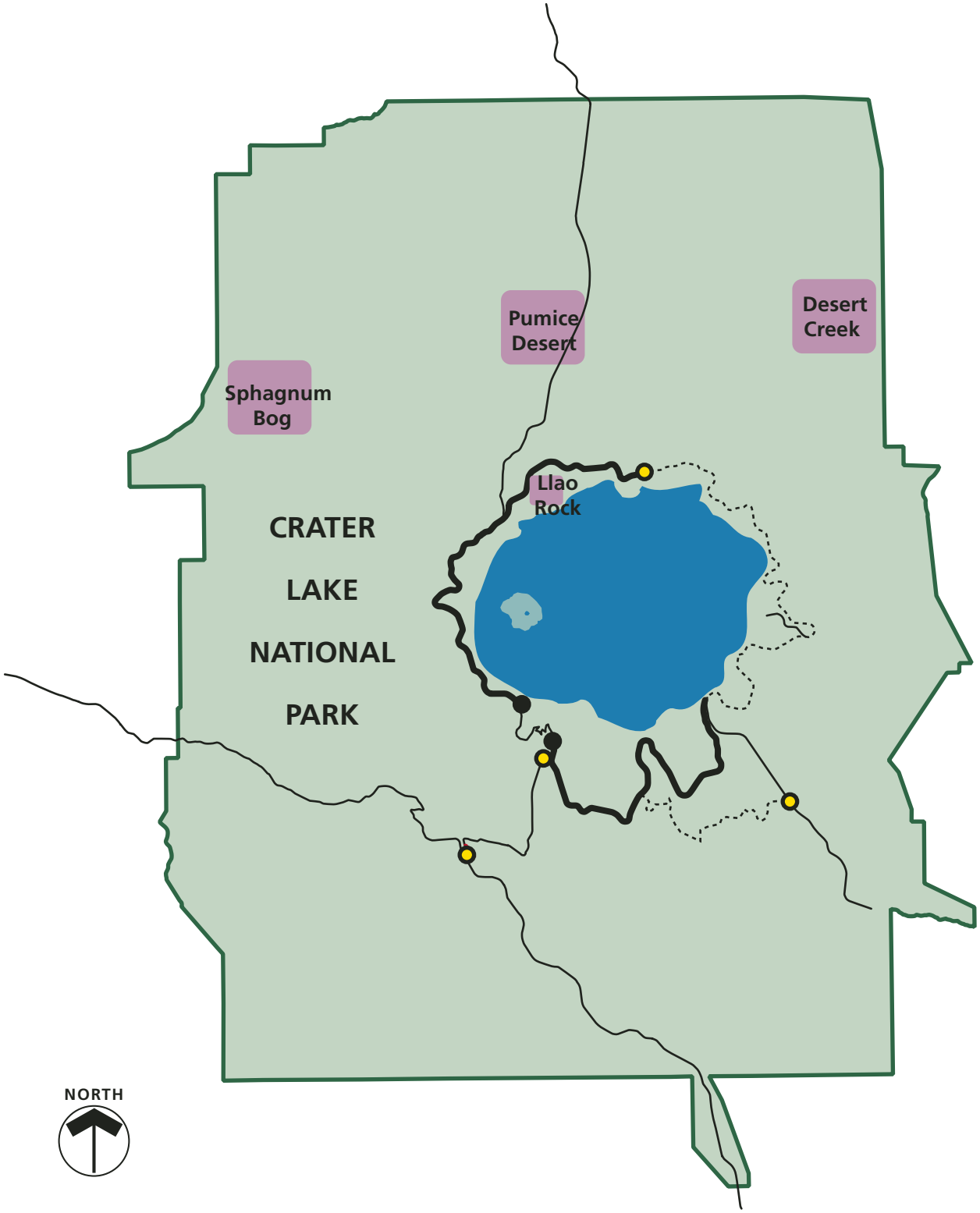
inter use of the park would change to allow natural processes to proceed with less disturbance than current management practices allows. inter plowing of the road to the rim would stop, e cept for spring opening. inter access to the rim would begin from the Mazama parking lot and would be via snowcoach. rooming of the road would probably be needed to ensure access by snowcoach. Snowmobiling along North unction oad would no longer be allowed.

E E T O I S

As under alternatives 2 and 3, most of the lands within the park would be managed under the backcountry management zone, which would include most lands contained in the 4 wilderness recommendation see the Alternative 4 Summer map . The rayback oad, which would be closed and restored if not eligible for the national register, would also be zoned backcountry. The research natural zone would be applied to the four areas in the park that posses uni ue habitats and e traordinary ecological values. This management zone would include the remaining lands contained in the 4 wilderness recommendation not zoned as backcountry. rater ake would be zoned lake and caldera.

To preserve cultural resources at a higher level, im Drive, im illage, and the Munson alley istoric District would be included in the cultural heritage zone. The developed zone would include visitor and administrative facilities at Munson alley, Mazama illage, and ost reek. The transportation zone would include corridors along the park road system, e cluding im Drive.

The backcountry zone would be e panded to include those portions of the park's road system and visitor facilities that would be closed in the winter, including the North unction road. The south access road, between 2 and the rim, would be zoned transportation but would restrict motorized access to snowcoach only.



Legend

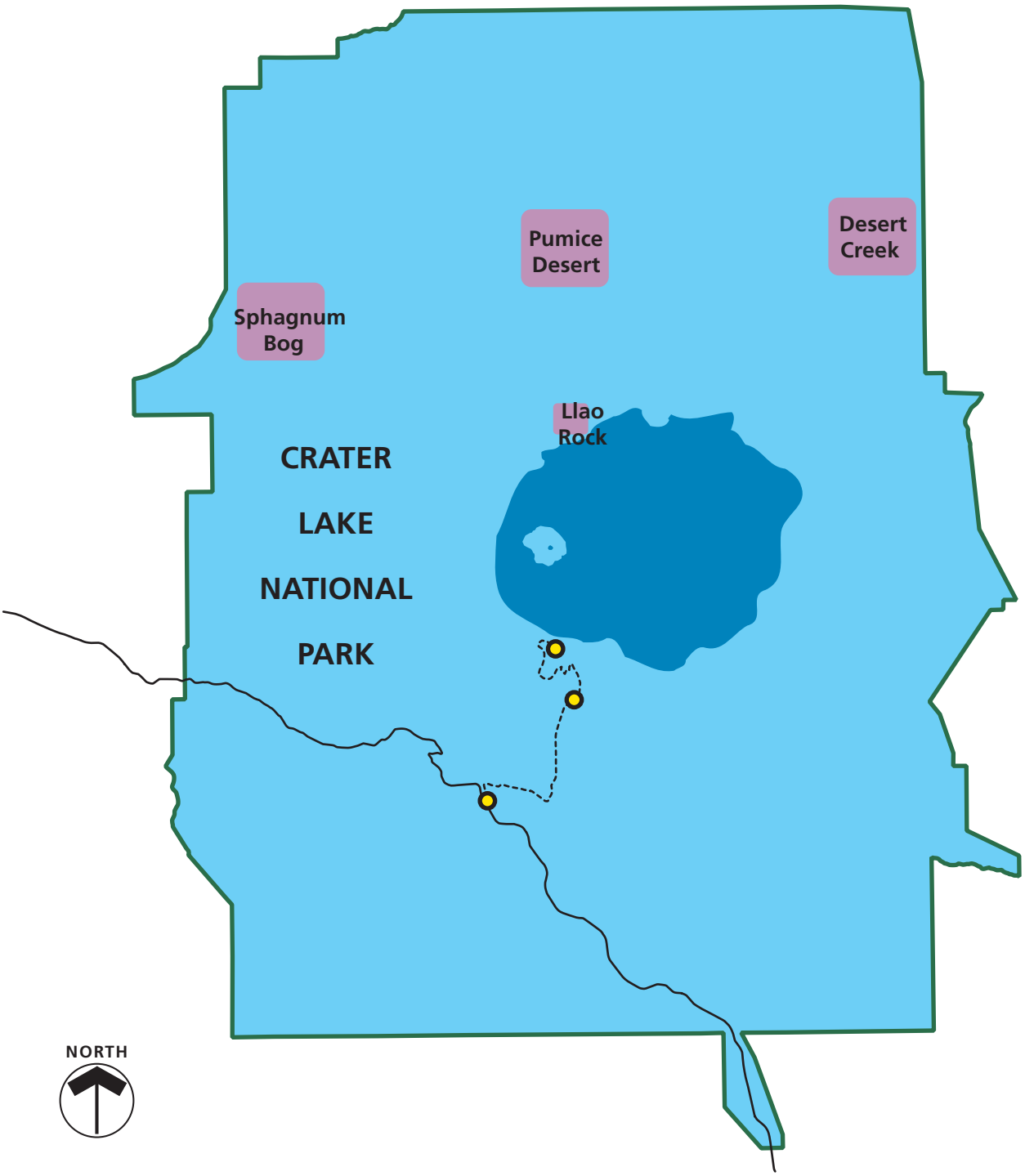
- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Cultural
- Cultural/Non Motorized
- Back Country (Summer)

Alternative 4
Summer
Emphasis on Preservation & Restoration of Natural Processes

Crater Lake National Park

United States Department of the Interior ■ National Park Service
DSC / MAR 04 / 106 / 20145

A T NATI S, IN UDIN T P DA T NATI



Legend

- Park Boundary
- Lake/Caldera
- Transportation
- Development
- Cultural/Non Motorized
- Back Country (Summer)

Alternative 4
Winter
Emphasis on Preservation & Restoration of Natural Processes

Crater Lake National Park

United States Department of the Interior ■ National Park Service
DSC / MAR 04 / 106 / 20146

ITI TI E S ES

The general management plan provides a management framework for the park.

ithin this broad conte t, the alternatives include the following practicable measures to minimize environmental harm. These measures are common to all alternatives and are based on the analysis of impacts of the alternatives presented in the nvironmental onse uences section. owever, additional appropriate mitigation would be identified as part of implementation planning and for individual construction projects to further minimize resource impacts.

C LT L ESO CES

Adverse impacts on properties listed in, or determined eligible for listing in, the National egister of istoric Places, would be avoided if possible. If adverse impacts could not be avoided, these impacts would be mitigated through a consultation process with all interested parties.

Mitigation includes the avoidance of adverse effects to cultural resources. Avoidance strategies may include the application of the *ecretar of t e Interior s tan ar s an i elines for Arc eolog an istoric reservation* Presented below is a description of typical mitigation measures.

herever possible, projects and facilities would be located in previously disturbed or e isting developed areas. acilities would be designed to avoid known or suspected archeological resources. If avoidance of archeological sites was not possible, mitigation strategies would be developed in consultation with all interested parties to recover information that makes sites eligible for inclusion in the National egister of istoric Places.

Archeologists would monitor ground-disturbing construction in areas where subsurface remains might be present. If previously unknown archeological resources were discovered during construction, work in the immediate vicinity of the discovery would be halted until the resources could be identified, evaluated, and documented and an appropriate mitigation strategy was developed, if necessary, in consultation with the regon State istoric Preservation ffice and any associated Indian tribes. In the unlikely event that human remains, funerary objects, or objects of cultural patrimony were discovered during construction, applicable provisions of the Native American raves Protection and epatriation Act would be implemented.

S

All project work relating to historic structures/buildings would be conducted in accordance with the guidelines and recommendations of the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for reserving e a ilitating estoring econstr cting istoric il ings*. Typical mitigation measures for historic structures/buildings include measures to avoid impacts, such as rehabilitation and adaptive reuse, designing new development to be compatible with surrounding historic properties, and screening new development from surrounding historic resources to minimize impacts on cultural landscapes and ethnographic resources.

C L

All project work relating to cultural landscapes would be conducted in accordance with the guidelines and recommendations of the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes* Typical mitigation measures for cultural landscapes include measures to avoid adverse impacts, such as designing new development to be compatible with surrounding historic properties and screening new development from surrounding cultural landscapes to minimize impacts on those landscapes.

E

The National Park Service would continue to consult with park associated American Indian tribes to develop appropriate strategies to mitigate impacts on ethnographic resources. Such strategies could include identification of and assistance in providing access to alternative resource gathering areas, continuing to provide access to traditional use or spiritual areas, and screening new development from traditional use areas to minimize impacts on ethnographic resources.

C

Mitigation measures related to museum collections consist of preventative conservation of a collection through proper storage, handling, and e hibit of objects as specified in the NPS *se m an oo* and NPS *irector s r er o 4 tan ar s for se m ollections anagement*.

T L ESO CES

New facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible.

New facilities would be built on soils that are suitable for development. Soil erosion would be minimized by limiting the time that soil is left e posed and by the use of various erosion control measures, such as erosion matting or silt fencing. nce work is completed, construction areas would be revegetated with native plants in a timely period

Interpretive displays and programs, ranger patrols, and regulations on visitor use would be used to minimize impacts caused by visitors.

Areas used by visitors e.g., trails would be monitored for signs of native vegetation disturbance. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used to control potential impacts on plants from trail erosion or social trailing.

A long-term data gathering and monitoring program to evaluate winter use and associated impacts would be implemented to ensure long-term protection of park resources. Management actions, such as restrictions on off-trail use, specific area closures, or limits on party sizes, would be taken as necessary to address impacts.

est management practices such as the use of silt fences, would be followed to ensure that construction related effects were

minimal and to prevent long-term impacts on water uality, wetland, and a uatic species.

uipment would be regularly inspected for leakage of petroleum and other chemicals.

evegetation plans would be developed for areas impacted by construction activities or other human disturbance and would include the use of native species, as well as salvaging of plant and topsoil.

The best available clean fuel technology for boat operations would be applied as it becomes available to the e tent feasible.

Dust abatement measures such as watering and revegetation of disturbed areas, as well as re uiring machinery to meet emission standards, would be employed.

acilities would be designed and sited to use previously disturbed sites and to avoid sensitive resources such as wetlands or whitebark pine stands to the e tent practicable. ther individual management actions to avoid or minimize the e tent and severity of impacts would also be implemented, such as localized area or seasonal use restrictions and confining or directing use through use of barriers, trails, and designated camping sites.

estoration of native vegetative communities would rely on natural regeneration and succession as well as active measures. The principle goal is to assist natural regeneration in reestablishing a sustainable native plant community.

Areas used by visitors would be monitored for signs of native vegetation disturbance and the introduction of non-native species. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used to control potential impacts from visitors along roads, trails, or social trailing.

A variety of techni ues would be employed to minimize or avoid impacts to native vegetation and wildlife, including visitor education programs, ranger patrols, and use restrictions permitted activities, locations, and times in areas with rare plants, vegetative communities, and/or sensitive wildlife populations and habitats.

etlands would be delineated by ualified NPS staff or certified wetland specialists and marked if construction of new facilities were to occur near them.

New developments would not be built in wetlands if feasible. If avoiding wetlands is not feasible, other actions would be taken to comply with ecutive rder 0 Protection of etlands , the lean ater Act, and Director's rder - etland Protection .

Special precautions would be taken to protect wetlands from damage caused by construction e uipment, erosion, siltation, and other activities with the potential to affect wetlands. onstruction materials would be kept in work areas, especially if the construction takes place near natural drainages.

T E S S

These species include those listed by the U.S. ish and ildlife as threatened or species of concern, and by the state of

ashington as threatened, endangered, or sensitive. Also included are species on the regon Natural eritage Program ist or 2.

Surveys would be conducted for special status species before implementing any action that might affect these species. acilities would be designed and sited to avoid or minimize adverse impacts. In consultation with the U.S. ish and ildlife Service and regon Department of Natural esources, measures would be taken to protect any sensitive species and their habitats.

Management practices to protect, restore, and monitor special status species would continue to be implemented, such as closing areas of the park near nest sites, restoring bull trout populations, and monitoring species status. The National Park Service would continue to work cooperatively with the U.S. ish and ildlife Service to identify and implement appropriate mitigation measures to protect nesting areas within the park.

here visitor use near rare plant populations would occur such as along the rim, and there is the likelihood of disturbance to plants, visitors would be alerted about the need to stay on trails. If necessary, populations would be protected by placement of signs and fencing. New developments, including trails, would be sited to avoid disturbing or providing access to rare plant populations.

S ST I LE ESI

rater ake National Park would strive 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 techni ues.

The National Park Service's *i ing rinciples of staina le esign* which provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook describes principles to be used in the design and management of visitor facilities that emphasize environmental sensitivity in construction, use of nonto ic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. rater ake National Park would adhere to these principles and especially strive to reduce energy costs, eliminate waste, and conserve energy resources by using energy efficient and cost effective technology whenever possible. nergy efficiency would also be incorporated into any decision-making process during the design or analysis and value engineering, including life cycle cost analysis, would be performed to e amine energy, environmental, and economic implications of proposed development. In addition, the park would encourage suppliers, permittees, and contractors to follow sustainable practices.

LTE TI ES O CTIO S CO SI E E
T ELI I TE F O F T E ST Y

Some comments received during public scoping suggested that the Park Service should consider increasing the number of roads in the park that are open to snowmobile use. urrently, snowmobiles are allowed along the North ntrance oad to North unction to accommodate winter lake-viewing access. ther park visitors also enjoy being able to cross-country ski and snowshoe along the rim without encountering motorized vehicles and to enjoy the solitude and uiet of winter lake viewing. panding snowmobile use along the im oad would result in conflicts with other users. Snowmobilers also have a substantial network of roads and trails available for recreational use outside of the park. onse uently, increasing the e tent of roads open to snowmobile use in the park was dropped from further consideration. The alternatives do e amine the possibility of improving access along the North ntrance road to accommodate both snowmobiling and snowcoaches.

I E TIFIC TIO OF T E EFE E LTE TI E

E L TIO

In order to develop the preferred alternative, all of the alternatives were evaluated. To minimize the influence of individual biases and opinions, the planning team used an objective analysis process called hoosing by Advantages A . This process, which has been used e tensively by government agencies and the private sector, evaluates different alternatives by identifying and comparing the relative advantages of each according to a set of criteria.

ne of the greatest strengths of the A system is its fundamental philosophy decisions must be anchored in relevant facts. or e ample, the uestion Is it more important to protect natural resources or cultural resources is unanchored, because it has no relevant facts on which to make a decision. ithout such facts, it is impossible to make a defensible decision.

The A process instead asks which alternative gives the greatest advantage. To answer this uestion, relevant facts were used to determine the advantages the alternatives provide. To ensure a logical and trackable process, the criteria used to evaluate the alternatives were derived from the impact topics in the IS. Alternatives were evaluated to see how well they would

- ma imize protection of cultural resources archeological resources, ethnographic resources, historic structures/buildings, cultural landscapes, and museum collections
- ma imize protection of natural resources biotic communities, threatened and endangered species, water resources and, air uality
- provide visitor e perience diversity of visitor activities, interpretation and orientation, visitor facilities and services and visitor e perience values
- limit effects on neighbors park neighbors; local, state, and land/resource managing agencies
- improve operational efficiency staffing, infrastructure, visitor facilities and services, and the role of commercial operators

Alternatives were rated on the attributes relating to each of the factors just listed. Then the advantages of the attributes were compared. Alternative 2 served as the basis for the preferred alternative. It was modified to add aspects of alternatives 3 that provided the greatest advantages

COSTS

osts are also a consideration in the selection of a preferred alternative. A MP provides a framework for proactive decision making, including decisions on visitor use, natural and cultural resource management, and park development. The plan prescribes resource conditions and visitor e periences that are to be achieved and maintained over time. Park development is considered in general needs rather than in specifics. or the purposes of cost estimating, general assumptions were made regarding amounts and sizes of development. These assumptions are then carried across to all alternatives so that comparable costs can be considered for each alternative.

osts identified in the MP are not intended to replace more detailed

consideration of needs, sizes, and amounts of future development. They should not be used as a basis for money re uests until further analysis has been completed. osts and items considered are shown in appendi .

omparative costs for the alternatives include both initial development costs and total life-cycle costs. Initial development costs are the estimated construction costs of the alternatives. Demolition, labor, and materials for buildings, roads, trails, e hibits, and parking are included.

stimated costs are based on costs for similar types of development in other parks from the Denver Service enter lass stimating uide. ife-cycle costs consider the costs of each alternative over a period of time. ife-cycle costs include the costs of operating buildings, the staffing re uired, maintenance, and replacement costs of alternative elements. The life-cycle costs below are for a 2 -year period

T S C C FY S C				
O	, 0 , 00	, 0 , 00	, 0 , 00	, 0 , 00
I C	3, 00,000	4, 43,000	3, 34,000	3, 4 ,000
T L C C	3, 00,000	2, 0 ,000	2 ,4 ,000	,4 ,000

E I O E T LLY EFE E LTE TI E

The environmentally preferable alternative is the alternative that will promote the national environmental policy as e pressed in section 0 of the National nvironmental Policy Act. In the National Park Service, the environmentally preferred alternative is identified by determining how each alternative would meet the criteria set forth in section 0 b and 2 considering any inconsistencies between the alternatives analyzed and other environmental laws and policies D 2, 2. . Section 0 states that it is the continuing responsibility of the ederal overnment to

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended conse uences
- preserve important historic, cultural, and natural aspects of our national heritage, and, wherever possible, maintain an environment that supports diversity and variety of individual choice
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
- enhance the uality of renewable resources and approach the ma imum attainable recycling of depletable resources. riteria was determined to be not applicable to this planning effort.

Taken as a whole, the preferred alternative alternative 2 would best satisfy the five remaining goals and is the environmentally preferred alternative. The preferred alternative would enhance the park's ability to carry out its mission through developmental and programmatic activities while limiting the amount of new environmental impacts from development and use. urrent visitor e periences would still be available but with a greater depth and range, and there would be increased opportunities for both recreational diversity and learning about park resources. uildings would be adaptively used for new functions thus ma imizing visitor opportunities without e panding the developed areas. Thus the preferred alternative would satisfy national goals 2, 3, 4, and to a high degree, ensuring for the long-term that visitors coming to the park see an esthetically and culturally pleasing area, providing a wide range of opportunities for visitors to learn and enjoy the area with minimal adverse impacts, while preserving and enhancing the understanding and preservation of the park's important natural and cultural resources and fulfilling the Park Service's responsibilities as trustee of the environment goals and 4 .

Alternative , the no-action alternative, would continue to preserve important cultural and natural resources goals and 4 , although it would not enhance the Park Service's ability to achieve these goals to

the same degree as under the preferred alternative. ducational, informational, and research opportunities would remain limited by lack of facilities and programs and would thus not fulfill goals 2, 3, 4, and as well as the preferred alternative.

Alternative 3 would provide the greatest range and fle ibility in visitor recreational opportunities, thus meeting goals 2, 3, 4, and . owever, alternative 3 would not have the emphasis on both research based educational opportunities and recreational diversity that the preferred alternative would offer. Providing these opportunities and associated new facilities would also result in more e tensive and dispersed resource impacts and a greater likelihood that resource management would become more reactive rather than proactive in addressing issues. Thus this alternative would not provide as great a degree of protection for resources goals and 4 compared to the preferred alternative.

Alternative 4 would provide the highest degree of protection for the park's natural and cultural resources, primarily by removing nonhistoric facilities and restoring areas to more natural conditions, e panding resource management programs and data collection, and generally preserving cultural resources at the highest level possible, with preservation of historic fabric a priority. Thus goals and 4 would be best served by this alternative. Although some visitor opportunities would be enhanced, particularly nonmotorized opportunities, overall there would be a narrower range and fewer opportunities for all visitors to fully enjoy the park and its resources goals 2, 3, 4, and compared to the other alternatives.

T LE S YOF LTE TI E CTIO S

		E I O	E E E	E
C	ontinuation of e isting management	ducation, research, and learning about park resources and the park's national and international conte t would be emphasized. ecreational opportunities would be increased.	isitors would e perience the park resources through recreational opportunities and education.	Park management would be focused on preservation and restoration of natural processes.
O	isting visitor recreational opportunities and interpretive programs in the park would continue.	Provide additional ways to e perience the park nonmotorized and low impact Additional frontcountry areas would provide enhanced interpretation and access to the backcountry. Additional interpretive e periences would offer a greater depth and range of information based on new research.	ecreational opportunities form the basis or interpretation and education. periences would provide a wider range of visitor e periences and reach out to a greater diversity of visitors. A broad range of programs would accommodate all ages and abilities and economic and ethnic groups.	nvironmental sensitivity would serve as the primary interpretive theme. More emphasis would be placed on self-guided and discovery education.
T	rayback oad would remain unpaved and open to one-way traffic	rayback oad would become a nonpaved trail to accommodate hikers and bicyclists. Sections of ast im Drive would be closed in the fall.	A shuttle around im illage would integrate with recreational opportunities and interpretive programs. An additional shuttle would connect Mazama and im illage. ast im Drive could be converted to one way.	im oad would be closed between leetwood ove and err Notch. The rayback oad would be restored to natural conditions, if not eligible for the National egister of istoric Places.

		E **I O**	**E E** **E**	**E**
	inter access to im illage in private vehicles would be on plowed road. inter snowmobile and snow coach access along North unction to the im would continue.	Same as no-action alternative	inter access for snowmobiles and snowcoaches would be enhanced by improved grooming.	inter access to im illage would be via snow-coach from Mazama illage. Snowmobile and snowcoach access along North unction to the im would not be allowed.
F	isting buildings and facilities would be adaptively used.	Same as no-action alternative.	Same as no-action alternative.	acilities that are not historic and not essential to park functions would be removed and the area rehabilitated.
	Park functions would remain in e isting facilities inside the park.	Administrative and other functions that are not park-based, would be moved to surrounding communities as needed.	Some interpretive functions would be based in sur-rounding communities.	Park-based functions would be retained in the park. ther functions would be moved to surrounding communities.
	Partnerships with academia and other outside research interests would continue.	Partnerships would be targeted toward universi-ties, scientists, and educa-tional groups.	Partnerships would be formed with the tourism and hospitality industry.	Partnerships would be developed with other agencies and environmental groups.
S	isting staff would remain.	Staffing increases in research, education and interpretation	Staffing increases in interpretation and ranger services.	Staffing increases would increase in resource preservation, restoration, protection and education.
	esearch activities would continue.	acilitate research that is focused, purposeful and significant to resources. New research would form the basis of a more substan-tive interpretive and educational e perience for visitors.	Same as no-action alternative	esearch would be non-manipulative.

T LE S Y CO ISO OF I CTS OF I LE E TI T E LTE TI ES

		E I O	E E E	E
C	There would be no adverse effects on archeological resources, cultural landscapes, ethnographic resources, or museum collections. ehabilitation of the superintendent's residence would result in adverse, minor, permanent impacts due to some loss of historic fabric. Adaptive use of the structure would ensure its long-term preservation and thus moderate, beneficial impact on the building.	Same as alternative , e cept for museum collections. Increased volume due to research and ac uisition along with improved storage and workspace would have beneficial, minor to moderate, long-term impacts on museum collections.	Same as alternative , e cept for museum collections. Improved storage would have minor to moderate benefits on the curation and protection of the collections.	There would be no adverse effect on archeological or ethnographic resources. verall, this alternative would have minor to moderate, long-term, beneficial impacts on historic structures/ buildings. Impacts to the superintendent's residence would be the same as alternative . Increased volume due to ac uisition, along with improved storage and workspace, would have beneficial, minor to moderate, long-term impacts on museum collections.
	The no-action alternative would have a minor, long-term, adverse impact on biotic communities, primarily in e isting areas of concentrated use and development. It would not adversely affect and could beneficially affect threatened or endangered species if additional	reater emphasis on research, partnering, and visitor education under this alternative would indirectly contribute to moderate long-term beneficial effects on biotic communities and could result in some adverse impacts on some threatened and endangered species. ong-term adverse	This alternative would result in some adverse impacts on some threatened and endangered species or biotic communities. ong-term adverse impacts from construction and use of new facilities would be localized and minor. Actions in this alternative would have	The greater emphasis on reduction in development restoration would contribute to improved resource conditions within the park, potentially having localized minor to more widespread moderate long-term beneficial effects on biotic communities. It would also have positive

		E I O	**E E E**	**E**
	protection measures were implemented. The water uality within the park would remain good; there would be a negligible adverse effect on water uality and uantity due to continuing maintenance activities and a slight increase in visitation, but there would be no impairment to water resources. This alternative would have a negligible, long-term adverse effect on air uality from a small increase in vehicle use within the park.	impacts from construction and use of new facilities would be localized and minor. Actions in this alternative would have negligible, long-term impacts on water uantity, water uality, and air uality.	negligible, long-term impacts on water uantity, water uality, and air uality.	effects on threatened and endangered species and their habitat.
E	isitor access, recreational opportunities, education, and visitor facilities and services would continue unchanged in this alternative. Potential increases in visitation over the life of the plan could have moderate, long-term impacts on the visitor's ability to access some areas of the park and enjoy scenic vistas in uiet, uncrowded conditions.	Increased visitor opportunities for recreation, educational, and interpretive programs, and access to park facilities and services would provide major beneficial impacts. Some visitors would e perience minor long-term adverse impacts due to the seasonal closure of im Drive. The same action would create major beneficial impacts for a small number of visitors to enjoy scenic views. The	Alternative 3 would have a major beneficial impact on the diversity of visitor e perience. There would be a reduction in the range of interpretive programs resulting in moderate long term adverse impacts to visitor enjoyment of interpretive programs. Access to park facilities and services would increase resulting in a major beneficial impact to visitors' enjoyment of park	Alternative 4 would have a moderate long-term adverse impact on the diversity of visitor opportunities, visitor accessibility, and on the ability of visitors to participate in educational and interpretive programs. There would be moderate long term adverse impacts on visitor enjoyment of park facilities and services.

		E I O	**E E E**	**E**
		cumulative actions in conjunction with the no-action alternative would result in an overall major, long-term, beneficial impact.	facilities. There would be minor, long term, adverse impacts to visitors' perceptions of sound-scapes. pportunities for scenic views would be e panded, resulting in minor, beneficial impacts to visitors.	
O	ontinuation of e isting management would result in minor, long-term impacts to park operations. econfiguration of im illage and adaptive reuse of historic structures would result in overall moderate, long-term beneficial cumulative impacts.	enefits of reconfiguration of im illage and adaptive reuse of historic structures would be the same as alternative . More functions would be accomplished outside the park, resulting in increased difficulties in communication and coordination. This would be offset by increased efficiencies in developing partnerships. verall, this alternative would result in moderate, beneficial impacts on park operations.	Same as alternative with small additional amounts of maintenance resulting from new frontcountry trails and closure of a portion of im Drive to two-way traffic.	Alternative 4 would result in moderate beneficial impacts to park operations.
C O	Alternative would have negligible impacts to concession operations. econfiguration of im illage, Mazama illage,	Same as Alternative .	Increased partnering with commercial operators would provide for increased opportunities for concession/commercial	inter access to the rim would be via snowcoach rather than private vehicles, resulting in a moderate, long-term adverse impact .

		E I O	**E E E**	**E**
	and leetwood ove would have moderate, long-term, beneficial, cumulative impacts.		operations, which would result in a moderate, long-term beneficial impact.	
S	The no-action alternative would continue to have a minor to moderate, short-term, beneficial impact on the socioeconomic climate of the gateway communities and regional area due to development projects. In the long term, the park would continue to be an important visitor attraction and contributor to the tourism industry in the three-county region.	Increased staff levels and moving some functions to nearby communities would have a moderate impact on the local economy and a negligible impact on the regional economy. ngoing and approved projects could result in moderate to major, short-term, beneficial impacts to individual firms and employees with some beneficial effects on the region and adjacent communities.	Same as alternative 2.	Moving some functions to nearby communities would have a moderate impact on the local economy and a negligible impact on the regional economy. ngoing and approved projects could result in moderate to major, short-term, beneficial impacts on individual firms and employees with some beneficial effects on the region and adjacent communities.

AFFECTED ENVIRONMENT

C LT L ESO CES

C EOLO IC L ESO CES

Prehistoric occupation of the rater ake area could date to more than 0,000 years ago, when e tensive mountain glaciers began to recede and hunters followed big game into present-day southeastern regon. The great eruption of Mount Mazama, more than , 00 years ago, left the area around it temporarily uninhabitable. Until uro-Americans arrived in the area, prehistoric populations from the eastern and western sides of the ascade Mountains intermittently used the area. Prehistoric uses included hunting, traveling to trade materials such as obsidian volcanic glass used to make some stone tools , gathering resources such as huckleberries, and practicing traditional spiritual activities in the higher elevations and around rater ake.

Archeological survey work has been conducted in the national park since the mid- 0s, and to date less than of the land area has been e amined. Until 200 only ten archeological sites in the park had been officially recorded. These consisted of one lithic scatter, five vision uest rock feature sites, three rock feature sites constructed within the last ten to thirty years, and one obsidian source area. omplementing these sites were isolated finds, most of which have been curated by park personnel. These isolates included two finds of obsidian raw materials chunks or nodule ; one isolated obsidian flake; a find of two crytocrystalline S flakes; obsidian tools or tool fragments; and three S tools. The tools are mainly hunting related implements, consisting of ten point and point fragments projectiles or knives , with one utilized flake, two bifaces, and one unifacially modified flake.

During 200 a new archeological resource property type grades and artifacts associated with railroad logging was discovered and recorded during a contracted survey of prospective burn units in the park's northeast uadrant. That area of the park was transferred from inema National orest to rater ake National Park in 0 and is part of a much larger logging railroad network developed during the 20s.

Although only a small portion of the park has been surveyed for archeological resources, an archeologist working for the National Park Service has made some predictions about where archeological sites are likely to occur. These sites include small base camps near water resources that are indicated by scatters of stone tools; rock features, such as cairns or piles, stacks, and rings on mountain peaks and high ridges probably associated with spiritual activities ; and hunting sites throughout the park that are indicated by isolated tools such as projectile points. To date, the archeological finds in the park conform to the hypotheses set forth in this predictive model.

None of the archeological sites in the park have been evaluated for listing in the National egister of istoric Places.

ET O IC ESO CES

Three Native American groups bordered the rater ake area on the west Molala, Upper Ump ua, and Takelma – while the lamath Tribes lived to the east. The lamath Tribes are a confederated tribe that includes people of lamath, Modoc, and ahooskin Paiute ancestry as well as descendents of the southern Molalas. Indian lifeways, before disruption by

uro-American contact, involved seasonal movements from lower-elevation winter villages to hunt and gather a variety of fish, plant, and animal resources throughout their territories. Use of the ascade ange, such as the present-day rater ake National Park area, included the establishment of warmer season camps to hunt animals, gather plant products such as huckleberries, and conduct traditional spiritual activities. aiding by various Native American groups also occurred in the park area.

Spirit uests took Indian people to isolated places that were believed to possess the powers of certain physical forces and animals that, when ac uired, brought success in activities such as gambling, romance, and healing. Those on uests retreated alone to particular places to fast, stay awake for long periods, undertake certain physical activities, and pray, while waiting for an answering vision. Some activities included running, stacking rocks into high piles, and swimming in water bodies thought to possess a sought-after power.

An ethnological overview of the park found rater ake to have been an important place of power and danger, highly regarded as a spirit uest site. This study referred to the lake as an important sacred place or landscape; such sites are called traditional cultural properties by cultural resource managers, although the boundaries of rater ake as a traditional cultural property have yet to be defined and documented. Parts of the lake are associated with mythical events and characters, and parts may be used for contemporary spirit uest rituals.

Members of the lamath Tribes have identified Mount Scott, rater ake, and uckleberry Mountain as important to traditional use activities. Some plant collection and harvesting probably occurred as a tribal use within park boundaries. Tribal staff have not yet formalized a re uest to further evaluate these sites as traditional cultural properties under National egister criteria, with the e ception of uckleberry Mountain. The re uest was transmitted to ogue iver National orest, although an ongoing traditional use/ethnographic study indicates tribal activities associated with uckleberry Mountain, the most significant harvesting area on the immediate western edge of present-day rater ake National Park, also included portions of the national park within the Union reek drainage. The ongoing traditional use/ethnographic study has several related components an appendi funded by the U.S. orest Service for interviews with tribal members on uckleberry Mountain, a separate study of anthropogenic fire regimes along the park's western boundary underwritten by the rater ake Natural istory Association, and a separately contracted e hibit plan focusing on traditional use through consulting with park-associated tribes.

The National Park Service will continue to consult with concerned Indian tribes to learn about possible traditional cultural property sites and how to avoid them. onsultation with the lamath Tribes will be e tended to include National Park Service activities affecting ceded lands areas of the park within the boundaries established by a treaty negotiated in 4 with the lamath and Modoc and a group of the Northern Paiutes that ceded vast territories to the federal government and created in compensation a reservation of appro imately . million acres. The treaty established the federally recognized lamath Tribes and delineated peak to

peak Thielson to Scott and Scott to Pelican utte boundaries that include most of the park's southeast uadrant.

ISTO IC ST CT ES IL I S

The documented historic structures/ buildings in rater ake National Park are primarily associated with development of the area as a national park. Most of the historic structures and districts in the park represent the activities of the National Park Service or the park's concessioners. These resources, which include some of the nation's best e amples of blending rustic architecture and other built features with a national park setting, are located at im illage and at park head uarters in Munson alley.

S L

. im illage istoric District was listed in the National egister of istoric Places in . The historic district, which includes seven contributing structures and other individual features that comprise a designed historic landscape in terms of form and function, are listed under riterion A for their association with the historical development of rater ake National Park and riterion for their association with site planning and design by NPS landscape architects and as outstanding e amples of rustic naturalistic design in the areas of architecture and landscape architecture. The structures and features were constructed over a -year period beginning in 2 .

The seven historic structures in im illage are rater ake odge, Sinnott Memorial uilding, Plaza omfort Station, omfort Station behind the afeteria omfort Station No. 4 , iser Studio, ommunity ouse, and a crenelated stone masonry wall that delineates the promenade and creates a parapet with three observaion bays of varying configurations that e tend into the caldera.

Individual features that are historically important to the rustic character of the designed landscape at im illage are listed by category. The features listed under the circulation category include roads and parking areas vehicular circulation and walkways and four hiking trails pedestrian circulation which begin at various points in the district. A promenade e tending 3,4 0 linear feet along the edge of the caldera is the primary pedestrian circulation system for im illage. The features listed under vegetation include planting concepts, which illustrate the philosophy behind all plantings in the district, and plant materials, which are the material forms of that philosophy. Small scale features include a variety of detail elements free standing boulders, stone benches, and masonry details, such as steps and curbing.

The rater ake superintendent's residence at Munson alley was designated a national historic landmark N in because it is an outstanding e ample of rustic architectural design. According to the National Park Service's *Arc itect re in t e ar s ational istoric an mar eme t* , the superintendent's residence remains an architectural gem a remnant of an ambitious development project that gave a strong architectural identity to a large park.

The Munson alley istoric District, which contains the park head uarters area, was listed in the National egister of istoric Places in under criteria A and . This nomination designated

buildings that contribute to the significance of the district. The structures, which represent prime e amples of rustic architecture, were built between 2 and 4 , although most were designed and constructed between 2 and 33. Subse uent landscape analyses have e panded on the significance of this district as a designed landscape and have established its historical significance under national register criteria A, for its association with significant persons , , and D for the significant information it has yielded or may be likely to yield .

The historic structures that contribute to the significance of the historic district include administrative building, ranger dorm building, mess hall, warehouse, machine shop, meat house, superintendent's residence national historic landmark , naturalist's house, si employees' residences, stone woodshed/ garage, hospital, transformer building, and comfort station.

L S The atchman ookout Station, located on an ,000-foot peak on the west side of rater ake, was listed in the National egister of istoric Places in under criteria A and . onstructed during 32 and designed as both a museum and fire lookout, the building is a uni ue e ample of rustic architecture as applied to a specialized building type. The National egister boundary e tends 200 feet away from the lookout and trailside museum in all directions.

S

C E

L

. In une 2003 the regon state historic preservation officer determined that im Drive was eligible for listing in the National egister of istoric Places. More specifics concerning contributing and non-contributing features will be available as work on the current im Drive cultural landscape report and a related corridor management plan for the olcanic egacy Scenic yway continues. Structures and features that contribute to im Drive's significance include the roadway's width and right-of-way, embankments, slopes, associated turnouts, and stone retaining and parapet walls. ontributing features included several trails astle rest ildflower, The atchman, Mount Scott, Sentinel Point, and Discovery Point already listed in the cultural landscape inventory.

F

In une 2003 the regon state historic preservation officer determined that the acksonville-to- ort lamath Military agon oad was eligible for listing in the National egister of istoric Places. The acksonville-to- ort lamath Military agon oad was constructed in to improve transportation routes in the region. An intermittent, but still ongoing, archeological survey is aimed at documenting features of the main route and spurs totaling some 22 miles in the national park. The main route of the military wagon road parallels State ighway 2 in places, but some segments veer some distance away from the highway, especially the spurs to im illage and Thousand Springs. Segments of the historic road are observable in or near various developed areas of the park,

including im illage, Munson alley, the abandoned Annie Spring campground, and Mazama illage. Potential character-defining features include roadbed segments, retaining or embankment walls, blazed trees, campsites, and artifacts associated with use of the road between and .

In une 2003 the regon state historic preservation officer informed the National Park Service that it appears likely that the Munson alley oad is eligible for listing in the National egister of istoric Places as a linear historic district and that bridges associated with the road should be evaluated as contributing or non-contributing within that district. The Munson alley oad e tends from Annie Spring to im illage and is the same road described as the South ntrance oad in this document.

C LT L L SC ES

To date the National Park Service has identified 3 cultural landscapes in rater ake National Park that are considered potentially eligible for listing in the National egister of istoric Places. These landscapes include what are referred to as parent landscapes and component landscapes

Parent/ omponent
Annie Spring
ost reek ampground
Munson alley/ astle rest
ildflower Trail, Munson alley
ridle Trail, Superintendent's
esidence
im Drive/ rayback oad, Mount
Scott Trail, The atchman
im illage/ arfield Peak Trails
izard Island

f these landscapes, Munson alley, im Drive, The atchman, astle rest ildflower Trail, and im illage have been documented with a preliminary statement of significance and an e isting conditions site plan. The superintendent's residence has been documented with a history narrative, full statement of significance, analysis and evaluation, and a consensus determination of eligibility by the regon state historic preservation officer. The aforementioned landscapes are in fair condition with the e ception of the astle rest ildflower Trail that is considered to be in good condition and the ost reek ampground and im illage landscapes which are considered to be in poor condition.

SE COLLECTIO S

The rater ake National Park museum collection consists of more than 200,000 objects divided into two major components the natural history collection and the cultural collection. The natural history collection consists of biological and geological objects, while the cultural collection consists of archeological, ethnological, historical, and archival objects.

ack of storage and workspace meeting National Park Service museum standards continues to frustrate efforts to improve care of and access to the collections. Due to limited staffing, the cataloging backlog continues to increase.

C

ollection and maintenance of documented natural history specimens and all associated records in the museum collection are designed to support the park's research/resource management and interpretive programs. The natural history

collection includes representative specimens of ta a found in the park, voucher specimens, and environmental monitoring samples. urrently, no paleontological resources have been identified. ence, the natural history collection is comprised of biological and geological specimens.

O The biological collections include Monera and Protista, plants and fungi, and animals. ollections made of the Monera and Protista, such as phytoplankton samples obtained in association with the park's lake research, comprise a significant part of the park's museum collection.

The Applegate ollection, the core of the park's vascular plant herbarium, represents the baseline for the park's vascular plants. In addition, the park's museum collection includes ecosystem collections of plants and fungi from research projects in the park's Sphagnum og and Pumice Desert areas and mosses collected during lake research projects since the 30s. The museum collection contains more than 2,000 herbarium sheets containing some ,000 botanical specimens.

The animal collection contains more than 220 specimens of mammals, representing appro imately 0 of the 2 mammal species known to occur in the park. The bird collection contains more than 2 specimens, representing appro imately 0 of the 2 bird species known to occur in the park. The reptile and amphibian collection contains more than 3 specimens, representing all of the 4 reptiles and amphibians known to occur in the park. The fish collection contains more than 0 specimens, representing all of the five fish species known to occur in the park. The insect and arachnid collection contains about , 00 insect and arachnid specimens representing appro imately 0 ta a. In addition, the museum collection contains some 340 zooplankton samples and about 40 specimens of other invertebrates.

O The park's museum collection stores some 420 geological specimens onsite. These consist of representative samples of rock types and formations e posed in the park. The U.S. eological Survey US S office in Menlo Park, alifornia, currently maintains the samples collected by and for Dr. harles acon's continuing research on the national park's geologic history. Due to the size of the collection, it will continue to be stored and used outside the park unless a more suitable facility is found. vidence indicates that other US S research has resulted in the collection of geological specimens, in particular collecting done by Dr. iroki amata of the ancouver, ashington, office. An estimated 2,000-plus, uncataloged geological specimens collected under previous collection permits are housed by US S in offsite repositories.

C C

The purpose of the cultural collection is to preserve a portion of the national park's cultural heritage and to increase knowledge and appreciation of that heritage through park research, e hibits, and interpretive programs. This collection contains materials from the disciplines of archeology, ethnology, and history which includes archival/documentary material, photographs and negatives, decorative and fine arts, and historic objects .

O The museum collection contains more than 20 archeological objects, all occasional finds,

which are primarily prehistoric and of mineral composition.

E O The museum collection contains several ethnographic objects baskets of unconfirmed tribal origin, possibly from the ogue iver region.

O Museum archival and manuscript collections include personal papers, organizational archives, assembled manuscript collections, resource management records, and subofficial records.

The national park's museum collection contains the assembled collection and personal papers of illiam ladstone Steel, generally considered to be the park's founder. This collection forms the core of the archival materials already in the museum collection. The rancis . ange ollection contains blueprints, tracings, drawings, sketches, correspondence, and photographs that highlight the rustic architecture at rater ake and other parks. hile the museum collection currently does not contain any organizational records, the archival collections of the rater ake Natural istory Association, rater ake ommunity lub, or Mazamas would be appropriate collections to consider for inclusion. The museum collection currently contains more than 00 photographs and negatives, some 0 lantern slides, and more than 00 booklets/handbills/reports compiled by various collectors. The museum collection also contains the theses of several individuals who completed research in the park. A large uantity of resource management records defined as vital non-official records generated by NPS employees, volunteers, contractors, cooperating associations, and other institutions to record information on cultural and natural resources for the purposes of reference or e hibition that should become part of the museum archives is stored elsewhere in the park as well as at offsite locations. The museum collection contains some subofficial records defined as copies or duplicates of documents that are useful for reference, administrative histories, interpretation, and research as a portion of the collections of past NPS employees. The museum collection contains 3 paintings and 20 framed photographs relating to historical figures and scenic views associated with the park's history. The museum collection contains some 30 historic objects, including Steel's signature stamp, wooden benches constructed by the ivilian onservation orps, conference table, and parts of the leetwood, the first boat used by e plorers on the lake.

LIST OF CL SSIFIE ST CT ES

The ist of lassified Structures S is a computerized, evaluated inventory of all historic and prehistoric structures having historical, architectural, or engineering significance in which the National Park Service has or plans to ac uire any legal interest. Included are structures that individually meet the criteria of the national register or are contributing resources of sites and districts that meet national register evaluation criteria. Also included are other structures moved, reconstructed, and commemorative structures as well as structures achieving significance within the last 0 years that are managed as cultural resources, because of management decisions that have been made pursuant to the planning process.

The following structures with the e ception of the Stone alls Around eservoir, arfield Peak, all of these

structures are individually listed in, or determined eligible for listing in, the national register or they are listed as contributing resources of national register-listed sites and districts are listed in the park's S. These include

im illage
Sinnott Memorial and Sinnott Memorial Pla ue
iser Studio
rater ake odge
Mather Memorial
Stone uard ail ehind odge
Stone urbs and Parapet alls
Stone Stairs in Auto Parking Area alls and Stairs to Sinnott Memorial
Plaza omfort Station
omfort Station behind the afeteria omfort Station No. 4
ommunity ouse

Munson alley
Administration uilding
anger Dormitory
mployee's esidences
Superintendent's esidence
Meat ouse
Mess all
oad ulvert ead alls
Trail ridge
ock alls
ady of The oods
Naturalist's esidence
omfort Station
Machine Shop
Transformer uilding
arage and oodshed
ospital
arehouse

im illage and Munson alley
Drinking ountains

im Drive
Stone etaining alls and Pull-outs

atchman Peak
atchman ire ookout
Stone Parapet alls and Trail
atchman ookout

arfield Peak
Stone alls Around eservoir

As a result of recently conducted condition assessments, possible additions to the S include the ineglass Patrol abin constructed in 34 and the Mount Scott ookout constructed in 2 . ecause the oodbye ridge constructed in 4 has been identified by personnel of the istoric American ngineering ecord as the earliest glue-lam bridge in the national park system, it is likely that this structure will be added to the S in the future.

T L ESO CES

IOTIC CO ITIES

The flora of rater ake National Park is typical of the vegetation found throughout the Southern ascades. enerally, the vegetation of the region reflects a mosaic of forested areas and open non-forested areas. limate, topography, soil development, and fire history all affect the composition and distribution of e isting plant communities. ecause of this natural species diversity, the park is regarded by many as a sanctuary for native forest and meadow communities, with limited introductions of non-native species. Appro imately 20,2 0 hectares 0,000 acres of late seral forest e ist throughout the park. ire suppression and historic logging activities have altered forest structure and species composition throughout portions of the park and surrounding areas.

rater ake National Park ranges in elevation from about 3, 00 feet in the southwest corner of the park to just over , 00 feet at Mount Scott. Most of the rim area is situated near the ,000 foot elevation level, although, the atchman and illman Peak areas on the western side of the lake are slightly in e cess of , 00 feet. egetation grades from a mi ed conifer forest dominated by ponderosa pine at the south entrance to high elevation mountain hemlock and whitebark pine forest at the rim. ther forest types include lodgepole pine, white fir, Douglas fir, and shasta red fir.

Ponderosa pine forest principally occurs on the southeastern edge and northeastern corner of the park, up to elevations of , 00 feet. The ponderosa pine is commonly associated with white fir and in the lower elevations with sugar pine and some Douglas fir. Along the margin of ponderosa pine communities, particularly at meadow edges where cold air tends to have a large ecological effect, lodgepole pine may be found in association with ponderosa pine. The white fir forest is concentrated in the southern portion of the Park and has a major component of ponderosa pine, as well as sugar pine.

istoric fires favored the survival of pines over white fir, and most of these stands, concentrated in the southern portion of the park, were historically dominated by ponderosa pine. The Douglas-fir type is not a common type in the park and occurs in relatively inaccessible areas in the southwestern portion of the Park, where it occurs in a comple mi ture with red fir, clima lodgepole, and white fir forests. Increasing in elevation, lodgepole pine forest type sometimes covers vast areas and is found from ,000- , 00 feet and is associated with shasta red fir and mountain hemlock.

limbing still higher, to the very rim of rater ake, and up the slopes of the surrounding peaks, the forest becomes more scattered and the trees smaller and more stunted. nly a few species endure the low temperature, high winds, and deep snows at these altitudes, the principal ones being mountain hemlock, and white-bark pine. Mountain hemlock stands are the highest elevation continuous forests at rater ake and become dominant at about 000 feet. hitebark pine e tends from about 00 ft to the top of Mt. Scott, the highest point in the park , 2 ft and is more an open woodland than a forest.

hitebark pine is uncommon in the park and is in decline throughout its range due to a non-native pathogen that causes white pine blister rust in five-needle pines. Information is being collected throughout the ascades ange that will help land managers to develop appropriate

management plans to provide for preservation of this species.

The abundant and diverse vegetation of the park constitutes a large block of relatively undisturbed habitat that supports various populations of native wildlife species. The park has significant populations of oosevelt elk, black tail deer, pronghorn, coyote, and porcupine. Periodic sightings of black bear, pine marten, weasel, and mountain lion are reported in the summer months. A variety of other small animal species are seen in the backcountry of the Park.

Soil properties are integral components of determining the species diversity, productivity, and regenerative capacity of vegetation types. Therefore soil resources are also included in this impact topic. The Natural esources onservation Service N S completed inventory and mapping of the soils of rater ake National Park in 200 . Twelve soil types that fall into si general categories were identified within the park. The categories are soils on uplands, formed in air-fall deposited ash and pumice; 2 soils on uplands, formed in air-fall deposited ash and pumice over glacial deposits; 3 soils in valleys, formed in ash flow deposits consisting of ash, pumice and cinders; 4 soils on cinder cones; soils on upland meadows with intermingled forests; and soils in seeps and on stream terraces. In general, the soils have a low water holding capacity and nutrient levels. These soil conditions combined with a short, relatively dry growing season make reestablishment of vegetation very difficult. Soils are in general not highly erodible.

T E TE E E E E SE SITI E S ECIES

A number of species may be affected by the alternatives that are considered threatened or endangered in regon, that inhabit, or for which potential habitat e ists in the park.

T T E S S

S	F S	S S	O L
anada lyn *n cana ensis*	Threatened	Threatened	
alifornia olverine *lo g lo l te s*	Species of oncern	Threatened	ist 2
Pacific isher *artes pennanti pacifica*	Species of oncern	Sensitive Species	ist 2
ald eagle *aliaeet s le cocep al s*	Threatened	Threatened	ist 2
Northern spotted owl *tri occi entalis ca rina*	Threatened	Threatened	ist
Peregrine falcon *alco peregrin s*		ndangered	ist 2
Northern oshawk *Accipiter gentilis*	Species of oncern	Sensitive Species	ist 2
ull Trout	Threatened	Sensitive Species	ist

S	F S	S S	O L
alvelin s confl ent s lamath iver and olumbia iver population segments			
rater ake rockcress *Ara is s ffr tescens* var. *ori ontalis*	Species of oncern	andidate	ist
Shasta arnica *Arnica vicosa*			ist 2
Pumice grapefern *otr c i m p micola*		Threatened	ist

L contains ta a that are endangered or threatened throughout their range or which are presumed e tinct. The status of ta a on this list represents its status throughout its range. **L** contains species that are threatened, endangered or possibly e tirpated from regon, but are stable or more common elsewhere.

C L

The park has over 34,000 acres of potential anada lyn habitat, consisting of a mosaic of old growth stands providing denning sites and lodgepole forest and meadow foraging habitat. Although the park has conducted three years of e tensive surveys for anada lyn in the park, none have been detected. There is evidence from the past suggesting that lyn previously foraged in the park. The Smithsonian Institute has a anada lyn pelt in its collection that dates back to . It was trapped along the ood iver just south of the park. yn sightings have been reported in the lamath asin as recent as 2000, but have not been verified with other substantive evidence such as photos, tracks, or hair.

C F

These species all have large home ranges, are capable of moving long distances, tend to avoid areas with human activity or development, and re uire relatively undisturbed habitats that are uncommon outside of the park. ecause of large-scale loss of natural habitats throughout both species' ranges, the high-elevation coniferous forests of rater ake that provide forage, denning, and travel habitat for these small carnivores park may be important to their distribution and abundance in regon. Although information on these species is limited, old forest structure, including large woody debris for denning both logs and snags , is an important structural characteristic of habitat for these animals. ngoing surveys initiated over the past years to determine if wolverines are present in the park have only detected pine martens, although a reliable siting of a wolverine was made in 2000 by a state biologist visiting the park.

E

There is a historic nest site on izard Island, and one currently active nest site along the shoreline of rater ake. Tour boats are restricted from areas on the lake that are near the nest site. The lamath asin has over 0 eagle nest sites and these birds forage in the park. ald eagles are observed in the Park from early spring, April or May, to fall, usually sometime in ctober. None are present during the winter months.

S O

This old-growth dependent species is at the eastern end of its range in rater ake National Park. There are appro imately 32,2 0 acres of lower elevation mi ed conifer forests that are considered suitable spotted owl habitat in the Park. This habitat is found in patches throughout the park, with higher density of patches and larger patch sizes southwest of a diagonal line connecting the northwest and southeast corners of the park. All currently known nest locations have been found within areas identified as potential habitat on the west and south sides of the park, but occasional sightings have been documented outside of these areas. The park conducts an annual monitoring program to assess the nesting and reproductive status of owl pairs living in the park. Since 2, owl pairs have been tracked.

This hawk is rare in rater ake National Park. ittle is known of the specific habitat re uirements for goshawks in rater ake National Park but the following general forest management activities are helpful in conserving habitat for Northern oshawks retain the upper canopy trees at known or suspected nest sites; 2 retain down wood and logs for prey, particularly s uirrel species; and 3 manage stands for understory removal and canopy retention.

F

Peregrines nest on cliffs, often near water and forage on a diverse avian prey base. Most habitat and reported activity in the park are from within the caldera. ne active peregrine nest site e ists within the caldera. Tour boats are restricted from areas on the lake that are near the nest site. There are many potential nest sites available on the cliffs in the caldera. The park conducts annual monitoring of falcon habitat, to determine relative abundance within the park.

T

The bull trout is the only known fish species native to rater ake National Park. ull trout are located only in Sun and ost reeks. Annie reek is also within this species range and is considered bull trout habitat, although bull trout do not currently occur there. The park has an active restoration program in progress. This program has resulted in elimination of non-native brook trout from Sun reek 2000. ollow-up surveys indicate that bull trout are responding well in the wake of their restoration in the creek.

S
C L

All three plants occur in isolated populations along the rim. Pumice grapefern is endemic to raw pumice-gravel substrates which are subject to harsh climatic e tremes intense sunlight, dessicating winds, cold nights, etc. . Shasta arnica occurs on dry talus slopes of the rim, often with an eastern aspect. rater ake rockcress is found in dry, rocky pumice and intermi ed with sparse, open, mountain hemlock forest.

TE ESO CES

rater ake is near the midpoint of the Sierra ascade Mountain province of the Pacific mountain system. The park is influenced by Pacific cean weather. The majority of storm fronts that pass the north Pacific oast each winter will result in moisture at rater ake. Summer

weather is generally mild with clear skies e cept for occasional thunderstorms, which seldom occur with enough force or volume to produce damaging rains or hail. Daytime summer high temperatures usually range from 0 to 0 2 and seldom e ceed 2 .4 . Appro imately 0 of the annual precipitation falls from November through March, with less than from une through August. During the dry months une, uly, and August an average of only five days will have precipitation greater than 0. 0 inch. Snow has fallen every month of the year. Annual snowfalls can total over 00 inches, and long-lasting snow depths of 00 to 200 inches accumulate.

aters from the slopes of Mt. Mazama flow into the lamath, ogue, and Umpua iver Systems. unoff channels are broad and poorly defined with rounded contours. This is because surface runoff in the Park from rain and melting snow is negligible. ater sinks almost immediately into the porous volcanic soils and glacial debris and is released only slowly through evaporation, plant use, seeps, and a few springs, some of which emerge within the caldera and flow directly into the lake.

Annie Spring, near the Mazama campground, has been the park's water supply since . ater is pumped from the spring to storage facilities at im illage, Mazama illage, and Munson alley. The source of water for Annie Spring is shallow groundwater originating as snowmelt; the spring's output is reduced during years when the winter snowpack is low entury est ngineering orporation 4 . The average low flow is about , ,000 gpd, or 2.4 cfs. Annie reek joins with the ood iver and eventually flows into the lamath iver system south of the park.

C L

rater ake lies inside the caldera of Mount Mazama and is surrounded by steep-walled cliffs that range from 00 to 2,000 feet above the lake's surface. At , 43 feet, it is the seventh deepest lake in the world and the deepest in the United States and noted for its e treme water clarity and deep blue color. The lake has no surface outflows and only minor surface groundwater inflows as springs along the caldera walls. The main source of water for the lake is precipitation, averaging 0 inches per year.

esults of the ongoing rater ake ong-Term imnological Program indicate that rater ake is a comple and dynamic system. No unidirectional change in the parameters monitored lake and spring water chemistry, nutrients, chlorophyll, primary productivity, phytoplankton, zooplankton, fish, water clarity, light penetration, and temperature has been detected. The monitoring program has also provided valuable data and recommendations on a number of other management issues including the e tent and significance of submerged hydrothermal resources relative to a proposed geothermal power development along the park boundary , boat and automobile petroleum hydrocarbon inputs to the lake, water uality of springs entering the lake below developed areas along the caldera rim, and the potential impact of introduced fishes.

I LITY

rater ake National Park is a class I air shed designated by the lean Air Act amendments. As a class I area, the park is subject to the most stringent regulations of any designation. esults from the park's air uality monitoring indicate that the

condition of the park's airshed is good, one of the cleanest airsheds in the U. S. There is relatively little impact from fine particulates and visibility is high. The elevation and geography make the park susceptible to winds, which tend to disperse particulates and other pollutants. The clean air allows spectacular views of the surrounding ascades and lamath asin. A major air uality concern is the pollutants from industrial areas introduced at rater ake in the form of acid rain and snow. These pollutants threaten both land and water resources, particularly the lake clarity.

ISITO S T E

O E IE

isitors primarily come to rater ake National Park to view the lake. As one of the first national parks, rater ake was the focus of early NPS publicity efforts to promote visitation. Since the establishment of the park in 02, rater ake has been accessible by automobile, and the park's road system has enabled visitors to drive to scenic destinations within the park, including Annie Spring, Munson alley, and parts of the crater rim. In the Park Service issued an automobile guide map to the park's features and successfully promoted visitation to the park in combination with travel on the Southern Pacific ailroad. arly 20th century visitation to the park was also encouraged by the National Parks ighway Association with the development of an automobile tour path linking western national parks in a route that became known as the Park ighway. In combination with road accessibility the park also offered visitor accommodations at campgrounds and concessioner lodging which supported travel to rater ake National Park.

isitation to rater ake National Park in the early years was restricted by the relative isolation of the park and the long snowy winters that limited the travel season to a few short months in the summer. Due to heavy snow loads, roads into the park were often not in condition for regular travel until uly or August and were fre uently closed by ctober. ith the development of im illage at the crater in the 20s, visitation to the park steadily increased. It was possible to drive completely around the lake beginning in and visitors did so while the im Drive was being built. In the winter of 3 3 , the highway into the park from Medford and lamath alls was kept open, making the park accessible to motorists the entire year for the first time in the park's history. In the late 30s, the im oad was e tended and improved enhancing the visitors' drive around the lake during the summer months. eather continues to play a role in determining the e tent of park visitation and shaping the visitor e perience.

The number of park visits continued to increase in the years before orld ar II, and visitor use of the park e panded to include winter snow play as well as summer season activities of nature-viewing, camping, hiking, and auto-touring. ollowing the war, as visitation to the park returned to pre-war numbers, improvements were made to the park's roads and to visitor accommodations. Annual park visitation reached a plateau of 00,000 in the early 0s but can fluctuate as much as 2 from year to year. isitation did reach a high near 00,000 in the 0s. In 2000 park visitation was 432, 3.

ased on a continuation of e isting trends in visitation, the number of visitors to the park is e pected to increase slightly over the long term and continue to fluctuate from year to year. It is anticipated that the bulk of visitation to the park will continue to occur in une, uly, and August and that most visits would continue to be less than four hours in duration. Any increase in annual visitation would likely result in more visitors during peak-use days within the peak period, and would continue to be concentrated between 0 00 A.M. and 4 00

P.M. Developed areas in the park, including Mazama illage, Munson alley, and im illage, would continue to be popular and could see increased use. Increases in annual visitation could also result in more visitor use on off-peak days. There could also be more visitation during the limited spring and fall shoulder seasons.

rater ake National Pak is a vital element in the regional recreational environment. Many high uality recreational opportunities are available in or near the park and many visitors stop at the park as part of a north-south automobile trip. Seventy-five percent of visitors polled in the 200 visitor survey said their primary reason for visiting the area was to visit rater ake National Park *rater a e ational ar isitor t* , 200 . The most common sources of information visitors use to plan a visit to rater ake National Park are travel guides and tour books as well as word of mouth. Three major rivers, the ogue, lamath, and Ump ua ivers, flow through the region. To the east of the park seven wildlife refuges are located in the lamath asin. The area offers summer and winter attractions, including cultural events, boating and rafting, hiking, fishing, hunting, and skiing. egional visitors tend to visit other areas for specific activities, but include rater ake in their itinerary.

O ISITS T E E T EY CO E

In the summer of 200 , the University of Idaho ooperative Park Studies Unit gathered demographic information about visitors to rater ake National Park. The survey was conducted August 3rd through the th in the summer of 200 . A total of visitor groups were contacted, 00 of these groups agreed to participate in the survey, and 4 4 uestionnaires were completed and returned for a response rate of 0. . The study found that a majority of visitors were from the states of regon, alifornia, and ashington. International visitors represent 3 of the total park visitation. Slightly over one-third 3 of international visitors to the park are from anada. The majority of visitors surveyed indicated that they were either first-time visitors to the park or had not visited the park within the past two to five years. ver half of all visitors to the park are older than 3 years of age. hildren, ages or younger, representing a fifth 20 of the visiting public. At least 0 of visitors to the park identified themselves as family groups, 4 as friends, and as being by themselves. ess than 2 of park visitors indicated that they were with a guided tour group.

The 200 survey found that rater ake National Park is principally a day use area. ighty-one percent of visitors to the park spend less than a day. or most visitors, the park is a stopover rather than a terminal destination area, however, of visitors indicated that rater ake National Park was the primary reason for their visit to the region and 3 of respondents stay at least one night outside the park. isitation to the park is highest between Memorial Day and abor Day. ifty-si percent of visitors spend four or more hours in the park and of all visits occur during a five-hour period in the middle of the day 0 00 A.M. to 3 00 P.M. . eather restricts access to the park during the winter months. im Drive is closed by snow usually from mid- ctober to early uly. ehicle access during the winter is maintained only from the south and west on oute 2 to im illage. oad closures, particularly between Munson alley and the rim, are common during the

winter and closures of up to three days are not unusual.

I E SITY OF EC E TIO L O O T ITIES

The 200 visitor survey profiled rater ake National Park visitors to better understand the e periences that visitors sought and attained. Information was gathered on what activities visitors engaged in, places visited, areas of the park visited, the use and importance of interpretation and park orientation, visitor facilities and services, and the importance of selected visitor e perience values.

The 200 survey found that the most common visitor activities are scenic driving 4 , viewing rater ake , and photography 3 . The least common activity is overnight backpacking. ther visitor activities included swimming, shopping, watching the orientation film at the visitor center, and hiking down to the lake at leetwood ove. The most common activity during the winter is cross-country skiing and the least common winter activity is snowshoeing. The most visited places in the park are im illage , est im Drive 0 , and im illage isitor enter . ast im Drive receives about 2 less use than the est im Drive. rayback Motor Nature Trail is the least used road. During the summer, there is moderate use of the short interpretive trails along the crater rim. iking, taking the boat tour, viewing the lake, picnicking, attending ranger-lead activities, nature study, and overnight backpacking were identified as less important, but desired activities for future visits to the park.

ISITO CCESS CI C L TIO

or the majority of visitors park roads mold and define the visitor e perience. The 200 visitor use survey indicates that rater ake National Park is primarily a day use area for appro imately of its annual visitors and that a stop at rater ake is a part of a north-south auto trip. Most visitors arrive at the park during the summer months and auto touring remains the predominant visitor activity. In the summer, automobile access to rater ake National Park from the north is via regon oute 3 , from the south the park is reached via regon oute 2 from Medford and lamath alls.

The park entrance at Annie Spring is miles from Medford and miles from lamath alls. The most used entrance into the park is the South ntrance oad from ighway 2, followed by the North ntrance from ighway . The most used e it from the park is the North ntrance to ighway . oth the south and north access roads lead to im Drive, a 33-mile road encircling the caldera rim. Numerous pullouts and/or parking areas along im Drive provide scenic lake views. The Pinnacles oad is a -mile spur road from im Drive that leads to an area of volcanic spires known as The Pinnacles. The 0-mile North ntrance road crosses the Pumice Desert. The 4-mile South ntrance road follows Annie reek anyon. The 3. -mile gravel surfaced rayback Drive diverges from ast im Drive at idae alls, crosses rayback idge, and connects with the Pinnacles oad at ost reek ampground.

im Drive at rater ake National Park is linked to other ascade Mountain volcanic areas by its designation by the regon Department of Transportation

as part of the olcanic egacy Scenic yway. The olcanic egacy Scenic yway joins the Shasta olcanic Scenic yway at ighway at the regon border. These scenic byways connect rater ake National Park with assen olcanic National Park in Shasta ounty, alifornia and e tend the volcano to volcano connection. In , the ederal ighway Administration named im Drive an All-American oad. im Drive receives one of the highest visitor uses in the park. During the summer months scenic pullouts and parking areas along im Drive can become crowded. Parking areas subject to crowding include leetwood, Phantom Ship verlook, and the atchman. ecause it is located at the only access point to the lakeshore, leetwood Trail parking is especially prone to congestion because boat tour participants and hikers compete for parking spaces. Parking at im illage and Mazama illage is also congested during the summer months.

Almost one-half of visitors 4 participating in the 200 survey said it was unlikely that they would be willing to ride a shuttle bus rather than drive their own vehicle on im Drive. orty-si percent of the visitors said they would be willing to ride a shuttle bus around im Drive if it included a park interpreter to inform them as they traveled around the lake. Although most visitors indicated they had not visited rater ake in the winter, said they would be willing to pay a modest fee to take an over-snow vehicle to the rim in winter.

isitors can access a minimally altered environment from frontcountry trails. The main access to the backcountry is from the Pacific rest Trail that bisects the park north to south. The park has appro imately 20 miles of frontcountry hiking trails, most of which are accessed from im Drive. rater rim trails ascend arfield Peak, the atchman, and Mount Scott, which is the highest point in the park. There is moderate use of these front-country trails. The one-mile leetwood Trail receives more use than other rim trails because it provides the only access to the lake. ther short interpretive trails are located near Mazama illage at odfrey len and Annie reek. A short trail at Munson alley, the astle rest Trail, introduces visitors to park flora. There is also a park head uarters historic walking tour available that involves a loop trail that goes past the ady of the oods. Twenty-si miles of the Pacific rest Trail traverse the park. The Pacific rest Trail and the ald rater oop trail are the only trails in the park that allows stock use.

ackcountry trails, most originally built in the 30s, crisscross the backcountry connecting with the Pacific rest Trail. The most commonly hiked trails in the park are leetwood ove ake Trail, atchman Peak, and astle rest ildflower Trail. The least hiked trail is the Munson alley istorical Trail. ther trails receiving moderate use are izard Island, im Trail, Sun Notch, and Pinnacles Trail NPS, rater ake NP isitor Study, 200 . Park facilities accessible to visitors with disabilities include road scenic pullouts, the visitor information building, and some frontcountry trails, primarily at im illage.

oat tours on the lake were initiated in 0 to provide an opportunity for visitors to better e perience the lake and caldera. The boat tour operation was moved from the im illage area to leetwood ove in 0 to take advantage of a less steep grade and a southern e posure for the access trail to the lake. The leetwood Trail is about a mile long and provides the only access to the lake. rom mid to late une

through September the concessioner offers hour commercial boat tours of the lake accompanied by an NPS interpreter. The boat tour begins at leetwood ove and circles the inside of the caldera with a stop at izard Island and a close-up look at a rock formation in the lake known as Phantom Ship. The concession-owned tour boats accommodate 4 passengers. There are seven boat tours a day. imited parking for the tours is available at the rim, however the leetwood parking lot is often congested and many visitors park along im Drive when spaces in the parking lot are unavailable.

Access to winter recreational opportunities at the rim, including cross-country skiing and snow play on unplowed roads, occurs during the winter months. The Munson alley oad to im illage is kept open during the winter months. im illage remains the focal point of visitor activity; however snow levels usually reduce lake-viewing opportunities. iewing the lake from im illage in winter can be difficult because of snow levels and accumulated snow from plowing operations. urrently a large metal pipe culvert is placed on supports at the edge of the rim to create a tunnel through the snow bank allowing visitors a view of the lake. In heavy snowfalls the viewing window on the culvert can become obstructed. Snowmobiles are permitted on the North ntrance road. A snowmobile study conducted at the park in estimated that about 3, 00 snowmobile visitors entered the park from November to April that year. The park issues incidental business permits for snowmobile and snow-cat tours along the North ntrance oad, as well as for cross-country skiing operations within the park.

E C TIO I TE ET TIO O IE T TIO

ducation/interpretation and orientation to the park are provided throughout the year, however most interpretative activities occur during the summer. During the summer passive interpretation is provided at observation areas along the rim. Sinnott Memorial, on a precipitous cliff overlooking the lake, provides visitors with unobstructed views of rater ake. Interpretive talks are presented here during the summer. Two visitor centers, one at Munson alley and one at im illage, provide orientation to the park during the summer. Interpretive activities also take place on boat tours operated by the park concessioner, and on ranger-led walks and talks on frontcountry trails and at a campground amphitheater.

ducation/interpretation and orientation opportunities at the park are reduced during the winter. inter orientation to the park is provided at the isitor Information uilding at Munson alley. The only visitor facility open year-round at im illage is the concessioner - operated cafeteria. Interpretative outreach programs are conducted throughout the year, with a primary focus during the winter when programs are made available to schools.

SO SC ES SCE IC LITY

The 200 visitor survey asked respondents to rate the importance of ten selected park attributes. Attributes that received a high importance rating include natural uiet / sounds of nature and solitude. ighty-nine percent of respondents to the 200 visitor survey indicated that natural uiet and sounds of nature were either very or e tremely important park attributes that

should be considered in preservation planning for rater ake National Park. Seventy-five percent of participants stated that solitude was either a very or an e tremely important park attribute. The predominant visitor activity at rater ake National Park is lake viewing. Ninety-four percent of respondents reporting sightseeing and scenic driving as very important activities during their visit. In addition, 3 of visitors indicated that sightseeing and scenic driving would be important parts of any future visits to the park.

pansion of parking at im illage has resulted in an e panse of asphalt and a concentration of visitors at the rim. During the summer pedestrians at im illage are constantly e posed to the sight, sound, and smell of vehicle traffic and must cross traffic lanes and parking areas to reach lake viewpoints and scattered facilities.

im Drive hugs the caldera rim for much of its length although there are uite a few stretches where a view of the lake is not possible from the road. Development of the im Drive and its associated overlooks and pullouts at The atchman, North unction, Steel ay, leetwood ove, rotto ove, Skell ead, loudcap verlook, ottage ocks, Sentinel Point, eflection Point, err Notch, Phantom Ship verlook, and Discovery Point has concentrated lake- viewing opportunities and trail access to a few areas. cellent opportunities to e perience natural soundscapes and scenic views are abundant in the backcountry, but a view of the lake is always shared with the sight and sounds of motor vehicle traffic.

O E TIO S

rater ake National Park is managed by a park superintendent head uartered at Munson alley. The superintendent is responsible for the day-to-day operations of the park and is supported by a concessions manager and secretary. Management of the park is organized into the following divisions administration, resource and visitor protection, resource preservation and research, maintenance, and interpretation / cultural resources. Staff in each division is stationed at park head uarters. Satellite offices are also maintained by some divisions at lamath alls and at Ashland.

Administrative functions, including payroll, budget and finance, procurement, contracting, property management, information technology services, and human resources, are accomplished at park head uarters. There are eight administrative personnel.

The esource and isitor Protection Division manages for resource protection and visitor safety and e perience. espon-sibilities include various visitor manage-ment and resource protection duties, including enforcing laws, resolving disputes, providing emergency medical services, fighting structural fires, managing visitor use in the park, building and main-taining trails, educating visitors about park resources, and performing search-and-rescue activities. Staff in this division also participate in resource management activities, including fire and wilderness management. There are 2 permanent resource and visitor protection staff employees. Another 3 seasonal employ-ees work for the division during the sum-mer months, and about 0 volunteers support the work of this division throughout the year.

The esource Preservation and esearch Division is responsible for preserving and managing the natural resources of the park and coordinating scientific research. They are responsible for resource inventory, monitoring and evaluation, impacts miti-gation, restoration, and wildlife manage-ment. acilities necessary to support resources management activities and programs include office and storage space, vehicle parking, and employee housing. ight permanent or term and appro i-mately 0 seasonal rater ake employees are currently assigned to the esource Preservation and esearch Division. Several of the natural resource manage-ment staff also work at offices in lamath alls and Ashland, regon.

Maintenan*ce* staff conducts preventive and corrective maintenance on park infra-structure and e uipment. Park infrastruc-ture includes water, wastewater treatment facilities, electric utilities, roads, parking, campgrounds, administrative and public buildings and structures within the park, and employee housing. All maintenance operations are based in Munson alley.

The Maintenance Division includes the following functions

- uildings and utilities function maintains structures, housing, campgrounds, and park utility infrastructure.
- oads function has responsibility for preventive and corrective maintenance on NPS administered roads. An impor-tant function of this branch is snow removal on park roads and responsi-bility for e uipment maintenance.

acilities that support the needs of the maintenance staff include e uipment and replacement parts storage, vehicle maintenance and repair shops, parts and supplies storage, warehouse facilities, boneyards, and office space. Appro imately 20 permanent and 20 seasonal employees are currently assigned to the acilities Management Division.

Interpretation and ultural esources Management staff facilitates connections between the public and park resources through programs, e hibits, written material, and the park's website. This staff also provides for the preservation and management of the park's cultural resources, including historic structures, cultural landscapes, museum and archives collection, and archeological sites.

Interpretive programs are presented in the park on a regular schedule during the summer months, and educational outreach programs are conducted throughout the year. Summer programs include ranger-led walks, talks, boat tours, and children's activities. Snowshoe walks are conducted for the public and school groups during the winter.

acilities associated with interpretive programs include two visitor centers, one public museum with interpretive e hibits, one building for hosting programs and e hibits, and one amphitheatre. ther facilities include the park library and the museum and archives collection. ne employee provides division management and is split between the disciplines of interpretation and education and cultural resources. Two full-time employees are currently assigned to interpretation and education, while the park historian and museum curator focus on cultural resource functions. Typically this division hires appro imately 2 seasonal interpretive employees. A seasonal archeologist is hired when project funding is available.

CO CESSIO O E TIO S

All concession facilities and services at rater ake National Park take place at im illage, Mazama illage, and leetwood and are operated by a private concessioner. The park's concessioner is anterra Parks and esorts. Snacks, meals, and gifts are sold daily in im illage. During the summer season at Mazama illage, camper supplies, gifts, and snacks are sold. The summer season concession operations is generally from mid-May through mid- ctober. Depending on snow conditions, the concessioner may open earlier in the spring or stay open later in the fall. Traditionally, the concessioner generates more than 0 of its total sales during the summer season. In the winter, most concessioner facilities are closed by heavy snow. Although the road to im

illage is maintained and plowed by the park, the low visitation and fre uent weather closures necessitate the reduction in the level of service at the rim. The cafeteria and gift shop, located in one multipurpose building, offer limited food and gift shop services, and also serve as the concessioner warehouse and storage facility. inter hours at the im illage cafeteria and gift shop are 0 00 A.M. to 4 30 P.M. snow conditions permitting. No concessioner-provided lodging is available in the park during the winter.

rater ake odge, located at the crater rim, offers summer season accommodation and dining from mid-May to late September or mid- ctober. The lodge has guestrooms and a -seat restaurant and bar. The concessioner employs appro imately 240 staff, many of whom are housed in an employee dormitory on the east side of im illage.

The concession operation at Mazama illage includes operation of the 2 3-site Mazama ampground and a camper services building providing a grocery and sundries store for camper supplies, coin-operated public showers and laundry, a commercial laundry, and limited snack food services. The store at Mazama illage is open from early une to mid- ctober. The camper services building serves as the concessioner's only laundry facility for the lodge and the concessioner-constructed 40-unit Mazama illage Motor Inn. ther concession-operated visitor services at Mazama illage include a gasoline station. ike im illage, Mazama illage is open only in the summer . odging at the motel is available from early une to mid- ctober.

leetwood is on the north shore of rater ake and is accessed from im Drive. It is about miles east of the North unction where im Drive intersects the North ntrance oad. leetwood includes a parking area, a nonpermanent ticket sales structure, and a portable restroom at the rim. A trail descends the side of the caldera to the lake. The concessioner offers commercial boat tours of the lake accompanied by NPS interpreters. The concessioner owns and operates three 4 -passenger boats from mid- to late une through mid-September. There are seven scheduled boat tours, plus one trip to izard Island for passenger pickup. During the winter months the boats and other e uipment are stored at docking facilities on izard Island.

I F ST CT E F CILITIES

rater ake National Park's ist of lassified Structures S includes 3 structures ranging from comfort stations to the rater ake odge. The S is an evaluated inventory of all historic and prehistoric structures that have historical, architectural and/or engineering significance within the park. Twelve listed structures are located at im illage. These include iser Studio uilding, Sinnott Memorial, omfort Station, alls and Stairs to Sinnott Memorial, Sinnott Pla ue, Stone urbs and Parapet alls, Stone uard ail behind odge, Mather Memorial Drinking ountains, and rater ake odge. Twenty-two of the listed structures are located in the Munson alley istoric District. These include the Administration uilding, anger Dormitory Steel Information enter , Mess all, arehouse, Machine Shop, Meat ouse, superintendent's residence, Naturalist's esidence, si employee residences, garage and woodshed, hospital, Transformer uilding, omfort Station, and ady of the oods. Also located in Munson alley is the main maintenance facility containing vehicle

repair and parking bays, shops, and e uipment storage. Permanent housing is located at Steel ircle near the Munson alley istoric District. There are seven duple housing structures representing a total of 4 residences along Steel ircle as well as a community building. Across the South ntrance oad from Steel ircle is a group of eight duple es with residential units built in the 0s and currently used primarily for seasonal housing known as Sleepy ollow. Structures located on or near im Drive include atchman ire ookout, Stone Parapet alls and Trail at atchman, and Stone etaining alls and Pull uts along im Drive.

Annie Spring, located near the Mazama campground, has supplied high- uality water to the park since the 0s. ater is pumped from the spring to storage facilities at im illage, Mazama illage and Munson alley. The park operates three water treatment facilities. Two are located under the bridge near the Annie Spring water intake and one is located at ost reek ampground. The two Annie Springs water treatment facilities serve Mazama illage, Munson alley, and im illage. The ost reek ampground water treatment facility serves only ost reek ampground. The park operates two sewage treatment systems. ne is south of Steel ircle and serves Park ead uarters and im illage. This system has four lagoons. The second sewage treatment system is located southeast of the Mazama Dormitory omple and serves all of Mazama illage. This system has three lagoons. There is a septic system near ost reek amp-ground to serve ost reek ampground.

rater ake National Park has appro i-mately 4 miles of roads. The road system within the park is generally in fair condition. The system has some safety and operational issues, including areas that are difficult to clear of snow. Seventy miles of primary roads, of which the circuit around the rim accounts for a little over 32 miles, comprise the bulk of the road system. Secondary and paved service roads in the park amount to about 4 miles. The primary roads in the park were designed and constructed to provide visitor access to the park's scenic features which are mostly concentrated along the rim of rater ake. In the winter snowplowing operations keep access to the rim open via regon oute 2 and the Munson alley road to the rim.

There are miles of maintained hiking trails in the park. f this total, trail miles are designated backcountry trails, including 33 miles of the Pacific rest Trail P T which bisects the park from north to south. The remaining 20 miles of maintained trails are front-country trails. In addition to the maintained trails, there are also 3 miles of unmaintained backcountry trails. Trails are only maintained during the summer months. In the winter, when im Drive is covered with snow, it is used for cross-country skiing and in effect becomes a designated winter-use trail.

SOCIOECO O IC E I O E T

I T O CTIO

rater ake National Park is located in southwest regon astride the ascade Mountain ange. This rectangular shaped park is completely bordered by state and national forests. ouge iver National orest abuts the park on the west and parts of the north and south sides. Ump ua National orest forms the middle third of the park's northern boundary. inema National orest borders the park on part of the north, almost all the east, and middle part of the south border. Sun Pass State orest on southeast completes the public forest encirclement. Sky akes ilderness part of the ouge iver and inema National orests is on the southern edge of the park and Mount Thielsen ilderness part of the Ump ua and inema National orests lies to the north.

Access to the park is via State oute 3 through the north entrance or by State oute 2 from the west or south. The road from the north entrance and the crater rim road are open only during the summer season due to heavy snows. ighway 2 is open year round. The Pacific rest National Scenic Trail runs north and south through the park with side trails leading to rater ake.

Most of the park is contained in west-central lamath ounty with small areas spilling over into Douglas and ackson ounties. The communities in these counties are closest to the park's boundaries and serve as gateways to the park, providing a variety of goods and services for visitors to the park. The park's location makes the three-county area the economic region under consideration for this planning effort. Any socioeconomic impacts from the action alternatives would have the most impact on these counties. Such impacts are marginalized farther from the park,

lamath alls is the county seat of lamath ounty and is about 0 miles south of the park via route 2 and US . Medford county seat of ackson ounty is about miles southwest of the park, traveling west and then southwest on route 2. isitors traveling north and then west about 00 miles on route 3 reach oseburg, also a county seat. These three cities are primary business, transportation, and service centers in their respective counties.

A number of smaller unincorporated communities eaver Marsh, Diamond ake, ort lamath, Prospect, and Union reek are much closer to the park. eaver Marsh is northeast of the park about miles from the north entrance. The store and gas station have been closed for over three years. ess that 0 people live in eaver Marsh. Diamond ake is a resort community about miles north of the north entrance. The resort structures and summer homes are within the Ump ua National orest on land leased from the U.S. orest Service. ear-round residents are estimated to be less that 20. ort lamath is appro imately si miles south of the park astride ighway 2. There is a store and gas station. The 0 permanent residents are joined by summer folks to increase the population to about 200. Prospect is 2 miles south of Union reek and about 20 miles from the park's

Mark, Steve. May 2003. -mail communication forwarded on May 2 , 2003. Most of the information in this paragraph represents his personal knowledge of the area surrounding the park.

west entrance. A high school, several churches, a gas station, a store, and three restaurants are found here. This is the largest of the local gateway communities; having a population estimated at between 200 and 2 0 persons. Union reek is also a resort and summer home community located within ogue iver National orest on leased federal land managed by the U.S. orest Service. The historic resort comple contains a store and there is also a restaurant nearby. Some government housing is found within this community. Appro imately 0 permanent residents live here.

The three counties in the affected region for socioeconomics are predominantly rural, with large areas in federal ownership as a national park and national forests managed by the U.S. orest Service . This three-county area had a combined population of more than 34 ,000 persons in the year 2000 table . The three county seats accounted for 02, 33 of these residents. The rest are scattered among many smaller communities. The population of the state of regon in 2000 was more than 3.4 million, which ranked it 2 th in the nation. The affected three-county area contains about 0. of the state's population. This area grew at a much lower rate . compared to 20.4 than the state as a whole during the 0s. nly ackson ounty, with an annual growth rate of 2.2 , led by Medford growing 34. over the decade, outpaced the state average . for growth. lamath and Douglas ounties had annual growth rates of only .0 and 0. .

T LE FFECTE E O L TIO FO CO TIES SELECTE TO S

ounties/ ities	0	2000	hange 0 to 2000	Annual rate of growth
Douglas ounty	4, 4	00,3	.	0.
oseburg	,032	20,0	.	.
ackson ounty	4 ,3	,2	23.	2.2
Medford	4 ,	3, 4	34.	3.0
lamath ounty	, 02	3,	0.	.0
lamath alls	, 3	,4 2	.	0.
Three- ounty egion	2 , 40	34 ,443	.	.
regon	2, 42,32	3,42 ,3	20.4	.

S S C

O I ST IES Y E I S

arnings are the sum of wage or salary income and the net income from self-employment. A person's earnings represent the amount of income received regularly before deductions for income ta es, social security, etc. In 200 , the most important industries for earnings in Douglas ounty were Manufacturing, ocal overnment, and ealth are and Social Assistance. These industries accounted for 44.2 of the total of .34 billion in earnings by county residents. arnings for lamath ounty were concentrated to a somewhat lesser degree 34.4 of the total of 0. billion in these same three industry sectors. ackson ounty had the most earnings at 2. 2 billion; which represented of all earnings in the three-county region. The largest sectors in ackson ounty were health care and social assistance, retail trade, and manufacturing. The regional total earnings were 4. billion. Douglas ounty contributed .34 billion or 2 and lamath ounty accounted for about , or 0. billion.

egionally, the top industry sectors were health care and social assistance 2. of the total , manufacturing 2.3 of the total , local government . of the total , and close behind is retail trade at .0 of the total . This region accounted for nearly .2 of regon's ,03 ,322,000 total earnings in 200 .

O I ST IES Y E LOY E T

The affected region provided nearly ,000 full- and part-time jobs in 200 . This figure represented about of the state total of 2. million jobs. etail trade, health care and social assistance, manufacturing, and local government were the sectors employing the most workers about 43 of the total in the region. etail trade accounted for the most positions in lamath and ackson ounties 2. and . of the total . etail trade was a close second in Douglas ounty providing ,3 jobs . of the total verses manufacturing's ,3 2.3 of the total . ver of the region's jobs were in ackson ounty; less than were in lamath ounty.

E LOY E T

regon had an unemployment rate in 0 that matched the national average unemployment rate of . see table . Unfortunately, each county had significantly higher unemployment rates. In fact, all three counties have had higher unemployment rates than the state and national averages for the selected years. The national average fell to 4.0 in 2000. owever the ne t year it rose to 4. .

Unemployment rose and fell for the three counties and regon during the 0s and continued this pattern in 2000 and 200 . In 200 the state average and that of ackson ounty both rose to .3 . Statewide, this unemployment rate represented about ,300 persons being out of work. or ackson ounty, out of a workforce of , 00, nearly , 00 people were looking for work but not finding suitable employment. Douglas and ackson ounties' unemployment figures rose to .0 almost 4,000 people and . nearly 2, 00 people . ith over 2,000 persons out of work, the regional unemployment rate for 200 was over . , significantly higher than the state or national averages.

T LE E LOY E T TES FO SELECTE YE S

Area	0	3		2000	200
Douglas ounty	0.2	.	.0	.	.0
ackson ounty	.	.	.	.3	.3
lamath ounty	.	0.	.4	.	.
regon	.	.3	4.	4.	.3
United States	.	.	.	4.0	4.

S L S

O E TY

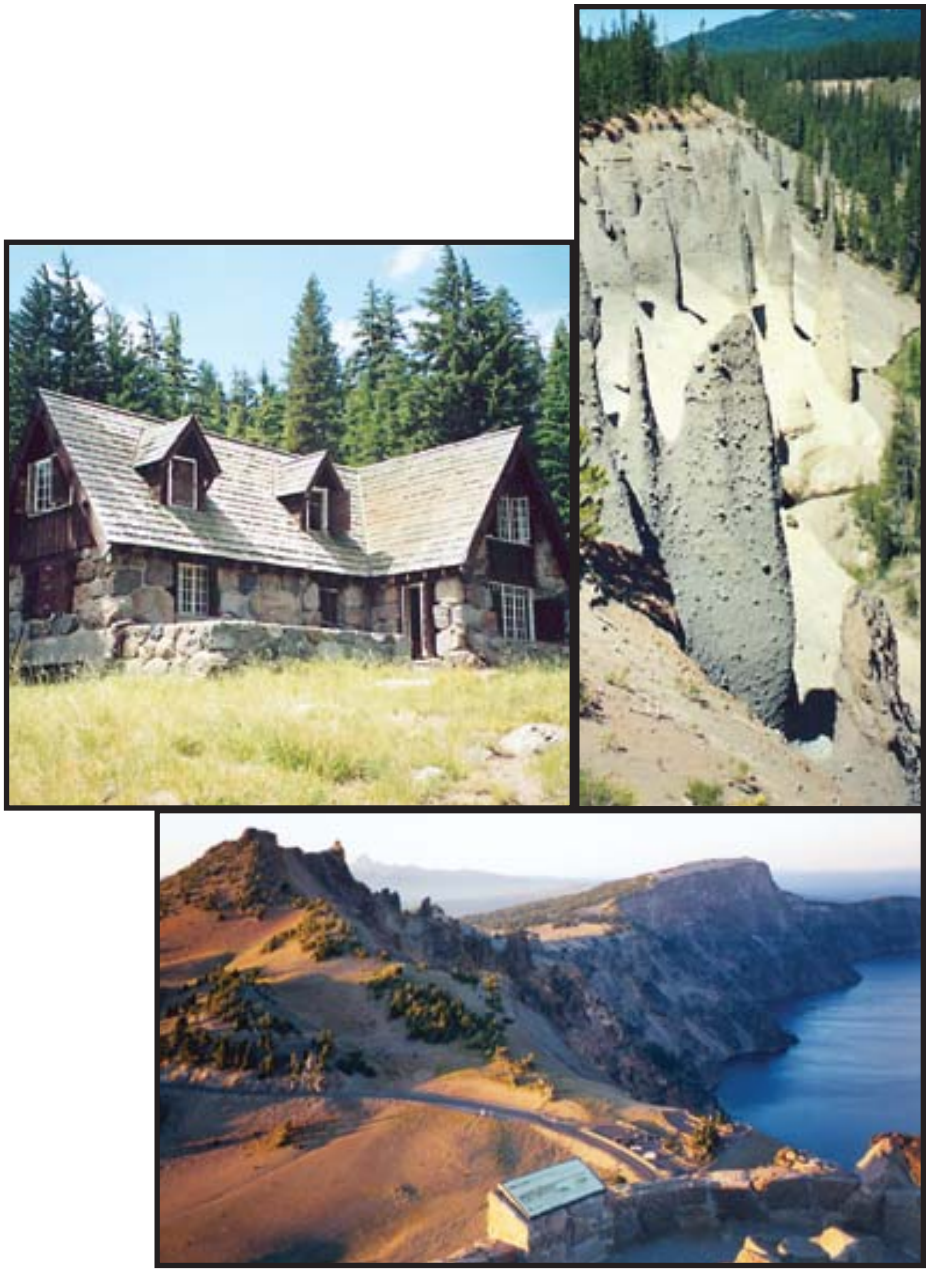
The national average for persons living in poverty in was 3. table . . This figure represented 3 . million people out of a population of 242.0 million. The poverty rate for regon was more than seven-tenths of a percentage point lower, at 2.4 . ver the years shown, the poverty rate for regon was consistently lower than the national rates. or the selected years, the poverty rates in the three counties were all higher than the state rates. or the most part the poverty rates in the counties were also higher than the national figures. In poverty in the three counties ranged from one person in eight in ackson ounty to one person in si in lamath ounty. These figures represented more than 4 , 00 people living in poverty in the region. This region accounted for more than 2. of all people living in poverty in regon in .

T LE E CE T OF EO LE LI I I O E TY

Area	3				
Douglas ounty	4.	.	.0	4.	3.
ackson ounty	3.2	4.4	4.	3.	2.
lamath ounty	.	.	.2	.	.
regon	2.4	3.2	2.	.	.
United States	3.	.	3.	3.3	2.4

ensus Data ensus stimates
Source US ensus ureau

ENVIRONMENTAL CONSEQUENCES



I T O CTIO

The National nvironmental Policy Act N PA mandates that environmental impact statements disclose the environmental effects of proposed federal actions. In this case, the proposed federal action would be the adoption of a general management plan for rater ake National Park. This nvironmental onse uences chapter analyzes the potential effects of four management alternatives on cultural resources, natural resources, the visitor e perience, park and concession operations, and the socioeconomic environment. y e amining the environmental conse uences of all alternatives on a relative basis, decisionmakers can decide which approach creates the most desirable combination of the greatest beneficial results with the fewest adverse effects on the park.

The alternatives provide broad management directions. ecause of the general nature of the alternatives, the potential conse uences of the alternatives are analyzed in similarly general terms using ualitative analyses. Thus, this environmental impact statement should be considered a programmatic analysis. onsistent with the National nvironmental Policy Act, the National Park Service would conduct additional environmental analyses with appropriate documentation before implementing site-specific actions.

The e isting conditions for all of the impact topics analyzed here were identified in the Affected nvironment chapter. All of the impact topics are assessed for each alternative. or each impact topic, there is a description of the positive beneficial and negative adverse effects of the alternative, a discussion of the cumulative effects when this project is considered in conjunction with other actions occurring in the region, and a brief conclusion.

The no-action alternative continue current management sets the baseline of e isting impacts continued into the future against which to compare impacts of action alternatives. The three action alternatives were then compared to the no-action alternative to identify the relative magnitude and intensity of potential impacts that would occur as a result of changes in park facilities and management. At the end of each alternative there is a brief discussion of unavoidable adverse impacts; irreversible and irretrievable commitments of resources; and the relationship of short-term uses of the environment and the maintenance and enhancement of long-term productivity. A brief summary of the impacts of each alternative was provided in table at the end of the Alternatives, Including the Preferred Alternative chapter.

ET O OLO Y FO LY I I CTS

The planning team based the impact analysis and the conclusions in this chapter largely on information provided by e perts in the National Park Service, park staff insights and professional judgments, and on the review of e isting literature and studies. The team's method of analyzing impacts is further e plained below. It is important to remember that it is assumed in the analyses that the mitigation measures described in the Alternatives, Including the Preferred Alternative chapter would be applied to minimize or avoid impacts. If these measures were not applied, the potential for resource impacts and the magnitude of those impacts would increase over those described here.

The environmental conse uences for each impact topic were defined based on impact type, intensity, conte t, and duration. umulative effects also were identified, but are discussed later in this section.

ffects can be either *a verse* or *eneficial* for the topic being analyzed and are referred to as impact type. The effects also can be *irect* or *in irect*. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable.

Impact *intensit* refers to the degree or magnitude to which a resource would be positively or negatively affected. ach impact was identified as negligible, minor, moderate, or major in conformance with the criteria for these classifications provided below by impact topic. ecause this is a programmatic document, the intensities were e pressed ualitatively.

onte t refers to the setting or area within which an impact would occur, such as the affected region or locality. In this document most impacts are either localized site-specific or parkwide. umulative impacts are either parkwide or regional e.g., biotic community impacts .

Impact *ration* refers to how long an impact would last. The planning horizon for this general management plan is appro imately 20 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts

ort term The impact would be temporary in nature, lasting a year or less, such as impacts associated with construction

ong term The impact would last more than one year and could be permanent in nature, such as the loss of soil due to the construction of a new facility

I CTS TO C LT L ESO CES SECTIO OF T E TIO L ISTO IC ESE TIO CT

In this environmental impact statement, impacts to archeological and ethnographic resources, historic structures/buildings, cultural landscapes, and museum collections are described in terms of type, conte t, duration, and intensity which is consistent with the regulations of the that implement the provisions of the National nvironmental Policy Act. These impact analyses are intended, however, to comply with the re uirements of both N PA and Section 0 of the National istoric Preservation Act N PA . In

accordance with the Advisory ouncil on istoric Preservation's A P regulations implementing Section 0 of the N PA 3 Part 00, *rotection of istoric roperties* , impacts were identified and evaluated by determining the area of potential effects; 2 identifying cultural resources present in the area of potential effects that are either listed in or determined eligible for listing in the National egister of istoric Places N P ; 3 applying the criteria of adverse effect to affected cultural resources either listed in or determined eligible for listing in the national register; and 4 considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory ouncil's regulations a determination of either adverse effect or no adverse effect must also be made for affected national register-listed or determined eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that ualifies it for inclusion in the national register, e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by actions of an alternative that would occur later in time, be farther removed in distance or be cumulative 3 Part 00. , *Assessment of A verse ffects* . A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that ualify it for inclusion in the national register.

regulations and the National Park Service's *onservation lanning nvironmental Impact Anal sis an ecision ma ing* Director's rder No. 2 also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under N PA only. It does not suggest that the level of effect as defined by Section 0 is similarly reduced. Although adverse effects under Section 0 may be mitigated, the effect remains adverse.

A Section 0 summary is included in the impact analysis sections for archeological and ethnographic resources, historic structures/ buildings, and cultural landscapes Section 0 determinations of effect are not provided for museum collections because such resources are generally ineligible for listing in the national register . The Section 0 summary is intended to meet the re uirements of Section 0 and is an assessment of the effect of the undertaking implementation of the alternative on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory ouncil's regulations. uture Section 0 compliance would be completed as warranted as individual actions are implemented.

C LT L ESO CES

egligi le – Impact is at the lowest levels of detection arely measurable with no perceptible conse uences, either adverse or beneficial, to archeological resources. or purposes of Section 0 , the determination of effect would be no adverse effect.

inor – Disturbance of a site s results in little, if any, loss of significance or integrity and the national register eligibility of the site s is unaffected. or purposes of Section 0 , the determination of effect would be no adverse effect.
Maintenance and preservation of a site s . or purposes of Section 0 , the determination of effect would be no adverse effect.

oderate – Disturbance of a site s does not diminish the significance or integrity of the site s to the e tent that its national register eligibility is jeopardized. or purposes of Section 0 , the determination of effect would be adverse effect.
Stabilization of a site s . or purposes of Section 0 , the determination of effect would be no adverse effect.

a or – Disturbance of a site s diminishes the significance and integrity of the site s to the e tent that it is no longer eligible to be listed in the national register. or purposes of Section 0 , the determination of effect would be adverse effect. Active intervention to preserve a site s . or purposes of Section 0 , the determination of effect would be no adverse effect.

S

egligi le – Impact s is at the lowest levels of detection, barely perceptible and not measurable. or purposes of Section 0 , the determination of effect would be no adverse effect.

inor – Impact would not affect the character defining features of a National egister of istoric Places-eligible or listed structure or building. or purposes of Section 0 , the determination of effect would be no adverse effect. Stabilization/preservation of character defining features in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties*. or purposes of Section 0 , the determination of effect would be no adverse effect.

oderate – Impact would alter a character defining feature s of the structure or building but would not diminish the integrity of the resource to the e tent that its National egister eligibility is jeopardized. or purposes of Section 0 , the determination of effect would be no adverse effect.
ehabilitation of a structure or building in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties*. or purposes of Section 0 , the determination of effect would be no adverse effect.

a or – Impact would alter a character defining feature s of the structure or building, diminishing the integrity of the resource to the e tent that it is no longer eligible to be listed in the national register. or purposes of Section 0 , the determination of effect would be adverse effect.
estoration of a structure or building in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties*. or purposes of Section 0 , the determination of effect would be no adverse effect.

C L

egligi le – Impact s is at the lowest levels of detection barely perceptible and not measurable. or purposes of Section 0 , the determination of effect would be no adverse effect.

inor – Impact s would not affect the character defining patterns and features of a National egister of istoric Places-eligible or listed cultural landscape. or purposes of Section 0 , the determination of effect would be no adverse effect.

Preservation of character defining patterns and features in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes*. or purposes of Section 0 , the determination of effect would be no adverse effect.

oderate –Adverse i pact Impact s would alter a character defining pattern s or feature s of the cultural landscape but would not diminish the integrity of the landscape to the e tent that its national register eligibility is jeopardized. or purposes of Section 0 , the determination of effect would be no adverse effect.

ehabilitation of a landscape or its patterns and features in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes*. or purposes of Section 0 , the determination of effect would be no adverse effect.

a or –Adverse i pact: pact s would alter a character defining pattern s or feature s of the cultural landscape, diminishing the integrity of the landscape to the e tent that it is no longer eligible to be listed in the national register. or purposes of Section 0 , the determination of effect would be adverse effect. estoration of a landscape or its patterns and features in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes*. or purposes of Section 0 , the determination of effect would be no adverse effect.

E

egligi le – Impact s would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. or purposes of Section 0 , the determination of effect on Traditional ultural Properties or T Ps ethnographic resources eligible for listing in the national register would be no adverse effect.

inor –Adverse i pact Impact s would be slight but noticeable but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. or purposes of Section 0 , the determination of effect on T Ps would be no adverse effect. ould allow access to and/or accommodate a group's traditional practices or beliefs. or purposes of Section 0 , the determination of effect on T Ps would be no adverse impact.

oderate – Impact s would be apparent and would alter resource conditions. Something 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 survive. or purposes of Section 0 , the determination of effect on T Ps would be adverse effect. ould facilitate traditional access and/or accommodate a group's practices or beliefs. or purposes of Section 0 , the determination of effect on T Ps would be no adverse effect.

a or –Adverse i pact: Impact s would alter resource conditions. Something 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 e tent that the survival of a group's practices and/or beliefs would be jeopardized. or purposes of Section 0 , the determination of effect on T Ps would be adverse effect.

ould encourage traditional access and/or accommodate a group's practices or beliefs. or purposes of Section 0 , the determination of effect on T Ps would be no adverse effect.

se ollections

egligi le Impact s is at the lowest levels of detection barely measurable with no perceptible conse uences, either adverse or beneficial, to museum collection.

inor Adverse i pact ould affect the integrity of a few items in the museum collection but would not degrade the usefulness of the collection for future research and interpretation.

ould stabilize the current condition of the collection or its constituent components to minimize degradation.

oderate Adverse i pact ould affect the integrity of many items in the museum collection and diminish the usefulness of the collection for future research and interpretation.

ould improve the condition of the collection or protect its constituent parts from the threat of degradation.

a or Adverse i pact ould affect the integrity of most items in the museum collection and destroy the usefulness of the collection for future research and interpretation. ould secure the condition of the collection as a whole or its constituent components from the threat of further degradation.

T L ESO CES

The natural resource impact topics that are analyzed in this document include biotic communities, water resources, air uality, and threatened and endangered species. Information on known resources was compiled and compared with the locations of proposed developments and other actions. The impact analysis was based on the knowledge and best professional judgment of planners, resource specialists, data from park records, and studies of similar actions and impacts when applicable. The planning team ualitatively evaluated the impact intensities for all of the natural resource impact topics.

C

egligi le The impact on biological communities, natural processes, soils, or species would be at the lower levels of detection or not measurable.

inor The impact would be detectable and could affect the abundance or

distribution of individuals in a localized area, but would not affect the viability of the local population or overall community size, structure, or composition. hanges to natural processes would be limited and affect only a localized area. or soils, the impact would change soil characteristics e.g., soil profile, productivity in a relatively small area and would not increase the potential for erosion of additional soil.

oderate The impact would be clearly detectable and could have appreciable effect on the resource. This would include impacts that effect the abundance or distribution of local populations, but would not affect the viability of the regional population. hanges to community size, structure, or composition and ecological processes could be substantial and occur over a larger area. or soils, the impact would appreciably change soil characteristics e.g., soil profile, productivity in specific area and would increase the potential for erosion of additional soil.

a or The impact would be severely adverse or e ceptionally beneficial. Impacts would have a substantial, highly noticeable, or widespread influence, affecting the abundance or distribution of a local or regional population to the e tent that the population would not be likely to recover adverse or would return to a sustainable level beneficial . ommunity size, structure, or composition and ecological processes would be highly altered and landscape level changes could be e pected. or soils, the impact would appreciably change soil characteristics e.g., soil profile, productivity over an e tensive area and would greatly increase the potential for erosion of additional soil.

C L

egligi le The impact on water uality or the timing or intensity of flows would be at the lower levels of detection or not measurable.

inor The impact would have detectable effects on water uality or the timing or intensity of flows.

oderate The impact would have clearly detectable effects on water uality or the timing or intensity of flows and potentially would affect stream species.

a or The impact would have severely adverse or e ceptionally beneficial effects on water uality or the timing or intensity of flows and potentially would affect stream species on a regional or watershed scale.

egligi le The impact would be at the lower levels of detection or not measurable.

inor The impact would have a slight, localized effect on air uality or visibility.

oderate The impact would have clearly detectable effects on air uality or visibility over a more widespread area of the park.

The impact would have severely adverse or e ceptionally beneficial effects on air uality or visibility and potentially would affect the regional air shed.

T E
S S

or federally and state-listed species the following impact intensities apply. These

definitions are consistent with the language used to determine effects on threatened and endangered species under the federal ndangered Species Act

no effect when the proposed actions would not affect special status species or critical habitat

not li el to a versel affect when effects on special status species are discountable i.e., e tremely unlikely to occur and or insignificant not able to be meaningfully measured, detected, or evaluated or completely beneficial

li el to a versel affect when any adverse effect to special status species may occur as a direct or indirect result of proposed actions and the effect is not discountable, insignificant or completely beneficial

ISITO SE

The discussions of visitor use in this document evaluate four aspects diversity of activities, 2 interpretation and orientation, 3 facilities and services, and 4 soundscapes and scenic uality. Analysis is conducted in terms of how the visitor e perience might vary by applying different management zones in the alternatives. Analysis is ualitative rather than uantitative because of the conceptual nature of the alternatives.

. Analysis of effects on the diversity on visitor activities is based on whether there was a complete loss, addition, e pansion, or a change in the number and range or availability of a recreational opportunity and how the application of management zones would affect group and individual opportunities.
2. Analysis of interpretation and orientation is based on whether there would be a change in the availability of interpretive and educational information and education programs resulting from management zone application or other action.
3. Analysis of visitor facilities and services discusses impacts on access to visitor facilities and services provided by the Park Service and commercial services in relation to management zone application and other actions.
4. Analysis on visitor e perience values is associated with visitor e perience values based on whether there would be a change in opportunities for solitude, tran uility, challenge, adventure and the freedom to travel throughout the park to e perience primary resources and their natural and cultural settings, including scenic uality, natural sounds, views, and night skies.

or impacts to visitor use the following thresholds apply

egligi le isitors would not be affected or there would be no noticeable change in visitor e perience or safety. hanges in the natural sound environment would be so slight they would not be of any measurable or perceptible conse uence to visitor e periences.

inor: hanges in visitor e perience or safety would be detectable, although the changes would be slight. The changes would affect a relatively small number of visitors, be localized in area, or have barely perceptible conse uences to the majority of visitors. A detectable change would occur to the natural sound environment, although the effects would be small, localized and of little conse uence to visitor e periences.

oderate: hanges in visitor e perience or safety would be readily apparent and would affect a relatively large number of visitors. A change in the natural sound environment would be readily detectable, affecting the e perience of a large number of visitors.

a or: hanges in visitor e perience or safety would be severely adverse or e ceptionally beneficial, highly noticeable, and would affect relatively large numbers of visitors. A change in the natural sound environment would be obvious, be severely adverse or e ceptionally beneficial, and affect the health of visitors, or cause a substantial, highly noticeable effect on the e perience of large numbers of visitors.

CO CESSIO O E TIO S

The impact evaluation was based on a ualitative evaluation of the effects on park and concession operations from changes in providing visitor and administrative facilities, services, or programs under the alternatives. Impacts were determined by e amining the affects of changes on staffing, infrastructure, visitor facilities and services and the role of commercial operators in providing services. The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Impact intensities for the park and concession operations impact topic have been defined as follows

egligi le	Park and/or concession operations would not be affected or there would be no measurable or perceptible change in operations.
inor	hanges in park and/or concession operations would be perceptible, although the changes would be slight and localized, and would not be e pected to have an overall effect on the ability of the park or concessioner to provide desired services and facilities.
oderate	hanges in park and/or concession operations would be readily apparent, would have appreciable effects on park or concession operations, and could have an effect on the ability of the park to provide some desired services and facilities.
	hanges in park and/or concession operations would be readily apparent and would highly reduce or increase the ability of the park or concessioner to provide desired services and facilities.

SOCIOECO O IC E I O E T

rater ake National Park is a part of the socioeconomic environment of Douglas, ackson, and lamath ounties. Socioeconomic impacts for the three-county area were determined based on applied logic, professional e pertise, and professional judgment. conomic data, historic visitor use data, e pected future visitor use, and future developments within the park were all considered in identifying and discussing potential impacts. A mostly ualitative analysis is sufficient to compare the effects of alternatives for decision-making

purposes. owever, the estimated costs of various projects do provide basic uantitative measures of the direct economic impacts of each of the alternatives on the region.

hanges in the three-county regional economy would include impacts on the regional socioeconomic base due to changes in park operations and other management or development actions. The socioeconomic base includes such factors as population, income, employment, earnings, etc. Park development and removal projects during the life of the general management plan would benefit the regional construction industry. Programmatic initiatives may re uire additional funding and/or personnel.

hanges at the park may also affect the socioeconomic conditions of any of the local gateway communities. The size, configuration, and relative isolation of the park has led to only three separate and dispersed entrances being developed to provide automobile access to the park. Several small local communities are associated with each of the travel corridors to these access points. These communities provide some resort opportunities as well as limited range of goods and services for the visiting public. Impacts on concession operations within the park could occur and would probably be considered local impacts.

ach alternative would have different staffing and budget needs, which could affect the adjacent communities and/or the region as a whole. or e ample, adding new staff positions at a particular location may lead to new hires seeking goods and services including housing in an associated community, these new e penditures provide limited benefits for the local economy.

A recent study of the tourism spending by visitors to rater ake National Park provides some measure of the impact such spending has had on the three-county region. In 200 , visitors were found to have spent some 30. million within-in 00 miles of the park.[2] The multiplier effects resulted in 34.3 million in direct sales; . million in personal income, .3 in value added and supported 3 jobs.[3] To put these figures in perspective, visitor spending 30. million related to the park visits accounted for about of total tourism spending in the three-county region in 200 .[4] During the same year, total personal income for the region amounted to over .4 billion, and the three-county work force consisted of 4,22 persons of which 2,3 were unemployed. The economic impacts related to park visitors vary from year to year and are dependent upon the numbers of visitors coming to the park, their participation in various activities, their e penditure patterns, prices of goods and services, and changes in the park and surrounding communities that may affect visitor use of the park.

C I

onte t, intensity, and duration of impacts compare the action alternatives to the no-action alternative. *onte t* refers to the relative area within which impacts would occur. or the most part, impacts

[2] Stynes, Daniel and a- en Sun. November 2002. Impacts of isitor Spending on ocal conomy rater ake National Park, 200 . Department of Park, ecreation and Tourism esources, Michigan State University, ast ansing, MI 4 24- 222.
[3] Stynes, Daniel and a- en Sun. Multiplier effects are the result of money spent by tourists being re-circulated within the local economy multiplying the effect of the direct e penditures.
[4] Stynes, Daniel and a- en Sun. November 2002.

would affect the regional area Douglas, ackson, and lamath ounties or the local area e.g., the ort lamath gateway community .

Impact *intensit* is the degree to which a topic is positively or negatively affected see impact thresholds below . Impacts on the socioeconomic environment were ualitatively evaluated and described for this analysis. owever, cost estimates for additional development and increased staffing levels do provide a measure of the direct fiscal impact of each alternative.

The *ration* of an impact is described as either short-term or long-term. Short-term impacts would last less than three years. ong-term impacts last more than three years and some result in a permanent change in conditions .

S I T

The following four levels of description are used to evaluate and describe impacts on the socioeconomic environment.

egligi le No effects occur or the effects on socioeconomic conditions are below or at the level of detection.

inor The effects on socioeconomic conditions are small but detectable, and only affect a small number of firms and/or a small portion of the population. The impact is slight and not detectable outside the affected area.

oderate The effects on socioeconomic conditions are readily apparent. Any effects result in changes to socioeconomic conditions on a local scale e.g., a gateway community or a single county within the affected area.

a or The effects on socioeconomic conditions are readily apparent. Measurable changes in social or economic conditions at the county or three-county regional level would occur. The impact is severely adverse or e ceptionally beneficial within the affected area.

C L TI E I CTS

The ouncil on nvironmental uality regulations implementing N PA define a cumulative impact 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. umulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. ach cumulative impact analysis is additive, considering the overall impact of the alternative when combined with effects of other actions inside and outside the park that have occurred or would occur in the foreseeable future.

These include ongoing and planned actions and projects in the park and surrounding lands umulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at rater ake National Park and, if applicable, the surrounding region. The primary projects and actions that could contribute to cumulative effects are summarized below.

- The combination of widespread logging and suppression of natural fires has affected the natural forest stands throughout portions of the park

and surrounding areas. Such changes may also have altered wildlife distribution, fre uency, and use of habitat from that which e isted prior to the Park s establishment.

- eneficial effects to late-successional forest species are e pected from implementation of the President s N orest Plan N P . The plan includes development of a network of forest reserves across the Pacific Northwest to protect late-successional forest species where habitat conditions are relatively intact and provide for the regeneration of late-successional forest habitat where habitat is e tremely limited and the associated plant and wildlife populations are low.

- Past introduction of various non-native fish species into rater ake and the park's streams has altered the a uatic ecology and adversely affected bull trout, the only known fish species native to the park. Although rater ake was originally barren of fish, fish stocking took place between and 4 . f the number of species that were stocked, only kokanee salmon and rainbow trout still e ist in the lake. rook trout were introduced in park streams and persist where they have not been eliminated by park management. The park's bull trout restoration program has recently culminated in the elimination of non-native brook trout and reestablishment of bull trout in Sun and ost reeks. Some adverse effects to bull trout such as loss of individuals would likely occur. Appropriate mitigation is included as part of the restoration program to minimize the potential for adverse effects

- Implementation of prescribed fire as part of the park's recently approved ire Management Plan would increase landscape and habitat diversity relative to fire and reduce the potential for catastrophic fire. Some adverse effects to wildlife such as loss of individuals or food sources may occur. Appropriate mitigation for sensitive species is included as part of that plan.

- ngoing trails rehabilitation and relocation would reduce localized resource impacts such as soil and vegetation loss and trampling and erosion.

- Planned construction projects include replacement of the waterline from Munson Springs to arfield, improvement of the lagoon at Munson alley, rehabilitation of ighway 2 est, and rehabilitation of superintendent's residence.

- ther planned construction associated with implementation of the rater ake National Park isitor Services Plan e.g., rehabilitate cafeteria building, relocate parking and road to area behind cafeteria building, convert e isting parking lot to pedestrian open space, construct new visitor contact station for year-round information and interpretation . The plan identifies the levels and kinds of NPS and concession visitor services and facilities within the developed areas of the park. These projects would have would have both adverse and beneficial localized effects. or instance, rehabilitation of the cafeteria building and relocation of rim parking would result in some disturbance to soils and vegetation within a previously impacted area, but would also restore historic visitor-use patterns on the rim.

- Designation of im Drive as a Scenic yway and All American oad and the potential nomination of the im Drive as a cultural landscape would likely enhance treatment of im Drive.

I I E T OF ESO CES O L ES

In addition to determining the environmental conse uences of the preferred and other alternatives, NPS policy NPS 200 *anagement olicies*, section 4. re uires analysis of potential effects to determine whether or not actions would impair resources of the unit.

The fundamental purpose of the National Park System, established by the rganic Act and reaffirmed by the eneral Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid or minimize to the greatest degree practicable adverse impacts on park resources and values. owever, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although ongress has given the NPS management discretion to allow certain impacts within parks, that discretion is limited by the statutory re uirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute an impairment. owever, an impact would more likely constitute an impairment to the e tent it affects a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the Park's eneral Management Plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination of impairment is made in the nvironmental onse uences section in the conclusion section for each resource impact topic.

I CTS OF I LE E TI LTE TI E O CTIO

C LT L ESO CES

Under alternative archeological sites would be surveyed, inventoried, and evaluated under National egister of istoric Places criteria of evaluation to determine their eligibility for listing in the national register as staff and funding permit. All ground-disturbing activities would be preceded by site-specific archeological surveys, and, where appropriate, subsurface testing to determine the e istence of archeological resources and how best to preserve them. nown archeological resources would be avoided whenever possible.

Although impacts to archeological sites would be monitored and efforts would be undertaken to minimize or mitigate potential impacts from National Park Service actions, visitor activities, and natural causes, an unknown number of archeological sites would continue to be subject to negligible to minor long-term and permanent adverse impacts from current and ongoing visitor activities, such as unintentional disturbance, vandalism, and looting, erosion as a result of wildfire, wind, heavy snowmelt and runoff, and other climatic conditions

C E . In the past, the relative isolation of the national park and the lack of sufficient monitoring have provided opportunities for looters and vandals to engage in pot-hunting and intentional pilfering, and visitors, as well as natural erosion from fire, wind, heavy snowmelt and runoff, and other climatic conditions, have contributed to inadvertent disturbance of archeological resources. ecause much of the park has not been surveyed and inventoried for archeological resources, decisions about site development have been made that, in hindsight, may not have been best for archeological resources. Such decisions included the placement and location of campgrounds, trails, roads, and other visitor use facilities, which may have been constructed on top of or near archeological resources. urrent and ongoing National Park Service activities, such as prescribed burns, trails rehabilitation and relocation, replacement of a waterline from Munson Springs to arfield Peak, a lagoon project at Munson alley, and rehabilitation of State ighway 2 est, could potentially result in minor to moderate impacts to archeological resources.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the park and surrounding region, would contribute to cumulative negligible to moderate, long-term and permanent adverse effects to any overall cumulative impact on archeological resources.

C . Archeological investigations would be undertaken before development to ensure that archeological resources were understood and that they would not be damaged or lost as a result of National Park Service actions. owever, an unknown number of archeological resources would be subject to negligible to minor, long-term and permanent adverse impacts under this alternative as a result of various National Park Service operations and actions, visitor activities, and natural causes.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with archeological resources.

S S or purposes of Section 0 , the determination of effect of actions under this alternative on archeological resources would be no adverse effect.

S

istoric structures/buildings in the national park would continue to be surveyed, inventoried, and evaluated under National egister of istoric Places criteria of evaluation to determine their eligibility for listing in the national register as National Park Service staff and funding permit. istoric structures/buildings listed in, or determined eligible for listing in, the national register would continue to be managed to preserve their documented values in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties* and to support National Park Service activities or visitor use. As a result, actions under alternative would generally have negligible to moderate long-term beneficial impacts on national register eligible structures and buildings.

ehabilitation of the superintendent's residence, a national historic landmark located in Munson alley, and its conversion for use as a science and learning center would result in adverse minor permanent impacts to the structure because some historic fabric both e terior and interior would be lost. owever, rehabilitation and adaptive use of the structure would ensure its long-term preservation and thus have a moderate beneficial impact on the building.

C E In the past lack of appropriate preservation treatment, impacts of weathering and other natural phenomena, and adaptive use have resulted in the loss of some historic fabric to historic structures/buildings in the national park. Thus, the documented values of some historic structures/ buildings have resulted in cumulative minor to moderate adverse long-term and permanent effects.

Actions under this alternative such as the rehabilitation of the superintendent's residence and comfort station no. 4, when combined with the impacts of implementing the recommendations of the *isitor ervices lan rater a e ational ar* including among other things the rehabilitation of the Sinnott Memorial, ommunity ouse, Plaza omfort Station, iser Studio, and Promenade at im illage would contribute beneficial minor to moderate long-term effects and an adverse minor permanent impact to any overall cumulative effect on historic structures/buildings.

C . Actions under alternative would generally have negligible to moderate, long-term beneficial impacts on historic structures/buildings in the park because they would continue to surveyed, inventoried, and evaluated for their eligibility for listing in the National egister of istoric Places, and listed, as well as determined eligible, structures/ buildings would be managed to preserve

their documented values in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties*

ehabilitation of the superintendent's residence, a national historic landmark located in Munson alley, and its conversion for use as a science and learning center would result in adverse minor permanent impacts to the structure because some historic fabric both e terior and interior would be lost. owever, rehabilitation and adaptive use of the structure would ensure its long-term preservation and thus have a moderate beneficial impact on the building.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with historic structures/buildings.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on historic structures/buildings would be no adverse effect.

C L

ultural landscapes in the national park would continue to be surveyed, inventoried, and evaluated under National egister of istoric Places criteria of evaluation to determine their eligibility for listing in the national register as National Park Service staff and funding permit. Multiple property national register nomination forms for cultural landscapes, including but not e clusively limited to Munson alley, im Drive, and im illage, would be prepared, and the National Park Service would recommend listing of these cultural landscapes in the national register. The National Park Service would implement resource management policies that preserve the natural resource values of these landscapes as well as their culturally significant character defining patterns and features in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes*. Thus, the overall impacts to cultural landscapes under this alternative would be minor to moderate, long-term, and beneficial.

C E In the past, lack of concern for the preservation of cultural landscapes in the national park has resulted in decisions about site development and resource management that, in hindsight, may not have been best for cultural landscape values and preservation. Such decisions include the placement and location of campgrounds, trails, parking lots, and other visitor use and administrative facilities such as those at im illage that have compromised some of the character defining patterns and features of the cultural landscapes in the national park.

Actions under this alternative such as the recommendation that the im illage, im Drive, and Munson alley cultural landscapes be listed in the national register and managed to preserve their documented values, when combined with the impacts of implementing the recommendations of the *isitor ervices lan rater a e*

ational ar including among other things the rehabilitation of the Sinnott Memorial, ommunity ouse, Plaza omfort Station, iser Studio, and Promenade and redesign of the picnic area in im illage would have cumulative beneficial minor to moderate long-term effects on cultural landscapes.

C Actions under alternative would generally have minor to moderate, long-term, beneficial impacts on cultural landscapes in the national park because they would continue to be surveyed, inventoried, and evaluated for their eligibility for listing in the National egister of istoric Places and listed, as well as determined eligible, cultural landscapes would be managed to preserve their documented values in accordance with the *ecretar of t e Interior s tan ar s for t e reatment of istoric roperties it i elines for t e reatment of lt ral an scapes*

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with cultural landscapes.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on cultural landscapes would be no adverse effect.

E

Native American groups regard rater ake and Mount Scott, as well as other sites in the park, as significant sacred sites or landscapes and important traditional use activity areas. National Park Service development and administrative/ maintenance operations, as well as increasing visitor use of the national park, have interrupted and are continuing to interrupt access to ceremonial or gathering areas, thus generally having negligible to minor long-term adverse impacts on ethnographic resources in the park. owever, the National Park Service is currently undertaking consultation and coordination with the lamath Tribes and other Native American groups to address these matters of mutual concern on parklands and encourage tribal members to participate in the preparation of programs, e hibits, replica artifacts, and literature to assist the park staff in accurately interpreting the cultural history of the early inhabitants of the park area. The National Park Service would continue to allow access to and/or accommodate the groups' traditional practices and beliefs and facilitate reburial of ancestral remains, both those e posed by natural weathering and those recovered from pot-hunters, under the provisions of the Native American raves Protection and epatriation Act NA P A . An ongoing traditional use/ethnographic study would enable the Park Service to carry out consultations more effectively to preserve and protect ethnographic resources in the national park. Therefore, actions under this alternative would generally have negligible to minor, long-term, beneficial impacts on ethnographic resources in the park because of the ongoing consultation and coordination activities between the National Park Service and the lamath Tribes and other Native American groups.

C E . National Park Service development and administrative/ aintenance operations, as well as increasing visitor use of the national park since its establishment, have had and are continuing to have cumulative adverse negligible to minor long-term effects on ethnographic resources. As sacred sites in south-central regon have been lost over time, those remaining in the park have become more significant to the lamath Tribes and other affiliated Native American groups. Actions under this alternative such as ongoing consultations with the lamath Tribes and other affiliated Native American groups to address matters of mutual concern would contribute negligible to minor, long-term, beneficial effects to any overall cumulative impact on ethnographic resources.

C . Actions under alternative would generally have negligible to minor, long-term, beneficial impacts on ethnoraphic resources in the national park because the National Park Service would continue ongoing consultation and coordination with the lamath Tribes and other Native American groups to address matters of mutual concern in the national park and allow access to and/or accommodate the groups' traditional practices and beliefs.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation; 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with ethnographic resources.

S S . No Traditional ultural Properties are affected by actions under this alternative. Thus, Section 0 determinations are not necessary.

C

Alternative would not provide additional storage and workspace meeting professional and National Park Service museum standards for the preservation and curation of, as well as access to, the park's museum collections. Thus, this alternative would generally have minor long-term adverse impacts on the park's museum collections. Some park-related museum collection materials would continue to be housed and managed by other organizational entities in offsite facilities where their condition is unknown and their ownership obscured.

C E . Since the park was established the combination of limited staffing and lack of storage and workspace meeting professional and National Park Service museum standards have frustrated, and are continuing to hinder, endeavors to improve care of and access to the museum collections and address the ever-increasing cataloging backlog. Thus, the park's museum collections have been subjected to minor to moderate long-term adverse effects. ecause e isting condiions would not change, actions under this alternative would not contribute to the impacts of the aforementioned actions; thus, there would not be cumulative effects on museum collections under this alternative.

C . Actions under alternative would generally have negligible to minor long-term adverse impacts on museum collections because of the lack of storage and workspace meeting professional and National Park Service museum standards

and limited staffing to address the ever-increasing cataloging backlog.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with museum collections.

T L ESO CES

C

ontinued maintenance of e isting roads, trails, and structures and increasing visitor use could result in additional disturbance to vegetation and soils, such as soil compaction and erosion, trampling and loss of vegetative cover, and introduction and spread of non-native species. ildlife populations and habitat could also be affected to varying degrees by continuing maintenance activities and visitor use that could affect natural movements of wildlife, habitat, and food sources. Most maintenance and visitor activities would continue to occur along e isting trails, roads, and in the developed areas. These areas have been previously disturbed. isitation is not e pected to increase appreciably and would likely have little additional effect on the e tent of impacts. The low incidence of collisions between vehicles and wildlife would not likely increase. Also, management actions to avoid or minimize the e tent and severity of impacts would continue to be employed, such as localized restoration efforts, confining or directing use through use of signs, trails, and designated parking areas, and continued monitoring and early corrective action to address invasive non-native plants.

onse uently, additional long-term adverse impacts would be minor.

inter recreational activities occur during the time when wildlife is stressed by cold weather and food shortages. Disturbance or harassment of wildlife during this sensitive time can have negative effects on individual animals, and in some cases populations, particularly when populations are low. inter recreation such as snowmobiling and skiing can create added energetic stress in winter when most wildlife species are already stressed NPS d . The effects of winter recreational activities in the park are unknown, although, disturbance would likely be limited because visitor use levels are e pected to remain relatively low and would continue to occur within very limited areas within the park. The park service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of park resources. Management actions, such as restrictions on off-trail use, specific area closures, increased patrols, visitor education, or limits on use or party sizes, would be taken as necessary to address impacts. onse uently, long-term impacts from continuing or increasing winter activities would be offset by increased protection measures that would benefit wildlife, although the e tent of potential beneficial effects would likely be localized and minor.

C I . umulative actions would contribute to both beneficial and adverse impacts to biotic communities. Some ongoing and future site-specific restoration work e.g., trail relocation and rehabilitation and rim restoration following removal of the employee dorm on the

rim would have long term benefits to resources by restoring vegetation and wildlife habitat. The fire management program may have short-term impacts on animal populations in the vicinity of any fire by eliminating cover, food sources, and habitat. owever, in the long term, reintroducing fire would provide for greater habitat diversity and less catastrophic habitat loss. isheries management has reestablished the native fishery in Sun reek. ther cumulative beneficial effects would occur outside the park from implementation of the N P which is e pected to provide for smaller, yet more stable and better distributed populations of late-successional forest species. verall, these programs would result in major, long-term benefits.

ire suppression and historic timber harvest have adversely impacted lands surrounding the park. Impacts on biotic communities have been long term, major, and adverse primarily because of widepread alteration of forest structure, wildlife habitat, species composition and fragmentation of habitats. Proposed development projects within the park e.g., replacement of the waterline from Munson Springs to arfield, rehabilitation of ighway 2 est would have minor, site-specific, construction-related impacts based on implementation of best management practices such as erosion and sediment controls and revegetation.

verall the past, present, and reasonably foreseeable actions in combination with the no-action alternative would have both long-term, major adverse and beneficial effects. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs affecting lands both action alternative would contribute a minor adverse increment to the overall cumulative impact.

C The no-action alternative would have a minor, long-term, adverse impact on biotic communities, primarily in e isting areas of concentrated use and development. Increased protection measures could result in minor benefits to wildlife during the winter. The past, present, and reasonably foreseeable actions in combination with the no action alternative would have both long-term, major adverse and beneficial impacts. The no-action alternative would contribute a minor, adverse, and beneficial increment to the overall cumulative impact.

In accordance with the criteria for determining impairment, there would be no major adverse impacts on resources or values, and there would be no impairment of resources or values associated with biotic communities, including vegetation, soils, and wildlife resources.

T E S S

Most maintenance and visitor activities would continue to occur along e isting trails, roads, and in the developed areas. These areas have been previously disturbed. isitation is not e pected to increase appreciably and there would be no new development under this alternative. Also, NPS actions to manage and protect special status species would continue to be employed, such as monitoring and restoration programs and restrictions on visitor use near nest sites. onse uently, there would be no change in the habitat or disturbance to special status species within the park as a result of the no action alternative.

As discussed under the biotic communities impact topic, the Park Service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of threatened and endangered species. ecause of a number of factors such as limited occurrence, small populations, low densities, and/or low birth rates, these species are more vulnerable to impacts than general wildlife populations. Some species lyn , wolverine, fisher could benefit from increased protection measures, although the e tent of potential beneficial effects is unknown. reater beneficial effects would occur if for e ample, den sites were located and measures were taken to protect them from disturbance.

C I umulative actions would contribute to both beneficial and adverse impacts to threatened and endangered species. ithin the park, the fire management program would perpetuate the natural role of fire in preserving threatened and endangered species habitat and would reduce the threat of catastrophic habitat loss. or instance, prescribed natural fires at rater ake tend to be patchy in terms of fire severity. This patchiness historically was associated with habitat improvement for small carnivores, and would likely be associated with habitat maintenance for them in the future. Some species would be negatively influenced by fire management activities in the short term, due the possible loss of individuals or short-term alteration of suitable habitat, such as elimination of a multilayered understory in some locations that may result in suboptimal spotted owl habitat. owever, species specific mitigation strategies would be implemented for sensitive species to minimize these effects. Although the park's bull trout restoration program has had short-term adverse impacts due to the loss of some individual fish, the program has lead to the elimination of non-native brook trout and reestablishment of bull trout in Sun reek. The N P is e pected to provide for smaller, yet more stable and better distributed populations of threatened and endangered late-successional forest species such as the northern spotted owl, which would also contribute beneficial effects. verall, these programs would adversely affect some individuals or habitat in the short-term, but would not likely adversely affect threatened and endangered species in the long-term because long-term effects would be beneficial.

None of the threatened or endangered animal species are endemic to rater ake National Park, and the threats to their e istence have largely occurred due to land management activities elsewhere, such as old growth forest loss affecting northern spotted owls. ire suppression and historic timber harvest have adversely affected habitat and threatened and endangered species populations on lands surrounding the park primarily due to widespread alteration and fragmentation of forests. Park construction and rehabilitation proposals would not affect most special status species because there would be no disturbance within known areas of occurrence or suitable habitat. Some inconse uential impacts such as localized disturbance to vegetation within suitable habitat could occur, but would not likely adversely affect any threatened and endangered species. Site-specific surveys would be conducted to determine if special status species were present and the park service would consult with the U.S. ish and ildlife Service and regon Department of Natural esources to determine mitigation.

Impacts of the above actions in conjunction with the no-action alternative would result in both long- and short term adverse and beneficial effects. The no-action alternative would not likely contribute to adverse effects on threatened or endangered species and could contribute beneficial long-term effects to the overall cumulative impacts.

C The no-action alternative would not adversely affect and could beneficially affect threatened or endangered species. Thus this alternative may affect, but would not likely adversely affect or result in impairment to any threatened or endangered species. Impacts of other actions in conjunction with the no-action alternative would result in both long- and short-term, adverse and beneficial effects. The no-action alternative would not likely contribute to adverse effects on threatened or endangered species and could contribute beneficial long-term effects to the overall cumulative impacts.

C L

Minimizing development within the caldera and lake drainage would prevent addition of sediments, minerals, or contaminants that could reduce water uality. urrent restrictions on access and boating would continue to minimize contaminants that could reduce water uality.

The long-term limnological program would continue to monitor a diverse array of chemical, physical, and biological properties of the lake and springs, including water chemistry, nutrients, secchi clarity, light transmission, temperature, light penetration, lake level, meteorological conditions, chlorophyll concentration, primary productivity, phytoplankton, zooplankton, and fish. ong-term special studies would include global climate change, nutrient dynamics, and lake mi ing. Most of the sample and data collection would continue to occur in the summer months when the lake is easily accessible. ccasional winter studies are also conducted. The program would continue to add devices capable of year-round sample and data collection to gain a better understanding of processes occurring during the winter months. Sample and data processing, along with data analysis and trend monitoring, would occur on a regular basis. Periodic program review by scientists from universities, the NPS, and other state or federal agencies has been incorporated into the long-term program. The latest review of the T MP was conducted by a panel of professional a uatic ecologists in 2000. ontinued monitoring would result in long-term, negligible, beneficial impacts on water uality.

C I . umulative actions would contribute both adverse and beneficial impacts to water uality.

As called for in the isitor Services Plan, only essential services would be provided at the rim. Included in this plan is the proposal to relocate the cafeteria parking behind the cafeteria. This would decrease the snow blown into the caldera during snowplowing and thereby decrease possible hydro carbons and vehicle related contaminants. The plan also calls for a reduction in the number of daily concession boat tours.

In 2003 the park's new concessioner replaced the aging tour boat fleet. This resulted in a major technological upgrade with conversion to improved fuel-injected 4-stroke engines, which will operate more efficiently and cleanly. The new boats also incorporated a number of other design

features to prevent accidental fuel leakage or spills into the lake environment. The park is also closely tracking the developments in alternative fuels technology, i.e., fuel cell, to eventually enable a conversion to engines not reliant on fossil fuels. The fuel system servicing the boat dock has recently been upgraded to provide increased protection from fuel leaks and contamination to the lake. Access to the lake would continue to be provided by a single access. ater uality could benefit from these increased protection measures, although the e tent of potential beneficial effects is unknown, but would likely be localized and minor.

C The no-action alternative would have a negligible, long-term, beneficial effect on water uality within rater ake. In accordance with the criteria for determining impairment, there would be no major adverse impacts on water uality, and therefore no impairment of water uality.

ontinued maintenance of e isting roads, trails, and structures and a slight increase in visitor use would result in little new disturbance to vegetation and soils that could potentially contribute to increased turbidity or sedimentation of park waters. Increased visitation would lead to only a minimal increase in vehicles in the park and associated increase in deposition of petroleum products routed into drainages that could affect water uality. ffects on water uality would be negligible.

A minimal increase in water use could occur from some increased visitation, although overnight accommodations, which utilize more water, would not increase. ater conservation efforts within the park would continue. Impacts on the uantity of water in Annie reek would be negligible. Snowmobiles use along the North entrance road would continue. Snowmobiles raise concerns about long-term impacts from high pollution emissions. missions from 2-stroke engine e haust include mono ide, hydrocarbons, nitrous o ides, and particulate matter NPS e . These concerns include the possibility that accumulations of pollutants in the snowpack and resultant snowpack runoff may be having adverse impacts on water uality and associated a uatic systems, although impacts from snowpack runoff that is contaminated with snowmobile pollutants have not been found. Impacts on water uality are likely short term and localized along travel routes because of the low volume of use and because snowmobiles are restricted to the north entrance road, which does not follow near any streams. Although snowmobile use is not e pected to appreciably increase, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study. Management actions to mitigate nonpoint source pollution would be implemented if necessary. ater uality could benefit from increased protection measures, although the e tent of potential beneficial effects is unknown, but would likely be localized and minor.

C I The geographical area included in the cumulative analysis for water resources is the park. All streams within the park, including Annie Spring, originate within the park. ffects on water uality and uantity outside the park from actions associated with this alternative would be negligible and likely not measurable.

The park's fire management program may adversely impact water uality e.g., sedimentation, erosion due to the effects of fires, particularly high intensity fires. Park construction and rehabilitation proposals would also contribute to adverse impacts from increased surface runoff and erosion. est management practices such as erosion and sediment controls would be employed to minimize these impacts. Impacts would be localized, short-term, and minor. Minor, localized, beneficial cumulative actions would include ongoing trails rehabilitation and relocation within the park that would reduce localized erosion and runoff.

The replacement of the waterline from Munson Springs to arfield would likely reduce water loss by the system. Implementation of actions within the *isitor ervices lan* would also reduce water use within the park. eductions in water use would have a minor beneficial effect on water uantity in Annie reek.

Impacts of the above other actions in conjunction with the no-action alternative would result in localized, minor, adverse and beneficial impacts on water uality and minor, beneficial effects on water uantity in Annie reek. The no-action alternative could contribute a negligible adverse impact on water uality and negligible decrease in Annie reek water flow to the overall cumulative impact.

C The water uality within the park would remain good and the no-action alternative would have a negligible adverse affect on water uality and uantity due to continuing maintenance activities and slight increase in visitation, but would not result in impairment to water resources. The impacts of other actions in conjunction with the no-action alternative would result in localized, minor, adverse and beneficial impacts on water uality and uantity. The no-action alternative could contribute a negligible adverse impact on water uality and negligible increase in water use within the park to the overall cumulative impact.

Slight increases in visitation would lead to only a small increase in vehicles in the park and associated increase in vehicle emissions. The increase in emissions would be small and would not measurably change the air uality. Snowmobile use along the North entrance road would continue. Snowmobiles raise concerns about long-term impacts from high pollution emissions. Impacts on air uality are believed to be short term and localized along travel routes because of the low volume of use and lack of large congregation sites coupled with winds which tend to disperse particulates and other pollutants. The Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts. Management practices to mitigate nonpoint source pollution would be implemented as necessary. Air uality could benefit from increased protection measures, although the e tent of potential beneficial effects would likely be localized and negligible.

C I . The park's air uality is good with negligible effects from regional pollution sources outside of the park. orest fires on surrounding lands could contribute particulates for limited periods of time. Degradation of air uality from the park's ire Management program could result in moderate short-term impacts, but the program would be in conformance with the lean Air Act, regon State Smoke Management Plan, and the regon isibility Protection Plan.

Park construction and rehabilitation proposals would cause localized increases in dust and emissions from construction vehicles and e uipment, resulting in localized, short-term effects on air uality. The cumulative actions in conjunction with the no-action alternative would result in short-term, moderate, adverse impacts on air uality. The no-action alternative would contribute a negligible, adverse and possibly negligible, beneficial increment to the cumulative effect.

C The no-action alternative would have a negligible, long-term, adverse effect on air uality from a small increase in vehicle use within the park. In accordance with the criteria for determining impairment, there would be no major adverse impacts on air uality, and therefore no impairment of air uality.

The cumulative actions in conjunction with the no-action alternative would result in short-term, moderate, adverse impacts on air uality. The no-action alternative would contribute a negligible adverse and possibly negligible beneficial increment to the cumulative effect.

ISITO SE

O

The e isting range of visitor e periences would continue unchanged. Activities identified by visitors as important, such as sightseeing, driving, camping, boat tours, and picnicking would continue to be available. isting hiking opportunities on front and back country trails would continue during the summer months. pportunities for winter activities i.e., cross country skiing, snowshoeing would continue unchanged at im illage and along im Drive in the winter months. Snowmobile opportunities would continue along the North unction road in the winter. There would be no noticeable change in visitor e perience or safety, therefore there would be no or negligible impacts on the diversity of visitor e perience.

C

Access to and within the park would be unchanged. There would be no change in management practices to control or manage visitor access. The operation or the location of visitor entrances to the park or the road system used by visitors within the park would not change. isitors would continue to enter the park from the north and south on ighways 2 and 3 . Two-way traffic would continue on im Drive and on the Pinnacles oad. The rayback Drive would remain open to motorized traffic. Scenic driving on the park's road system, particularly year-round private vehicle access to caldera views of rater ake at im illage, would continue. isitors would be able to drive from one area in the park to another during the late spring and early fall and would usually be able to be accommodated in e isting parking areas. Munson alley oad to im illage would continue to be cleared of snow in the winter. The amount of parking within the park would remain appro imately the same as current availability. The number of visitors at peak periods currently causes parking congestion at popular im Drive overlooks, particularly leetwood ove, the atchman, and Phantom Ship. Traffic and parking congestion is also apparent at im illage and Mazama illage during the summer months. During congested periods, some visitors are deterred from stopping due to the inconvenient parking and choose to pass by rim pullouts and parking areas, particularly at leetwood ove and the atchman. Any increase in

congestion would detract from the visitor e perience. Perceptions of full parking lots, many vehicles traveling park roads, and traffic noise are important factors in determining the uality of visitor' e periences. Access to trailheads and opportunities for day hikes on front country trails along the rim, at Munson alley, and at Mazama illage would not change. ront country hiking e periences could become crowded during the peak use summer months and change the character of this activity. isitor surveys indicate that short trails are e tremely important to a majority of visitors. Any increase in the use of frontcountry trails during peak periods, particularly along leetwood ove would contribute to congestion and detract from visitor e perience. oat tours would continue at the same levels on the lake and some visitors may not be accommodated due to sold-out tours. Due to anticipated increases in visitor numbers, the change in visitor e perience and safety in the way visitors access the park's resources would be readily apparent, and would affect a relatively large number of visitors resulting in moderate long-term adverse impacts to visitor access.

E O

urrent opportunities for information, interpretation, and education would continue at e isting levels and locations. isitor information would continue to be available throughout the year via personal contact, printed material, and the park's web site. During the summer, visitors would continue to receive information about the park at two visitor centers. isitor opportunities to learn about park resources would also continue through NPS interpretive programs on the concessioner-operated rater ake boat tours. Interpretive outreach programs including internet information would continue to be upgraded. A science and learning center would be developed at Munson alley. earning center opportunities would e pand the range of interpretive opportunities but would likely affect a relatively small number of visitors, resulting in a minor, beneficial impact to the diversity of visitor e periences. During the winter, information and orientation to the park would continue at the visitor information building at Munson alley. Access to interpretative and educational opportunities is important. Si ty-four percent of visitors to rater ake use the visitor centers, and of visitors indicated that the availability of information and orientation at the visitor centers was very important to their park e perience isitor Survey 200 . ver the long term, increased visitation to the park is anticipated during peak periods. Increased visitation could make it more difficult for some visitors to readily obtain park information or to participate in interpretive programs. hanges in visitor e perience would be detectable, although the changes would be slight or have barely perceptible conse uences to the majority of visitors, resulting in long-term, minor, adverse impacts to visitor interpretive and educational opportunities.

F S

isitor facilities and services would continue unchanged. isitors would continue to camp at Mazama ampground and at ost reek ampground. Park roads and their associated pullouts and overlooks would be maintained and traffic circulation would be unchanged. isitors would continue to receive park orientation and information at visitor contact centers at Munson alley and at im illage and would continue to hike both front and back country trails. There would be no

loss, addition, e pansion, or change in the number of park facilities. If visitor facilities were not reconfigured or e panded, some crowding along frontcountry trails or in developed areas might occur. hanges in use would be detectable, although the changes would be slight and localized, resulting in minor, long-term, adverse impacts to the visitor's e perience of park facilities.

S S

ith anticipated increases in visitation the contribution of vehicle noise levels along park roads and at areas of concentrated visitor use, such as im illage, Mazama illage, and leetwood, would be e pected to increase. Any increase in visitation and traffic along im Drive would further degrade the opportunity to e perience solitude and tran uility while viewing the lake.

A change in the natural sound environment would be readily detectable along transportation corridors and at popular overlooks, viewpoints and trailheads. The changes would affect a relatively large number of visitors but would be localized, resulting in minor long-term adverse impact on soundscapes along park roads. There would be no change in outstanding opportunities for visitors to e perience the park's primary resources in their natural and cultural settings. As crowding along im Drive escalates, there would be a change in the way many visitors perceive lake views. ecause there would be readily apparent changes in viewing the lake under crowded conditions and the change would affect a relatively large number of visitors, a moderate long term adverse impact to the e perience of enjoying scenic vistas at the caldera rim is e pected under this alternative.

C I Past and ongoing projects, including development of front-country trails, reconfiguration of im illage, and adaptive reuse of historic structures in Munson alley and im illage, have had long-term, major, beneficial impacts on visitor e perience. econfiguration of im illage would change the way visitors access views of the lake. A walk along the promenade would be possible without having to compete with vehicular traffic. A year-round visitor contact station at the rim would enable winter views of the lake for people of all abilities. verall these projects have the potential to increase the diversity, of visitor e perience, enhance the range of interpretative programs, e pand access to park facilities, and to improve the uality of visitor e perience values such as sounds of nature and scenic views. The major long-term beneficial impacts of the above other actions, when combined with the impacts of the no-action alternative would result in an overall major, long-term, beneficial impacts. The no-action alternative would contribute a minor to moderate adverse increment as well as a minor beneficial increment to the cumulative impacts to visitor e perience.

C verall, under alternative there would be minor to moderate long-term, adverse impacts to the visitor e perience. There would also be minor, long-term, beneficial impacts to visitors' educational opportunities. The cumulative actions in conjunction with the no-action alternative would result in major beneficial impacts on visitor e perience. The no-action alternative would contribute a minor to moderate adverse and minor beneficial increment to the cumulative effect.

O E TIO S

O

Under the no action alternative, no staffing increase is anticipated. Park infrastructure, visitor facilities and services would remain unchanged. Park functions currently stationed in the park would remain in e isting park facilities. Some office functions currently conducted in surrounding communities would continue. The relative distribution of disciplines across divisions would remain the same.

The level of effort to protect park resources, maintain park facilities, and to provide for visitor enjoyment is anticipated to slightly increase. Park structures and infrastructure would continue to be supported from the central maintenance facility located at Munson alley. Munson alley oad to im illage would continue to be cleared of snow during the winter months and im Drive would continue to be plowed to allow summer season access as early in the spring as weather dictates. The park would continue to maintain year-round employee residences at Steel ircle and summer season residences at Sleepy ollow at Munson alley. ver the long term, the level of resource protection, visitor protection and safety, and the level of education and interpretive effort are e pected to slightly increase. The level of staffing as well as the use of facilities and infrastructure would remain unchanged, resulting in a perceptible change in the ability of the park to provide desired services. These changes would be slight but detectable, resulting in minor, long-term, adverse impacts in park operations.

C I Past and ongoing projects, including reconfiguration of im illage, adaptive reuse of historic structures in Munson alley and im illage, upgrading the infrastructure at leetwood ove, and highway road improvement projects on ighway 2, have had long-term moderate beneficial impacts on park operations. verall these projects have the potential to have an appreciable effect on park operations and improve the ability of the park to provide desired services and facilities. Impacts of the above other actions in conjunction with the no-action alternative would result in moderate long-term beneficial cumulative impacts. The no-action alternative would contribute a minor adverse increment to cumulative impacts to park operations.

C verall, under alternative there would be minor long term adverse impacts to park operations. The cumulative actions in conjunction with the no-action alternative would result in moderate, long-term beneficial cumulative impacts. The no-action alternative would contribute a minor adverse increment to cumulative impacts to park operations.

C O

Under the no-action alternative, e isting commercial activities would continue unchanged, although the primary area of commercial activity would shift from im illage to Mazama illage. Necessary and appropriate commercial services to meet the needs of visitors and to enhance their enjoyment of the park would continue to be provided at im illage, Mazama illage and at leetwood ove. There would be no change in the number or fre uency of boat tours on the lake. ecause commercial activities would not be affected and there would be no measurable change in operations under

alternative , there would be new impacts on concession operations.

C I . Past actions including restoration of the rater ake odge, reconfiguration of facilities at im illage, Mazama illage, and leetwood ove have had moderate, long-term beneficial impacts on concessioner operations. The no-action alternative would not contribute to cumulative impacts on concession operations.

C verall, under alternative there would be negligible long term adverse impacts to concession operations. The no-action alternative would not contribute to cumulative impacts on concession operations.

SOCIOECO O IC E I O E T

Park staffing remains relatively constant at full-time e uivalent positions T s . The park's annual budget also remains the same 4,02 ,000 in 2003 e cept for small increases due to inflation and the rising costs of goods and services utilized by the park. acilities, park operations, and recreational uses are maintained. urrent conditions and trends continue. Most facilities and services within the park would remain essentially the same as now. ithout a long-term, comprehensive management plan, park managers would accommodate changing visitor use patterns, uses, and volumes, and changes in resource conditions, as they occurred or in response to pressure from various interest groups. The current upward trend in visitation continues. hile visitation can and does fluctuate from year to year, the historic growth rate of appro imately .4 is assumed to continue for the life of this plan.

Additional funding for specific currently authorized projects would amount to , 0 , 00 ,402, 00 federal dollars , 04,000 private dollars, see appendi . These projects do not occur all at the same time but are phased in over a number of years. The impacts e.g., increase in income, creation of jobs, etc. on individual firms and employees could be short term, moderate to major, and beneficial for individuals and affected firms. owever, impacts on the regional economy with nearly .0 billion in earnings and about ,000 jobs in 200 as measured by economic indictors e.g., a substantial increase in income or a decrease in unemployment or poverty, etc. would be negligible.

rater ake National Park would continue to be a substantial contributor to the regional economy and some local gateway communities' economies as a result of jobs provided, and wages and operational e penditures by the National Park Service. In addition, the park serves as a key attraction for the local and regional tourism industry. The visiting public would continue to generate tourism related spending within the regional and local economies, which benefits businesses by generating income and providing employment opportunities.

owever, the three-county region would not be affected due to the size and diversity of the regional economy. Individual gateway communities may be affected by specific projects occurring in the park. owever, the number and types of businesses located in the local gateway travel corridors are small. Since there are few local businesses that can be affected by the continuing operations of the park, and the park would continue to operate and be open to the public, and this alternative continues current policies and programs,

no changes in the types or amounts of impacts would occur as the result of this alternative.

C I Additional changes or shocks either positive or negative to the local and regional socioeconomic environment within which the park e ists are not e pected. No other actions that could have cumulative effects when combined with the impacts of the no-action Alterative have been identified during this planning process, which has included public participation and input. The park continues to be an important visitor attraction bringing visitors to the region resulting in tourism related e penditures in the area. penditures by the Park Service to operate and maintain the park continue to contribute positive direct benefits to the local and regional economies. In conjunction with other past, present, and reasonably foreseeable actions, no additional cumulative impacts are e pected.

C The park's staff levels and base budget would not change under the no-action alternative other than as a result of adjustments for inflation and rising labor and materials costs. Approved projects over and above regular operations of the park, which would be funded under the no-action alternative, would amount to about , 0 , 00 in direct e penditures. These projects would be phased-in over a number of years, so impacts on individual firms and employees could be moderate to major, short term, and beneficial, but impacts on the regional economy would be negligible. The current range and level of impacts tourism spending and park spending on adjacent communities would continue to be beneficial providing income, employment, and business opportunities to the local and regional economy.

The no-action alternative would continue to have a minor to moderate short-term beneficial impact on the socioeconomic climate of the gateway communities and regional area, primarily because of ongoing maintenance of facilities and programs and some limited development projects. The overall current level and types of impacts would remain the same. In the long-term, the park would continue to be an important visitor attraction and contributor to the tourism industry in the three-county region.

OI LE E SE EFFECTS

There would be no unavoidable adverse impacts of major intensity that would result from implementing alternative . Alternative would result in moderate adverse impacts to visitor access along im Drive and Mazama illage. The negligible and minor impacts are described in the foregoing analysis.

EL TIO S I OF S O T TE SES OF T E E I O E T T E I TE CE E CE E T OF LO TE O CTI ITY

The vast majority of the park would be protected in a natural state and would maintain its long-term productivity. Adverse impacts on the park's soils, water uality, and wildlife from continuing visitor activities could reduce the productivity of the park's natural resources in localized areas over time.

I E E SI LE O I ET IE LE CO IT E TS OF ESO CES

onstruction materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds e pended on both labor and construction materials. ecause it takes so long for soils to form, the loss of soils due to visitor use in localized areas would be an irreversible commitment of resources.

I CTS OF I LE E TI LTE TI E EFE E LTE TI E

C LT L ESO CES

Implementation of this alternative would generally have the same impacts on archeological resources as those listed under alternative , although provision of more diversified visitor e periences along the im Drive corridor, including development of new trails, picnic areas, and improved pullouts, parking areas, and overlooks, could have additional minor, long-term and permanent adverse impacts on archeological sites. Development of the new science learning center in the superintendent's residence would also result in additional minor, long-term, and permanent adverse impacts on archeological sites.

C E . Implementation of this alternative would generally have the same cumulative effects on archeological resources as those listed under alternative , although development projects and improvements along the im Drive corridor, as well as development of the new science learning center in the superintendent's residence, would contribute minor, long-term, and permanent adverse effects to any overall cumulative impact on archeological resources.

C Implementation of this alternative would generally have the same impacts on archeological resources as those listed under alternative .

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with archeological resources.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on archeological resources would be no adverse effect.

S

Although implementation of alternative 2 would generally have the same impacts on historic structures/buildings as those listed under alternative , rehabilitation and adaptive use of some historic structures/ buildings for new functions would have moderate, long-term, beneficial impacts on those structures/ buildings.

C E Implementation of this alternative would have the same cumulative effects on historic structures/ buildings as those listed under alternative , although rehabilitation and adaptive use of some historic structures/buildings for new functions would contribute moderate, long-term, beneficial effects to any overall cumulative impact on historic structures/ buildings.

C Implementation of this alternative would have the same impacts on historic structures/buildings as those listed under alternative , although rehabilitation and adaptive use of some historic structures/buildings for new functions would have moderate, long-

term, beneficial impacts on those structures/ buildings.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this eneral Management Plan or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with historic structures/ buildings.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on historic structures/buildings would be no adverse effect.

C L

Implementation of this alternative would generally have the same impacts on cultural landscapes as those listed under alternative . Although development of new trails, picnic areas, and improved pullouts, parking areas, and overlooks in the im Drive corridor would have some additional minor, long-term, adverse impacts on the im Drive cultural landscape. owever, management of parking and road congestion along the road by defining and formalizing e isting pullouts, parking areas, and overlooks would be e pected to have minor, long-term, beneficial impacts on the im Drive cultural landscape because the historic character and general design features of the road corridor would be preserved.

C E . Implementation of this alternative would generally have the same effects on cultural landscapes as those listed under alternative . Development projects and improvements along the im Drive corridor would contribute minor, long-term, adverse effects to any overall cumulative impact on the im Drive cultural landscape. owever, improvements along the road to manage parking and road congestion would be e pected to contribute minor, long-term, beneficial impacts to preservation of the historic character and general design features of the road corridor.

C Implementation of alternative 2 would generally have the same impacts on cultural landscapes as those listed under alternative . Although development projects and improvements along the im Drive corridor would contribute additional minor, long-term, adverse effects on the im Drive cultural landscape, improvement along the road to manage parking and road congestion would be e pected to have minor, long-term, beneficial impacts on preservation of the historic character and general design features of the road corridor.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with cultural landscapes.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on cultural landscapes would be no adverse effect.

E

Implementation of this alternative would generally have the same impacts on ethnographic resources as those listed under alternative , although emphasis on e panded and diverse recreational and educational opportunities in the national park for visitors would have minor, long-term, adverse impacts on such resources. Although e panded visitor activities could result in intrusion on significant sacred sites or landscapes, important traditional use activity areas, and ceremonial practices, these impacts would be generally slight but noticeable. owever, educational opportunities would be provided to park visitors to heighten their awareness of the importance of ethnographic resources and the need to respect tribal access to such sites as well as a group's ceremonial practices.

C E . Implementation of alternative 2 would have the same cumulative effects on ethnographic resources as those listed under alternative . mphasis on e panded and diverse recreational and educational opportunities for visitors, however, would contribute minor, long-term, adverse effects to any overall cumulative impacts on ethnographic resources.

C Implementation of this alternative would generally have the same impacts on ethnographic resources as those listed under alternative , although emphasis on e panded recreational opportunities would have minor, long-term, adverse impacts on such resources.

There would no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this eneral Management Plan or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with ethnographic resources.

S S . No Traditional ultural Properties are affected by actions under this alternative. Thus, Section 0 determinations are unnecessary.

C

Implementation of this alternative would have beneficial, minor to moderate, long-term impacts on the park's museum collections because the increased volume of the collections that would result from e panded park research activities, as well as ac uisition of pertinent park-related collection materials not currently owned or managed by the National Park Service, would be stored in both onsite and offsite facilities that meet professional and National Park Service museum standards. Thus, provision for ade uate storage and workspace would be provided to improve curation, protection, and access to the collections, and staffing would be upgraded to reduce the cataloging backlog.

C E Since the national park was established the combination of limited staffing and lack of storage and workspace meeting professional and National Park Service museum standards have hindered endeavors to improve care of and access to the park's museum collections and address the ever-increasing cataloging backlog, thus having minor to moderate, long-term, adverse impacts on such resources. Actions under this alternative, such as e pansion of the collections and their storage in both onsite

and offsite facilities, would contribute beneficial, minor to moderate, long-term effects to any overall cumulative impacts on the park's museum collections.

C Implementation of alternative 2 would have beneficial minor to moderate long-term impacts on the park's museum collections.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with museum collections.

T L ESO CES

C

The greater emphasis on research, partnering, and visitor education would greatly enhance the opportunities for positive effects on resources within the park. The following actions would potentially have localized minor to more widespread moderate, long-term, beneficial effects on biotic communities. The intensity of the effects would likely be greater over time as more knowledge of the resources is accumulated, partnerships e panded, and resource management actions were implemented that further preserved and restored native species, communities, and processes.

panded opportunities for research and greater collaboration and communication between park resource staff and members of the scientific community would provide valuable information and working relationships relevant to managing and preserving the park's resources. The uality and uantity of information would be enhanced, as would integration of research and data collection with resources management, which would contribute to more informed and better management decisions. Park management could become more proactive in determining desired resource conditions and identifying and addressing potential impacts or threats. esearch and the information gained would allow for not only better management of resources within the conte t of the park, but within a broader regional and global ecological conte t as well. All these actions would indirectly contribute to improved resource conditions by enhancing the park service's knowledge and capabilities for restoring and maintaining native species, communities, and processes. Some adverse impacts to resources from research activities such as vegetation and soil trampling could occur but would be localized and negligible.

Increased partnerships with the scientific community and others would provide a wider base of e pertise to draw upon in making management decisions. Increased monitoring and restoration programs would also be possible through partnerships.

nhanced visitor education opportunities could also indirectly benefit native species, communities, and processes. Improved education and interpretation would increase the public's appreciation, understanding, and stewardship for these resources, which may reduce the potential for visitor-related impacts. This broader base of public support and advocacy would also aid in accomplishing the park's

resource protection and preservation programs and initiatives.

onversion of the rayback Trail to non-motorized use would have localized long-term benefits because of reduced noise along the trail corridor that may reduce disturbance of nearby wildlife species. eneficial effects would likely be minor because of the relatively low levels of motorized use that would be eliminated and the continued presence of hikers and bikers along the corridor. Seasonal closure of a section of the im Drive to motorized use would have similar effects.

Possible future implementation of alternative transportation systems would reduce or eliminate localized effects on vegetation, soils, and wildlife habitat such as trampling and erosion that were described under the no action alternative. This would result in long-term, negligible to minor benefits.

Adaptive use of e isting buildings is e pected to result in negligible new resource impacts. These buildings are located in e isting, previously disturbed developed areas. onstruction and use of new facilities i.e., picnic areas, short trails and minor improvements of e isting pullouts, parking areas, and overlooks in frontcountry zones along the im Drive and other park roads would result in site-specific loss of soils, vegetation, and wildlife habitat. There would also be increased human disturbance to wildlife. Individuals, populations, and species vary in their sensitivity to disturbance and visitor use might disturb or displace some individual animals, particularly those species more sensitive to human disturbance. ertain wildlife may also become habituated to human presence or attracted to the increased food source visitors provide. Specific locations for new facilities have not been identified; however, siting them primarily in or adjacent to previously developed or disturbed sites within the park and avoiding sensitive resources such as wetlands or whitebark pine stands, would minimize additional loss of vegetation, soils, and habitat and disruption to wildlife. ong-term adverse impacts would be localized and minor. Mitigation measures such as topsoil salvage, erosion control, and revegetation would minimize construction impacts.

Administrative and office functions relocated from the park to nearby communities would be housed in e isting structures if possible. owever, if new buildings were necessary, construction activities would have short-term effects on soils and vegetation. Depending on whether of not facilities were built on previously disturbed sites, the long-term adverse effects with mitigation would be negligible to minor.

inter recreational activities occur during the time when wildlife are stressed by cold weather and food shortages. Disturbance or harassment of wildlife during this sensitive time could have negative effects on individuals animals, and in some cases populations, particularly when populations are low. inter recreation, such as snowmobiling and skiing, could create added energetic stress in winter when most wildlife species are already stressed NPS d . The effects of winter recreational activities in the park are unknown, although, disturbance would likely be limited because visitor use levels are e pected to remain relatively low and would continue to occur within limited areas within the park. Snowmobiling would also be restricted to current levels. The park service would initiate a long-term data gathering and monitoring

program to evaluate winter use and associated impacts to ensure long-term protection of park resources. Management actions, such as restrictions on offtrail use, specific area closures, increased patrols, visitor education, or limits on use or party sizes, would be taken as necessary to address impacts. ildlife could benefit from increased protection measures, although the e tent of potential beneficial would likely be localized and minor.

C I . umulative impacts on biotic communities from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . verall cumulative impacts would be long-term, and both major adverse and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs affecting lands both within and outside of the park. The preferred alternative's contribution to adverse cumulative impacts would be minor. owever, actions under alternative 2, particularly increased research, partnering, and visitor education, would promote the further protection, maintenance, and restoration of native communities. Therefore, alternative 2 would also contribute a minor to moderate, beneficial effect to the overall cumulative impacts.

C The greater emphasis on research, partnering, and visitor education under this alternative would indirectly contribute to improved resource conditions within the park, potentially having localized minor to more widespread moderate, long-term, beneficial effects on biotic communities. ong-term adverse impacts from construction and use of new facilities would be localized and minor. iotic communities would not be impaired by the actions proposed under this alternative.

 umulative impacts would be long term and both major, adverse, and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park, and beneficial impacts would be from restoration and protection programs affecting lands both within and outside the park. Alternative 2's contribution to adverse impacts would be minor and its contribution to beneficial effects minor to moderate.

T E
S S

Similar to impacts discussed under biotic communities, greater emphasis on research, partnering, and visitor education under this alternative would also enhance the opportunities for positive effects on threatened and endangered species and their habitat within the park through increased knowledge and better informed management. Any research proposals would be reviewed on a case-by-case basis so that potential adverse effects to these species or their habitats could be avoided.

Some inconse uential changes to habitat or loss of individual sensitive plant species might occur from new development or use as described below. New facilities would be limited and small in scale. They would primarily be placed within currently developed or previously impacted areas or corridors, or where human use is already occurring, thus minimizing the potential for adverse effects. Site-specific surveys would be conducted before implementing specific actions to determine if special status species e isted in any proposed

project area. If any were located or if an action occurred within suitable habitat, the National Park Service would consult with the U.S. ish and ildlife Service and regon Department of Natural esources to determine mitigation measures to avoid or minimize adverse impacts on the species.

As discussed under the biotic communities impact topic, the Park Service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of threatened and endangered species. ecause of a number of factors, such as limited occurrence, small populations, low densities, and/or low birth rates, these species are more vulnerable to impacts than general wildlife populations. Some species lyn , wolverine, fisher could benefit from increased protection measures, although the e tent of potential beneficial effects is unknown. reater beneficial effects would occur if for e ample, den sites were located and measures were taken to protect them from disturbance.

ased on the nature of the actions being proposed along with a commitment to conduct surveys, consultation with the U.S. ish and ildlife Service and regon Department of Natural esources, and implementation of appropriate mitigation measures, this alternative would avoid or minimize adverse effects on threatened and endangered species. owever, alternative 2 could result in some adverse effects on some threatened or endangered species. urther rationale is provided below by individual species.

C C

F . Although the park has conducted e tensive surveys for anada lyn and wolverine in the park, none have been detected. All these species re uire large e panses of land relatively free from human use. ecause of the e tent of suitable habitat within the park, new development and associated visitor use would likely occur within or near suitable habitat, which would incrementally contribute to habitat loss and fragmentation. Increased human noise and activity could disturb and displace these species. owever, development would be located primarily in nonwilderness areas in or adjacent to e isting developed areas and roadways. ecause of the e isting development and use in these areas, adjacent habitat would not be readily used and would probably be avoided by these species. Some new backcountry trail links would be established to connect into the park's backcountry network of trails. These new trails would be zoned for low levels of use, would re uire only minimal clearing of vegetation and, would impact a relatively small area, potentially affecting only a small fraction of these species' territory or the e tent of suitable habitat.

E . There would be little if any adverse impact on the primary food sources fish and carrion of the bald eagle. No new development or use would occur near the e isting nest site along the rater ake shoreline. Tour boats would continue to be restricted from areas on the lake that are near the nest site. The primary area for potential nest sites for this species would likely be within the caldera. Potential new development along the rim, such as trails and picnic areas, could affect potential nest site habitat. owever, new development would affect little of the overall amount of suitable habitat along the rim or within the caldera. Prior to new development, surveys would be completed to identify suitable habitat and locate nest sites. New development would be sited and designed to avoid impacts to nesting eagles.

S O . urrent management practices that would continue under alternative 2 include protecting identified nest sites from human activities. Although new development and associated use could be located within patches of old growth stands identified as suitable habitat, no development would occur near known nest sites or within associated protective buffer zones. Most development would be in or adjacent to e isting developed areas and roadways, thus minimizing the likelihood of disturbance. onversion of the rayback Trail to nonmotorized use could reduce disturbance to a known owl nest site because of reduced noise along the trail corridor, although the nest is located over .2 miles away from the road.

. Development of frontcountry facilities along roadways e.g., picnic and parking areas, trails could result in the loss of goshawk habitat, primarily where facilities were located in forested habitats. These developments would impact a relatively small area and would potentially affect only a small fraction of any nesting pair's much larger territory or the e tent of suitable habitat. Surveys to locate nest sites would be completed prior to facility construction and those sites avoided.

F . Peregrines are known to be sensitive to disturbances such as human presence above their nest site. No new development would be located in or above the area of the one known nest site within the caldera. Tour boats would also continue to be restricted from areas on the lake that are near the nest site. New development such as trails or picnic areas along the rim could result in visitor use above some caldera cliff faces that could provide potential nest sites. owever, new development would affect very little of the overall amount of suitable habitat along the rim or within the caldera. Prior to new development, surveys would be completed to identify suitable habitat and locate nest sites. New development would be sited and designed to avoid impacts to nesting falcons.

T Some frontcountry development could occur within the Sun and ost reek drainage basins near the rayback and im Drive oad intersection and the ost reek campground. unoff from areas disturbed by construction could lead to increased sedimentation that could affect bull trout habitat in Sun reek. Design and location of facilities would take into consideration such parameters as soil types, slopes, and vegetative cover in order to minimize disturbance and potential runoff. A vegetative buffer would be maintained between facilities and creek headwaters. est management practices such as erosion and sediment controls and revegetation would be implemented to eliminate or reduce both short- and long-term impacts.

onversion of the rayback Trail to nonmotorized use could have localized long-term benefits because the elimination of vehicles would reduce erosion that could affect bull trout habitat in Sun reek. eneficial effects would likely be negligible because of the relatively low levels of motorized use and associated impacts that would be eliminated. The park would continue to take actions to stabilize and minimize areas of erosion along this trail.

S

C L . The location of these plants would continue to be protected and the populations monitored. ecause of the limited new development and use along the rim that would occur,

disturbance to populations of these plants would be negligible. or e ample, some small loss of habitat or individual plants might occur where new picnic areas or trails along the rim were developed. ow-ever, locations for any new development or trails would be surveyed for the pres-ence of these species, and measures to avoid or minimize adverse impacts would be implemented.

C I . umulative impacts on threatened and endangered species from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . verall cumulative impacts would be both adverse and beneficial. Adverse impacts would be primarily due to land management activities in the region. Park programs would adversely affect some individuals or habitat in the short term, but would not likely adversely affect threatened and endangered species in the long term because long-term effects would be beneficial. Alternative 2 could contribute some adverse effects on threatened or endangered species but could also contribute beneficial long-term effects to the overall cumulative impacts.

oncl sion. reater emphasis on research, partnering, and visitor education under this alternative would enhance the opportunities for positive effects on threatened and endangered species and their habitat within the park. New devel-opment could result in small, localized reductions in habitat. The survey, avoid-ance, mitigation, and consultation actions that the Park Service would take would help ensure that this alternative would avoid or minimize adverse effects on threatened and endangered species. Alternative 2 could result in some adverse effects on threatened or endangered species but would not result in impairment to these species. Alternative 2 could contribute some adverse effects on threatened or endangered species but could also contribute beneficial long-term effects to the overall cumulative impacts.

C L

Impacts to rater ake, as in alternative , would be minimized by proactive manage-ment actions to prevent contamination to the lake. Development within the caldera and lake drainage would be minimal, preventing the addition of sentiments, minerals or contaminants that could reduce water uality. Park operations such as snowplowing would continue to be managed to minimize addition of contaminants to the lake ecosystem. urrent restrictions on access and boating would continue.

The rater ake ong-Term imnological Program would continue its interdisci-plinary monitoring and research program. The program would continue to inform management of the lake's status, varia-bility, and trends. And contributes to the scientific understanding of rater ake and other large-lake and ocean ecosys-tems. This alternative e pands the research and monitoring programs of the park through e panded partnerships and the establishment of the new science and learning center. panded research efforts would include

- modeling ecosystem components and interactions among biological, physical, and chemical processes, including food web interactions and the impacts of introduced fish
- optical studies of the lake to include the effects of abiotic and biotic particles lake clarity
- paleo-limnological studies

- studies of benthic and nearshore communities

panded research and monitoring would result in long-term beneficial impacts to the water uality of rater ake.

C I . umulative actions would contribute both adverse and beneficial impacts to water uality.

As called for in the isitor Services Plan, only essential services would be provided at the rim. Included in this plan is the proposal to relocate the cafeteria parking behind the cafeteria. This would decrease the snow blown into the caldera during snowplowing and thereby decrease possible hydro carbons and vehicle related contaminants.

Improvements in boating technology by conversion of research and tourboats to 4-stroke motor or direct fuel injection would also prevent contaminants that could reduce water uality. Personal watercraft would continue to not be allowed on the lake, and access to the lake would continue to be provided by a single access. ater uality could benefit from these increased protection measures, although the e tent of potential beneficial effects is unknown, but would likely be localized and minor.

C The no-action alternative would have a negligible, long-term, beneficial effect on water uality within rater ake. In accordance with the criteria for determining impairment, there would be no major adverse impacts on water uality, and therefore no impairment of water uality.

The construction or rehabilitation of facilities would have the potential to impact water uality through ground disturbance, which would result in increased surface runoff and erosion. owever, due to the limited e tent of proposed developments and implementation of mitigation measures, such as silt fences, erosion control blankets, mulch, and revegetation to control impacts, increased sedimentation and turbidity would be temporary and negligible.

elocation of some park administration functions outside the park would likely have little effect on water use in the park because the e isting building would be used for other functions. Adaptive use of e isting buildings is e pected to have a negligible effect on water use within the park. New overnight use by a small number of visiting researchers, scientists, and artists would be accommodated in e isting facilities. This is e pected to result in a negligible, if any, increase in overall water demand. Incorporation of water saving features into facilities would be e pected to offset most of the increased use.

Under this alternative, snowmobile use would be restricted to e isting use levels. Similar to alternative no-action alternative , because snowmobiles raise concerns about long-term impacts from high pollution emissions, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study. Management actions to mitigate nonpoint source pollution would be implemented if necessary. ater uality could benefit from increased protection measures, although the e tent of potential beneficial

effects would likely be localized and minor.

C I . umulative impacts on water resources from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . The park's fire management program might adversely impact water uality e.g., sedimentation, erosion due to the effects of fires, particularly high intensity fires. Park construction and rehabilitation proposals would also contribute to adverse impacts from increased surface runoff and erosion. est management practices such as erosion and sediment controls would be employed to minimize these impacts. Impacts would be localized, short-term, and minor. Minor beneficial cumulative actions would include ongoing trails rehabilitation and relocation within the park that would reduce localized erosion and runoff.

The replacement of the waterline from Munson Springs to arfield would likely reduce water loss by the system. Implementation of actions within the *isitor ervices lan* would also reduce water use within the park. eductions in water use would have a minor beneficial effect on water uantity in Annie reek.

The impacts of other actions described above in conjunction with the impacts of alternative 2 would result in localized, minor, adverse, and beneficial impacts on water uality and minor beneficial effects on water uantity in Annie reek. Alternative 2 would contribute a negligible adverse impact on water uality and negligible decrease in water uantity in Annie reek to the overall cumulative impact.

C . Alternative 2 would have a negligible adverse effect on water uality due to construction activities and a negligible effect on Annie reek water uantity. ater uality could benefit from increased protection measures, although the e tent of potential beneficial would likely be localized and minor. ater resources would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 2 would result in short- and long-term negligible to localized, minor adverse and beneficial impacts on water uality and uantity. Alternative 2 would contribute a negligible, adverse impact on water uality and negligible, decrease in water uantity in Annie reek to the overall cumulative impact.

Seasonal closure of a portion of the im Drive and closure of the rayback Trail to motorized use would benefit air uality because of reduced vehicular emissions in these areas. eneficial effects would be localized and negligible because of the relatively low levels of motorized use that would be eliminated.

There would be some short-term, localized impacts on air uality resulting from particulates or machinery fumes generated during construction, removal, or rehabilitation of facilities under some alternatives. Mitigation measures such as watering and revegetation of disturbed areas, re uiring machinery to meet emission standards, would be employed. ffects would be short term and negligible, lasting only during the construction period.

Under this alternative, snowmobile use would be restricted to e isting use levels. Similar to alternative no-action

alternative , because snowmobiles raise concerns about long-term impacts from high pollution emissions, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study. Management practices to mitigate nonpoint source pollution would be implemented as necessary. Air uality could benefit from increased protection measures, although the e tent of potential beneficial would likely be localized and negligible.

C I . umulative impacts on air uality from actions in the park and surrounding lands would be similar to those described for the no-action alternative. The park's air uality is very good with negligible effects from regional pollution sources outside of the park. orest fires on surrounding lands could contribute particulates for limited periods of time. Degradation of air uality from the park's fire management program could result in moderate short-term impacts, but the program would be in conformance with the lean Air Act, regon State Smoke Management Plan, and the regon isibility Protection Plan. Park construction and rehabilitation proposals would cause localized increases in dust and emissions from construction vehicles and e uipment, resulting in localized short-term effects on air uality. The cumulative actions in conjunction with the no-action alternative would result in short-term, negligible to moderate, adverse impacts on air uality. Alternative 2 would contribute a negligible, short-term adverse and negligible, long-term, beneficial increment to the cumulative effect.

C ong- term, beneficial impacts to air uality within the park would be minor. Short-term construction related impacts would be negligible. Air uality would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 2 would result in short-term moderate adverse impacts on air uality. Alternative 2 would contribute a negligible, short-term, adverse, and negligible, long-term, beneficial increment to the cumulative effect.

ISITO SE

O

Under alternative 2 there would be a focused range of visitor e periences emphasizing research, learning, and more in-depth e perience of park resources. isitors would have opportunities to participate in guided field trips, seminars, and workshops. This focused learning environment would enable park interpreters and partnering researchers to convey a broader range of information and involve park visitors in hands-on learning e periences about both natural and cultural park resources. In frontcountry areas at Munson alley, im illage, and along im Drive, there would be e panded opportunities to e perience the rustic designed architecture of park buildings and roads in their cultural settings.

isting recreational opportunities would remain, including scenic driving, front country and back country hiking, picnicking, and nature viewing. inter activities, including snow-camping, cross-country skiing, and snowshoeing would continue as would snowmobile access along the north entrance road to North unction. Use of snow coach access would be encouraged on the North ntrance road. reater diversity of visitor use along im Drive would be provided by

seasonal closures of sections of ast im Drive during the autumn shoulder season, allowing visitors an opportunity to e perience the primary resource of the park in ways other than driving, as new nonmotorized uses would be encouraged in areas that have space to accommodate them. Nonmotorized recreational opportunities would be available along rayback Drive.

ecause there would be an addition in recreational opportunities seasonal non-motorized use along im Drive and an e pansion of e isting educational / interpretive programs in-depth, focused educational field trips and seminars , the change in the diversity of visitor e perience would be highly noticeable, e ceptionally beneficial, and would affect relatively large numbers of visitors, resulting in a major beneficial impact on the diversity of visitor opportunity.

C

Under alternative 2 the road system would continue to be accessible during peak visitor use times in the summer months. Traffic congestion, especially along im Drive during the summer season, would be managed by improving e isting pullouts, parking areas, and overlooks. If warranted by future crowding, shuttles and other alternative transportation systems would be used to alleviate congestion along im Drive between leetwood ove and im illage. A feasibility analysis would determine whether the shuttle would be a concession, Park Service operated, or a service contract. There would be some change to motor vehicle accessibility to portions of east im Drive during the shoulder autumn season when portions of ast im Drive would be closed to motorized traffic on an e perimental basis resulting in reduced motorized access.

rayback Drive would be closed to motorized traffic throughout the year. Private vehicle access to the rim in the winter would continue. Snowmobile access and permits for snow coach tours would continue on the North ntrance oad to North unction. ecause there would be no noticeable change in the way visitors e perience the park in the winter, there would be negligible impacts to visitor accessibility to park resources during the winter season. verall, changes in motorized accessibility in the park would be detectable, localized in area, and of short duration affecting a relatively small number of visitors resulting in minor, long-term, adverse impacts to motorized accessibility.

New trails would be developed in local-ized frontcountry areas along the park's road system. There would be new hiking and biking opportunities along ast im Drive during the autumn. Improvements to e isting front country hiking trails and development of new front country trails would result in greater trail accessibility. isitor surveys indicate that short trails are e tremely important to a majority of visitors. pansion of frontcountry trails, the addition of seasonal nonmotorized hiking and biking opportunities along ast im Drive, and the addition of year-round hiking and/or skiing, snowshoeing, and biking opportunities along rayback Drive would be readily apparent. Ninety-three percent of visitors responding to the 200 isitor Survey indicated that short, frontcountry trails were either very important or e tremely important. ecause front country trail access would be e panded and new front country non-motorized trail opportunities would be added an e ceptionally beneficial impact on trail accessibility would normally be e pected, however because visitation to the park during the fall shoulder season is

considerably reduced from peak use these additions and e pansions of nonmotorized trail opportunities would affect a relatively small number of visitors resulting in minor to moderate, long-term, beneficial impacts on trail accessibility.

E O

Under alternative 2 e isting passive interpretive opportunities would continue and interpretive programs and educational services would increase in number and in depth of information. pportunities to participate in educational programs would increase with the development of a science and learning center at Munson alley. Partnerships with universities, museums, other agencies, and researchers would e pand the breadth and depth of knowledge of park resources and enrich interpretive programs. isitors would have the opportunity to participate in a wide variety of educational programs such as focused guided field trips, workshops, and seminars. Interpretation of park resources would be provided by researchers guiding special indepth tours, participatory field trips, and seminars. Park interpreters would provide research-based programs. uided hikes and interpretation on concession-operated boat tours would focus on participatory, learning e periences for visitors. New and e panding sources of information about park resources would be available to park visitors and would be conveyed in a broader conte t as technology advanced and new educational venues developed. ecause the variety and range of interpretive programs would increase and e pand, the change to visitor opportunities to participate in educational and interpretive programs would be highly noticeable. These changes in the interpretive program would affect relatively large numbers of visitors, resulting in a major, long-term, beneficial impact on visitors' opportunities to participate in interpretive programs.

F S

 pportunities for visitors to access and use park facilities and services would increase. New and e panded uses of park facilities would open some park buildings and structures for visitor use and enjoyment. isitors would gain new opportunities to e perience east im Drive and its associated pullouts and overlooks without vehicular traffic during the fall. rayback Drive would provide non-motorized opportunities year-round. Participation in workshops and seminars conducted in park buildings and other structures would e pand and change visitor use of park facilities. These changes would be highly noticeable, a relatively large numbers of visitors would be affected, and the changes would be e ceptionally beneficial. Therefore alternative 2 would have a major, beneficial, long-term impact on the visitor's e perience of park facilities and services.

S S

Development of frontcountry trails would occur in localized areas along the park's transportation corridor resulting in detectable, localized, but small changes to the natural sound environment in these areas. This would result in negligible long-term, adverse impacts to soundscapes at park trailheads. losing portions of ast im Drive to vehicular traffic in the autumn shoulder season would enhance the natural soundscape along this portion of the lake caldera. This change would be detectable, although the change would affect a relatively small number of visitors and would be localized in area resulting in resulting in minor beneficial long-term

impacts to soundscapes along east im Drive.

ith the seasonal closure of ast im Drive in the fall, visitor opportunities to sightsee in the park would e perience a change during that season. Scenic views of the lake without the intrusion of vehicular traffic would be possible. During peak use periods in the summer opportunities for visitors to sightsee in the park, including motorized sightseeing along im Drive, would remain unchanged. There would be a noticeable change in visitor e perience in viewing the lake in the autumn. This change would be highly noticeable, but would affect a relatively small number of visitors and be localized in area, resulting in a minor, beneficial impact on visitor opportunities to sightsee and enjoy the park's scenic views.

C I Past and ongoing projects, including development of front-country trails, reconfiguration of im illage, and adaptive reuse of historic structures in Munson alley and im illage, have had long-term, major, beneficial impacts on the visitor e perience. econfiguration of im illage would change the way visitors access views of the lake at im illage. A walk along the promenade would be possible without having to compete with vehicular traffic. A year-round visitor contact station at the rim would enable winter views of the lake for people of all abilities. verall these projects have the potential to increase the diversity, of visitor e perience, enhance the range of interpretative programs, e pand access to park facilities, and to improve the uality of visitor e perience values such as sounds of nature and scenic views. The impacts of the above other actions, when combined with the impacts of the no-action alternative would result in a major, long-term, beneficial impact. Alternative 2 would contribute a minor to major, beneficial increment to cumulative impacts to the visitor e perience, because alternative 2 would add new and e pand-ing e isting visitor opportunities. Alterna-tive 2 would also contribute minor, long-term adverse increment to cumulative impacts due to the seasonal closure of ast im Drive.

C . Alternative 2 would have a major beneficial impact on the diversity of visitor e perience. Under this alternative visitors would e perience minor, long-term, adverse impacts on vehicular access with the seasonal closure of ast im Drive but would gain minor to moderate, long- term, beneficial impacts on frontcountry trails accessibility. There would be major beneficial impacts to visitor enjoyment of educational and interpretive programs and access to park facilities and services. pportunities for visitors to enjoy scenic views would be e panded along the caldera rim resulting in minor beneficial impacts to scenic viewing opportunities. The cumulative actions in conjunction with the no-action alternative would result in an overall major, long-term, beneficial impact. Alternative 2 would contribute a minor to major beneficial increment to cumulative impacts to the visitor e perience, because this alternative would add new and e panding e isting visitor opportunities. Alternative 2 would also contribute a minor, long-term, adverse increment to cumulative impacts due to the seasonal closure of ast im Drive.

O E TIO S

O

Under alternative 2 e isting buildings and facilities would be adaptively used for new functions and uses. esearchers and scientists would stay in the park year-round increasing all season use of park buildings. Use of park facilities is e pected to be constant but short term with fre uent turnover, necessitating increased maintenance responsibilities in preparing and maintaining park buildings for and in use. Maintenance of year-round residences at Steel ircle and summer season residences at Sleepy ollow in Munson alley would continue. Park maintenance staff would continue to support park operations from the central maintenance facility located at Munson alley. Munson alley oad to im illage would continue to be cleared of snow during the winter months and im Drive would continue to be plowed to allow summer season access as early in the spring as weather dictates. ecause changes in the ability of the park to provide desired services and facilities would be small but perceptible, minor, long-term, adverse impacts to park operations would be e pected under alternative 2.

To accommodate new and e panded visitor use, some park functions that are not, of necessity, park resource-based, would be relocated outside the park in surrounding communities. ewer employees would reside in the park and more staff functions would be accomplished outside the park boundary. This action would disperse the staff and associated inconveniences in communication and coordination among employees would be e pected to occur. This would be offset by increased telecommunication efficiency and reliability. ocating staff in surrounding communities would also contribute to increased efficiencies in developing partnerships and would contribute a moderate beneficial impact on park operations. Different options for accommodating operations outside the park would be studied before implementing any actions. Actions that propose purchasing additional property outside the boundary would re uire additional authorization. Staff functions would shift to a greater emphasis on research, education, and interpretation. There would also be an increased need for maintenance operations to maintain year-round use of park facilities and to manage fre uent turnover of park residential spaces. ecause changes in park operations would be readily apparent and would have an appreciable effect on the ability of the park to provide new services and facilities, there would be moderate, beneficial impacts on park operations.

C I Past and ongoing projects including reconfiguration of im illage, adaptive reuse of historic structures in Munson alley and im illage, upgrading infrastructure at leetwood ove, and highway road improvement projects on ighway 2, have had long-term moderate beneficial impacts on park operations. verall these projects have the potential to have an appreciable effect on park operations and improve the ability of the park to provide desired services and facilities. Impacts of the above other actions in conjunction with the no-action alternative would result in moderate, long-term, beneficial cumulative impacts. The no action alternative would contribute a moderate, beneficial, and minor adverse increment to cumulative impacts to park operations.

C Alternative 2 would result in moderate, beneficial impacts on park operations. umulative actions in conjunction with the no-action alternative would result in a moderate, long-term, beneficial cumulative impact. Alternative 2 would contribute a moderate, beneficial and minor, adverse increment to cumulative impacts to park operations.

C O

Under alternative 2 impacts on concession activities would be similar to alternative . elative to the no-action alternative, there would be no measurable or perceptible change to concession operations under alternative 2, resulting in no new impacts on concession operations.

C I Past actions, including restoration of the rater ake odge, and ongoing actions, such as reconfiguration of park facilities at the rim and at Mazama illage, have had a beneficial impact on concessioner activity. onsolidation of concession activity at Mazama and the closeness of Mazama illage to regon State ighway 2 facilitate concession operations and inventory staging. These actions would result in moderate, long-term, beneficial impacts. Alternative 2 would not contribute to cumulative impacts on concession operations.

C . Alternative 2 would have negligible, long-term adverse impacts and would not contribute to cumulative impacts on concession operations.

SOCIOECO O IC E I O E T

The emphasis of this alternative is to manage the park and its resources to provide greater opportunities for visitors to e perience diverse recreational, educational, and research opportunities. Some additional staff persons . T would be hired. hanges to the park's infrastructure are called for to support this shift in park emphasis. The park's base budget would be increased by 00,3 0 Development projects such as building new trails and backcountry camping sites, improving roadways, pullouts, parking areas, etc. re uire the e penditure of additional funds for development in the amount of 4, 43,000 which is 43,000 more than the no -action alternative. These monies spent over the life of the plan for various projects would provide some impacts e.g., increase in income, creation of jobs, etc. to individual firms and workers which would be moderate to major, short term, and beneficial. Impacts on the economic indicators within the affected area described in the Affected nvironment chapter would be negligible because of the relative size of the regional economy appro imately .0 billion in earnings and about ,000 jobs in 200 and the phasing of the projects over the ne t to 20 years.

The pattern of increasing visitation is e pected to continue. oncession services may be e panded to cover additional tours or research partnerships. Providing additional facilities and programs would encourage more visitor use at the parks. The amount of additional use is indeterminate at this time. owever, this increased use could result in some additional spending within the gateway communities or region, which would benefit some retail establishments, restaurants, or motels in the travel corridors.

Moving some administrative or operational functions to areas outside the park as the need for space increased would

result in the purchase or long-term lease of land and building s and/or the construction of new buildings in gateway areas. New facility construction would result in a short-term, positive impact on the regional economy, mostly affecting the construction sector of the economy. The purchase of privately owned land on a willing-buyer/willing-seller basis would benefit both the private landowner and the Park Service. and or real estate ac uisition by the federal government would result in some long-term loss of local real-estate ta revenue. owever, the amount of property ta revenue lost to the three counties would be minor compared to the ta revenues collected by Douglas ounty ta revenues .2 million in 2002/03 , ackson ounty ta revenues 4 . million in 2002 and lamath ounty ta revenues of about 3 million, 2002 . Ac uisition of other federally owned land for these purposes would not result in any change in real estate ta es.

Improving facilities within the parks would further contribute positive economic benefits in the form of direct spending to the growing regional economy. More visitors might result in additional tourism-related spending within the region and gateway towns ,increasing business opportunities, income, and employment. The need for housing for additional park staff combined with the increasing desirability of living in the gateway communities might add to the demand for local housing and other locally provided goods. iring additional staff would result in a small increase in the local population that would contribute to the overall growth in the gateway communities. As described above, in conjunction with other past, present, and reasonably foreseeable actions, the preferred alternative would have minor to moderate, long-term, beneficial impacts on the socioeconomic climate of the local gateway communities, but these benefits would be negligible at the three-county regional level.

C I Additional changes or shocks either positive or negative to the local and regional socioeconomic environment are not e pected. No other actions that could have cumulative effects when combined with the impacts of alternative 2 have been identified during this planning process. In conjunction with other past, present, and reasonably foreseeable actions, no additional cumulative impacts are e pected.

C An increase in park staffing levels by . full-time T 's, along with a budget increase to 4, 2 ,3 0 current leasing staffing would have a moderate impact on the local gateway communities' economies and a negligible impact on the regional economy. Additional employees would likely purchase some goods and services from within the gateway communities.

Appro imately 4, 43,000 would be spent over the life of the plan on various projects, an increase of only 43,000 compared to the no-action alternative. These e penditures could result in moderate to major, short-term, beneficial impacts on individual firms and employees increased business and profits, increased employment opportunities, increased income, etc. . verall impacts on the regional economy effects on the economic indicators of income, unemployment rate, poverty rate, etc. , however, would be negligible because of the size and the phasing of the projects over the ne t to 20 years. These projects might encourage some increased visitation to the parks, with beneficial

effects on the region and adjacent communities in terms of increased visitor e penditures for locally provided goods and services.

Moving some administrative functions and park employee housing outside the parks as space re uirements dictate would result in the purchase or long-term lease of land and the construction of buildings in local gateway areas, with short-term, beneficial impacts on the local economy, mostly affecting the construction sector and a few landowners. The purchase of privately owned land on a willing-buyer/willing-seller basis by the federal government would result in some long-term loss of local real-estate ta revenue. owever, the amount of property ta revenue lost to the three counties would be minor compared to the ta revenues collected by the three counties. Ac uisition of other federally owned land for these purposes would not result in any change in real estate ta es.

OI LE E SE EFFECTS

There would be no unavoidable adverse impacts of major intensity that would result from implementing alternative 2. Moderate adverse effects on park operations would occur due to increased maintenance and management operations. The negligible and minor impacts are described in the foregoing analysis.

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The vast majority of the park would be protected in a natural state and would maintain its long-term productivity. Disturbance of soils, vegetation, and wildlife habitat from visitor use and constructing facilities would reduce the long-term productivity of the environment in localized areas. reater emphasis on research, partnering, and visitor education would indirectly contribute to improved resource conditions and the long-term productivity of the environment.

I E E SI LE O I ET IE LE CO IT E TS OF ESO CES

onstruction materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds e pended on both labor and construction materials. ecause it takes so long for soils to form, the loss of soils due to development and visitor use in localized areas would be an irreversible commitment of resources.

I CTS OF I LE E TI LTE TI E

C LT L ESO CES

Implementation of alternative 3 on archeological resources would generally be the same as those listed under alternative , although the additional construction of trails to introduce visitors to a diverse range of ecosystems and terrain, could have some additional impacts on archeological sites. If known archeological resources could not be avoided, the range of potential adverse effects to archeological resources would be negligible to moderate depending upon the e tent to which the resources were affected.

C E . Implementation of this alternative would generally have the same cumulative effects on archeological resources as those listed under alternative .

C . Implementation of this alternative would generally have the same impacts on archeological resources as those listed under alternative , although the additional construction of trails could have some additional impacts on archeological sites. If known archeological resources could not be avoided, the range of potential adverse effects to archeological resources would be negligible to moderate depending upon the e tent to which the resources were affected.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with archeological resources.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on archeological resources would be no adverse effect.

S

Implementation of this alternative would have the same impacts on historic structures/buildings as those listed under alternative .

C E . Implementation of this alternative would have the same cumulative effects on historic structures/buildings as those listed under alternative .

C . Implementation of alternative 3 would have the same impacts on historic structures/buildings as those listed under alternative .

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with historic structures/ buildings.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on historic structures/buildings would be no adverse effect.

C L

Implementation of this alternative would generally have the same impacts on cultural landscapes as those listed under alternative , although provision for dispersed and e panded recreational opportunities and development of new trails to introduce visitors to a diverse range of ecosystems could result in additional impacts on the park's cultural landscapes. If known resources could not be avoided, the range of potential adverse impacts to cultural landscapes would be negligible to moderate depending upon the e tent to which the resources were affected.

C E . Implementation of this alternative would generally have the same cumulative effects on cultural landscapes as those listed under alternative , although provision for decentralized recreational opportunities and development of new trails could result in additional cumulative effects on the park's cultural landscapes.

C Implementation of this alternative would generally have the same impacts on cultural landscapes as those listed under alternative , although provision for decentralized recreational opportunities and development of new trails to introduce visitors to a diverse range of ecosystems could result in additional impacts on the park's cultural landscapes. If known resources could not be avoided, the range of potential adverse impacts to cultural landscapes would be negligible to moderate depending upon the e tent to which the resources were affected.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with cultural landscapes.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on cultural landscapes would be no adverse effect.

E

Implementation of alternative 3 would generally have the same impacts on ethnographic resources as those listed under alternative , although emphasis on visitor enjoyment of the diverse and uni ue natural environment of the national park could have some barely perceptible or measurable, and hence negligible, impacts on such resources. Provision for a wider range of visitor e periences could result in some intrusion on sacred sites or landscapes and important traditional use activity areas and thus have minor adverse impacts on ethnographic resources., because the impacts would be noticeable but would neither appreciably alter resource conditions nor alter the relationship between the resource and the affiliated group's body of practices and beliefs.

C E . The cumulative effects to ethnographic resources resulting

from implementation of this alternative would be similar to those described for alternative , with the addition of minor adverse impacts associated with provisions for wider ranges of visitor e perience. owever, the minor adverse impacts associated with such provisions would represent a very small incremental increase in any overall adverse cumulative effect.

C . Implementation of this alternative generally have the same impacts on ethnographic resources as those listed under alternative , although emphasis on a wider range of visitor e periences to enjoy the diverse and uni ue natural environment of the national park could have some minor adverse impacts on such resources.

S S . No Traditional ultural Properties are affected by actions under this alternative. Thus, Section 0 determinations are unnecessary.

C

Implementation of this alternative would have beneficial minor to moderate long-term impacts on the park's museum collections because ade uate staffing and space would be provided for their curation and storage and they would be stored in an on-site facility that met professional and National Park Service museum standards. Although ade uate storage and workspace would be provided to improve curation and protection of the collections and staffing would be upgraded to reduce the cataloging backlog, park-related collection materials not currently owned or managed by the National Park Service would generally not be ac uired. Access to the collections, both for NPS and non-NPS researchers, would be limited by availability of museum staff to assist in use of the collections.

C E . Since the national park was established the combination of limited staffing and lack of storage and workspace meeting professional and National Park Service museum standards have hindered endeavors to improve care of and access to the museum collections and address the ever-increasing cataloging backlog. Thus, the park's museum collections have been subjected to minor to moderate long-term adverse impacts. Actions under this alternative, such as provision of ade uate space to curate and store the park's museum collections in an on-site facility that met professional and National Park Service museum standards and ade uate staffing to reduce the cataloging backlog, would contribute beneficial minor to moderate long-term effects to any overall cumulative impacts on the park's museum collections.

C . Implementation of alternative 3 would have beneficial minor to moderate long-term impacts on the curation and protection of the park's museum collections because ade uate space would be provided for their curation and storage in an on-site facility that met professional and National Park Service museum standards.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be

no impairment of resources or values associated with museum collections.

T L ESO CES

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onstruction and use of new facilities i.e., picnic areas, short trails in frontcountry zones along the im Drive and other park roads would result in site-specific loss of soils, vegetation, and wildlife habitat. There would also be increased human disturbance to wildlife. Individuals, populations, and species vary in their sensitivity to disturbance and visitor use might disturb or displace some individual animals, particularly those species more sensitive to human disturbance. ertain wildlife may also become habituated to human presence or attracted to the increased food source visitors provide. Specific locations for new facilities have not been identified; however, siting them primarily in or adjacent to previously developed or disturbed sites within the park and avoiding sensitive resources such as wetlands or whitebark pine stands, would minimize additional loss of vegetation, soils, and habitat and disruption to wildlife. ong-term adverse impacts would be localized and minor. Mitigation measures such as topsoil salvage, erosion control, and revegetation would minimize construction impacts. Increased monitoring and restoration programs would be implemented to ensure that impacts from additional frontcountry development and more dispersed visitor use would be minimized and sensitive resources such as whitebark pine stands protected.

Increased contact with visitors could indirectly benefit native species, communities, and processes. There would be greater opportunity to enhance the public's appreciation, understanding, and stewardship for these resources, which may reduce the potential for visitor related impacts. This broader base of public support and advocacy would also aid in accomplishing the park's resource protection and preservation programs and initiatives. eneficial effects would likely be localized and minor.

inter recreational activities occur when wildlife are stressed by cold weather and food shortages. Disturbance or harassment of wildlife during this sensitive time can have negative effects on individual animals, and in some cases populations, particularly when populations are low.

inter recreation such as snowmobiling and skiing can create added energetic stress in winter when most wildlife species are already stressed NPS d . The effects of winter recreational activities in the park are unknown, although, disturbance would likely be limited because visitor use levels are e pected to remain relatively low and would continue to occur within very limited areas within the park. owever, some increase in snowmachine use could occur due to grooming of the North ntrance oad. The Park Service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of park resources. Management actions, such as restrictions on off-trail use, specific area closures, increased patrols, visitor education, or limits on use or party sizes, would be taken as necessary to address impacts. onse uently, long-term impacts from continuing or increasing winter activities would be offset by increased protection measures that would benefit wildlife, although the e tent of potential beneficial effects would likely be localized and minor.

C I . umulative impacts on biotic communities from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . verall cumulative impacts would be long-term, and both major adverse and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs affecting lands both within and outside of the park. Alternative 3's contribution to both adverse and beneficial cumulative impacts would be localized and minor.

C . ong-term adverse impacts from construction and use of new facilities would be localized and minor. Increased contact and education of visitors and possible implementation of protection measures to mitigate winter use impacts could have minor benefits to resources. iotic communities would not be impaired by the actions proposed under this alternative.

umulative impacts would be long-term, and both major adverse and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs affecting lands both within and outside of the park. Alternative 3's contribution to both adverse and beneficial cumulative impacts would be localized and minor.

T E S S

Similar to impacts discussed under biotic communities, increased monitoring and restoration programs and increased contact with visitors would enhance the opportunities for positive effects on threatened and endangered species. Some inconse uential changes to habitat or loss of individuals might occur from new development or use as described below. New frontcountry facilities would be relatively small in scale, but would be constructed in more locations under this alternative. They would primarily be placed within currently developed or previously impacted areas or road corridors, where human use is already occurring, thus minimizing the potential for adverse effects. Site-specific surveys would be conducted before implementing specific actions to determine if special status species e isted in any proposed project area. If any were located, or if an action occurred within suitable habitat, the National Park Service would consult with the U.S. ish and ildlife Service and regon Department of Natural resources to determine mitigation measures to avoid or minimize adverse impacts on the species.

As discussed under the biotic communities impact topic, the park service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of threatened and endangered species. ecause of a number of factors such as limited occurrence, small populations, low densities, and/or low birth rates, these species are more vulnerable to impacts than general wildlife populations. Some species lyn , wolverine, fisher could benefit from increased protection measures, although the e tent of potential beneficial effects is unknown. reater beneficial effects would occur if for e ample, den sites were located and measures were taken to protect them from disturbance.

Similar to alternative 2, development proposed under alternative 3 may affect, but would not be likely to adversely affect special status species for the following reasons

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F . Although the park has conducted e tensive surveys for anada lyn and wolverine in the park, none have been detected. All these species re uire large e panses of land relatively free from human use. ecause of the e tent of suitable habitat within the park, new development and associated visitor use would likely occur within or near suitable habitat, which would incrementally contribute to habitat loss and fragmentation. New frontcountry development and trails would result in more dispersed use. This increased human noise and activity could disturb and displace these species. owever, development and trails would be located in nonwilderness areas, primarily in or adjacent to e isting developed areas and road corridors. ecause of the e isting development and use in these areas, adjacent habitat would not be readily used and would probably be avoided by these species. New development and use would affect only a very small portion of suitable habitat within the park.

E . There would have little if any adverse impact on the primary food sources fish and carrion of the bald eagle. No new development or use would occur near the e isting nest site along the rater ake shoreline. Tour boats would continue to be restricted from areas on the lake that are near the nest site. The primary area for potential nest sites for this species would likely be within the caldera. Potential new development along the rim, such as trails and picnic areas, could affect potential nest site habitat. owever, new development would affect very little of the overall amount of suitable habitat along the rim or within the caldera. Prior to new development, surveys would be completed to identify suitable habitat and locate nest sites. New development would be sited and designed to avoid impacts to nesting eagles.

S O . urrent management practices that would continue under alternative 2 include protecting identified nest sites from human activities. Although new development and associated use could be located within patches of old growth stands identified as suitable habitat, no development would occur near known nest sites or within associated protective buffer zones. Most development would be located in or adjacent to e isting developed areas and roadways, thus minimizing the likelihood of disturbance.

. Development of frontcountry facilities along roadways e.g., picnic and parking areas, trails could result in the loss of goshawk habitat, primarily where facilities were located in forested habitats. These developments would be impact a relatively small area and would potentially affect only a small fraction of any nesting pair's much larger territory or the e tent of suitable habitat. Surveys to locate nest sites would be completed prior to facility construction and those sites avoided.

F . Peregrines are known to be sensitive to disturbances such as human presence above their nest site. No new development would be located in or above the area of the one known nest site within the caldera. Tour boats would also continue to be restricted from areas on the lake that are near the nest site. New development such as trails or picnic areas

along the rim could result in visitor use above some caldera cliff faces that could provide potential nest sites. owever, new development would affect very little of the overall amount of suitable habitat along the rim or within the caldera. Prior to new development, surveys would be completed to identify suitable habitat and locate nest sites. New development would be sited and designed to avoid impacts to nesting falcons.

T . Some frontcountry development could occur within the Sun reek drainage basin along rayback Trail and im Drive. unoff from areas disturbed by construction could lead to increased sedimentation that could affect bull trout habitat in Sun reek. Design and location of facilities would take into consideration such parameters as soil types, slopes, and vegetative cover in order to minimize disturbance and potential runoff. A vegetative buffer would be maintained between facilities and creek headwaters. est management practices such as erosion and sediment controls and revegetation would be implemented to eliminate or reduce both short- and long-term impacts. Use of the rayback Trail would not change and the park would continue to take actions to stabilize and minimize areas of erosion along this trail.

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C L The location of these plants would continue to be protected and the populations monitored. ecause of the greater potential for new development and use along the rim under this alternative, loss of habitat or individual plants could occur. These plants e ist in distinct locations and locations for any new development or trails would be surveyed for the presence of these species and measures to avoid or minimize adverse impacts would be implemented.

C I . umulative impacts on threatened and endangered species from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . verall cumulative impacts would be both adverse and beneficial. Adverse impacts would be primarily due to land management activities in the region. Park programs would adversely affect some individuals or habitat in the short-term, but would not likely adversely affect threatened and endangered species in the long-term because long-term effects would be beneficial. Alternative 3 could contribute some adverse effects on threatened or endangered species but could also contribute beneficial long-term effects to the overall cumulative impacts.

C . New development and more dispersed use could result in small, localized reductions in habitat and disturbance to individuals. The survey, avoidance, mitigation, and consultation actions that the Park Service would take would help ensure that this alternative would avoid or minimize adverse effects on threatened and endangered species. Alternative 3 could result in some adverse effects on threatened or endangered species but would not result in impairment to these species. Alternative 3 could contribute some adverse effects on threatened or endangered species but could also contribute beneficial long-term effects to the overall cumulative impacts.

C L

Alternative 3 seeks to allow a greater range of visitor opportunities to the e tent that resources continue to be protected. Impacts on rater ake would generally be the same as those listed under alternative no-action alternative .

Minimizing development within the caldera and lake drainage would prevent addition of sentiments, minerals, or contaminants that could reduce water uality. urrent restrictions on access and boating would continue to minimize contaminants that could reduce water uality.

The long-term research and monitoring program would continue. ontinued monitoring would result in long-term beneficial impacts on water uality.

C I Implementation of this alternative would generally have the same cumulative effects on rater ake as those listed under alternative .

C Implementation of this alternative would generally have the same impacts on rater ake as those listed under alternative . This alternative would have a negligible, long-term, beneficial effect on water uality within rater ake. In accordance with the criteria for determining impairment, there would be no major adverse impacts on water uality, and therefore no impairment of water uality.

The construction or rehabilitation of facilities and more dispersed visitor use would have the potential to impact water uality through ground disturbance, which would result in increased surface runoff and erosion. owever, due to the limited e tent of proposed developments and implementation of mitigation measures such as silt fences, erosion control measures, designated trails, and revegetation to control impacts, increased sedimentation and turbidity would be temporary and negligible.

Under this alternative, grooming the North ntrance oad to accommodate snow coaches could increase use of both snow coaches and snowmobiles, although, use volumes would not be e pected to increase appreciably. Similar to alternative no-action alternative , because snowmobiles raise concerns about long-term impacts from high pollution emissions, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study. Management actions to mitigate nonpoint source pollution would be implemented if necessary. Additional impacts from some increased use would be mitigated by increased protection measures. ater uality could benefit from increased protection measures, although the e tent of potential beneficial effects would likely be localized and minor.

C I . umulative impacts on water resources from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . The park's fire management program may adversely impact water uality e.g. sedimentation, erosion due to the effects of fires, particularly high intensity fires. Park construction and rehabilitation proposals would also contribute to adverse impacts from increased surface runoff and erosion. est management practices such as erosion and sediment controls would be employed to minimize these impacts. Impacts would be localized, short-term and minor. Minor beneficial cumulative actions would include ongoing trails rehabilitation and relocation within the park that would reduce localized erosion and runoff.

The replacement of the waterline from Munson Springs to arfield would likely reduce water loss by the system. Implementation of actions within the visitor services plan would also reduce water use within the park. eductions in water use would have a minor beneficial effect on water uantity in Annie reek .

The impacts of other actions described above in conjunction with the impacts of alternative 3 would result in localized, minor adverse and beneficial impacts on water uality and minor to moderate beneficial effects on water uantity in Annie reek. Alternative 3 would contribute a negligible adverse impact on water uality and negligible decrease in water uantity in Annie reek to the overall cumulative impact.

C . Alternative 3 would have a negligible adverse effect on water uality due to construction activities and a negligible effect on Annie reek water uantity. ater uality could benefit from increased protection measures, although the e tent of potential beneficial would likely be localized and minor. ater resources would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 3 would result in short- and long-term negligible to minor adverse and beneficial impacts on water uality and uantity. Alternative 3 would contribute a negligible adverse impact on water uality and negligible decrease in water uantity in Annie reek to the overall cumulative impact.

Implementation of a shuttle system would result in an incremental reduction in traffic and thus emissions along the im Drive and the roadway between the rim and Mazama. This would likely result in localized, negligible beneficial effects on air uality.

There would be some short-term, localized impacts on air uality resulting from particulates or machinery fumes generated during construction, removal, or rehabilitation of facilities under some alternatives. Mitigation measures such as watering and revegetation of disturbed areas, re uiring machinery to meet emission standards, would be employed. ffects would be short-term and negligible, lasting only during the construction period.

Under this alternative, grooming the North ntrance oad to accommodate snowcoaches could increase use of both snowcoaches and snowmobiles, although, use volumes would not be e pected to increase appreciably. Similar to alternative no-action alternative , because snowmobiles raise concerns about long-term impacts from high pollution emissions, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study. Management actions to mitigate nonpoint source pollution would be implemented if necessary. Additional impacts from some increased use would be mitigated by increased protection measures. Air uality could benefit from increased protection measures, although the e tent of potential beneficial would likely be localized and negligible.

C I . umulative impacts on air uality from actions in the park and surrounding lands would be similar to those described for the no-action alternative. The park's air uality is good with negligible effects from regional

pollution sources outside the park. orest fires on surrounding lands could contribute particulates for limited periods of time. Degradation of air uality from the park's fire management program could result in moderate short-term impacts, but the program would be in conformance with the lean Air Act, regon State Smoke Management Plan, and the regon isibility Protection Plan. Park construction and rehabilitation proposals would cause localized increases in dust and emissions from construction vehicles and e uipment, resulting in localized, short-term effects on air uality. The cumulative actions in conjunction with the no-action alternative would result in short-term, moderate, adverse impacts on air uality. Alternative 3 would contribute a negligible short-term, adverse, and negligible, long-term, beneficial increment to the cumulative effect.

C ong- term beneficial impacts to air uality within the park under this alternative would be negligible. Short-term construction related impacts would be negligible. Air uality would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 3 would result in short-term moderate adverse impacts on air uality. Alternative 3 would contribute a negligible, short-term, adverse, and negligible, long-term, beneficial increment to the cumulative effect.

ISITO SE

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Under alternative 3 visitors would e perience the entire range of visitor e periences through recreational opportunities and educational programs. Scenic driving, front and back country hiking, camping, and picnicking, nature viewing, and boat tours would be available to a greater diversity of user groups.

isitor use would be dispersed in an e panded front country and park visitors would find increased opportunities for high- uality recreation activities and e periences. Additional hiking and picnicking opportunities would be developed in frontcountry areas along the park's road system and new hiking and biking opportunities would be available along east rim drive between leetwood ove and err Notch. More park facilities would be open to use enabling visitors to e perience the park's cultural resources in their rustic setting. Additional back-country trails and camping opportunities would be e plored. inter access to im illage and winter activities including snow camping, cross-country skiing, and snowshoeing would continue as would snowmobile access along the North ntrance oad to North unction. Use of snow coach access would be encouraged on the North ntrance oad. Motorized recreational opportunities would be available along rayback Drive. ecause the change in the diversity of visitor e perience would be highly noticeable, e ceptionally beneficial, and would affect relatively large numbers of visitors, alternative 3 would have a major, beneficial impact on the diversity of visitor opportunity.

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Under alternative 3 motorized accessibility would change with the closure of one lane of im Drive between leetwood ove and err Notch to vehicular traffic. im Drive would accommodate one-way traffic between these points. oad access to im illage during the winter would be maintained. Traffic congestion during the summer season, particularly along im

Drive, would be managed by improving e isting pullouts, parking areas, overlooks and by the addition of a transportation shuttles. A feasibility analysis would determine whether the shuttle would be a concession, Park Service operated, or a service contract. These rider-optional shuttles would operate between im illage and leetwood ove and between Mazama illage and im illage. At peak visitor periods, interpretive and educational information and orientation to the park would be provided for shuttle riders. ther roads in the park, including rayback Drive, would remain accessible for motorized travel. oss of two-way motorized access to ast im Drive would be readily apparent, but would inconvenience a relatively small number of visitors desiring to travel in both directions along ast im Drive between leetwood ove and err Notch, resulting in negligible to minor, long-term, adverse impacts to the motorized visitor e perience of the park.

elative to the no-action alternative there would be no change in winter access to the park. isitors would continue to have private vehicle access to im illage in the winter, and snowmobile access would continue on the North ntrance oad. Snowcoach use would also be encouraged on the North ntrance oad. No change in winter access would result in no to negligible impacts to winter vehicular access to the park.

Access to trailheads and opportunities for day hikes on front country trails along the park's road system would be e panded. New trails would be developed in localized front country areas along the park's road system. These trails would be located to introduce visitors to a diverse range of ecosystems and terrain and to accommodate ability and e perience levels. In addition, one-lane of im Drive between leetwood ove and err Notch would be closed to private vehicles to offer new opportunities for nonmotorized activities. losure of sections of ast im Drive would improve front country caldera rim hiking opportunities. There would be an associated and detectable change in visitor safety resulting from multiple use of ast im Drive between leetwood ove and err Notch where the roadway would be shared by vehicles, hikers, and bicyclists. verall, improvements to e isting frontcountry hiking trails and development of new frontcountry trails would result in greater trail accessibility, and visitor surveys indicate that short trails are important to most visitors.

ecause frontcountry trail access would be e panded, there would be detectable changes in visitor hiking and biking e periences. These changes would affect a relatively large number of visitors but would be localized in areas, resulting in minor, beneficial impacts to visitor e perience of trails accessibility. verall changes in visitor access and circulation would be readily apparent and would affect a relatively large number of visitors, resulting in a moderate, beneficial impact on visitor access and circulation.

E O

elative to the no-action alternative, alternative 3 would result in changes in the availability and focus of interpretive and educational information and education programs. ducation and interpretation would focus on minimizing impacts, leaving no trace, and ac uisition of skills for outdoor recreation. ducational programs would be in suites to provide appropriate levels of education and interpretation for a variety of groups.

Some orientation and education efforts could occur offsite in local hotels and/or on tours to prepare visitors for and foster stewardship to groups on their way to and within the park. Interpretive programs would stress the natural and cultural resources of the park in a regional recreational setting. Many interpretive opportunities at the park would be self-directed or self-serve and contact with park interpretive staff would necessitate visitors stopping at isitor Information uilding or at im illage. hanges in interpretive programs would be detectable and would affect a relatively large number of visitors resulting in moderate, long-term, adverse impacts on visitor opportunities to participate in interpretive programs.

F S

pportunities for visitors to access and use park facilities and services would increase. New and e panded uses of park facilities would open some park buildings and structures for visitor use and enjoyment. isitors would gain opportunities to enjoy a hiking or biking e perience on east im Drive. rayback Drive would continue to provide motorized opportunities year-round. These changes in visitor e perience of park facilities would be highly noticeable and would affect a relatively large numbers of visitors, resulting in a major beneficial impact on visitor e perience of park facilities and structures.

S S

Development of frontcountry trails would occur along the park's transportation, corridor resulting in detectable changes to the natural sound environment in these areas which would result in minor, long-term, adverse impacts to soundscapes at park trailheads.

elative to the no-action alternative, there would be no change in views of the lake. Scenic views from the caldera rim would continue to be shared with vehicular traffic. There would be small but detectable changes in visitor ability to enjoy scenic views of the park's natural and cultural resources. Increases in front-country areas along the park's transportation corridors would open more front-country opportunities for visitors to enjoy scenic views. This change would affect a relatively small number of visitors and be localized in nature, resulting in minor, long-term beneficial impacts to opportunities to enjoy scenic views in the park.

C I . Past and ongoing projects, including development of front-country trails, reconfiguration of im illage, and adaptive use of historic structures in Munson alley and im illage have long-term, major, beneficial impacts on the visitor e perience. Past actions, such as the completion of the leetwood Trail and the development of the astle rest and odfrey len Trails, have increased visitor access to front country trails. econfiguration of im illage would change the way visitors access views of the lake at im illage. A walk along the promenade would be possible without having to compete with vehicular traffic. pportunities to participate in interpretive programs would e pand with the use of historic structures at Munson alley, and a year-round visitor contact station at the rim that would enable winter views of the lake for people of all abilities. verall these projects have the potential to increase the diversity of visitor e perience, enhance the range of interpretative programs, e pand access to park facilities, and improve the uality of

visitor e perience values such as sounds of nature and scenic views. The impacts of the above other actions, when combined with the impacts of the no-action alternative would result in an overall major, long-term beneficial impact. Alternative 3 would contribute a moderate to major beneficial increment to cumulative impacts to visitor e perience, because Alternative 3 would increase and e pand e isting visitor opportunities. Alternative 3 would also contribute minor to moderate, long-term adverse increment to cumulative impacts due to a reduction in the range of interpretive programs and impacts on soundscapes at some park trailheads.

C . Alternative 3 would have a major beneficial impact on the diversity of the visitor e perience. Under alternative 3 visitors would e perience minor, long-term, adverse impacts on vehicular access with the closure of ast im Drive to two-way traffic, but would gain minor, long-term, beneficial impacts with frontcountry trails accessibility. ecause interpretative programs would primarily focus on leave no trace ethics and there would be less emphasis on educational programs, there would be a reduction in the range of interpretive programs, resulting in moderate, long-term, adverse impacts to visitor enjoyment of interpretive programs. Access to park facilities and services would increase, resulting in a major beneficial impact to visitor's enjoyment of park facilities. There would be minor long term adverse impacts to visitors' perceptions of soundscapes. pportunities for visitors to enjoy scenic views would be e panded resulting in minor beneficial impacts to scenic viewing opportunities.

umulative actions in conjunction with alternative 3 would have an overall major long-term beneficial impact. Alternative 3 would contribute a moderate beneficial increment to cumulative impacts to visitor e perience, because alternative 3 would increase and e panding e isting visitor opportunities. Alternative 3 would also contribute minor to a moderate, long-term, adverse increment to cumulative impacts due to a reduction in the range of interpretive programs and impacts on soundscapes at some park trailheads.

O E TIO S

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Under Alternative 3 e isting buildings and facilities would remain and some may be adaptively used for new functions and uses. Development of new frontcountry trails, closure of a portion of im Drive to two-way traffic, and adaptive use of historic structures for visitor use would increase the level of maintenance re uired to support these new visitor activities. ear-round residences at Steel ircle and summer season residences at Sleepy ollow at Munson alley would continue to be maintained. Park maintenance staff would continue to maintain park roads, utilities, and structures. The Munson alley oad to im illage would continue to be cleared of snow during the winter months, and im Drive would continue to be plowed to allow summer access as early in the spring as weather dictates.

Most park functions would remain in the park. Staff functions would shift to a greater emphasis on resource protection and interpretation. There would also be an increased need for maintenance operations to maintain e panded front country trails and visitor services. hanges in park operations would be perceptible but would not be e pected to have an overall

detrimental effect on the ability of the park to provide desired services and facilities, resulting in minor, adverse impacts to park operations.

C I . Past facility development, particularly at the rim, has affected park operations. ngoing actions, including scaling back development at im illage and improving parking and circulation, have impacted park operations. verall these projects have the potential to have a moderate long-term beneficial effect on park operations and improvement in the ability of the park to provide desired services and facilities. Impacts of the above other actions in conjunction with the alternative 3 would result in moderate long-term beneficial cumulative impacts. Alternative 3 would contribute a minor adverse increment to cumulative impacts to park operations.

C . Alternative 3 would result in minor, adverse impacts to park operations. umulative actions in conjunction with alternative 3 would result in moderate long-term beneficial cumulative impacts. Alternative 3 would contribute a minor, adverse increment to cumulative impacts to park operations.

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elative to the no-action alternative, there would be a change to concessioner activities under alternative 3. There would be a moderate, long-term, beneficial impact on concession operations. Increased partnering with commercial operators would provide for additional opportunities.

C I . Past actions, including restoration of the rater ake odge, and ongoing actions, such as reconfiguration of park facilities at the rim and at Mazama illage have had an impact on concessioner activity. onsolidation of concession activity at Mazama and the closeness of Mazama illage to regon State ighway 2 would facilitate concession operations and inventory staging, resulting in readily apparent changes in concession operations that would have a long- term, moderate, beneficial impact on concessioner operations. Impacts of the above other actions in conjunction with alternative 3 would result in an overall moderate, long-term beneficial cumulative impact. Alternative 3 would contribute a moderate, adverse increment to cumulative impacts on concession operations.

C . Alternative 3 would result in a moderate, long-term adverse impact on concession operations. umulative actions in conjunction with alternative 3 would result in an overall moderate, long-term, beneficial cumulative impact. Alternative 3 would contribute a moderate adverse increment to cumulative impacts on concession operations.

SOCIOECO O IC E I O E T

This alternative emphasizes that the full range of recreational opportunities and educational e periences be offered to a most diverse public. The widest possible range of visitor groups is sought out to ac uaint, educate, and foster an appreciation of the natural environment in a more diverse park clientele. Most current facilities continue to be used and maintained. istoric structures and fabric are preserved without adaptive reuse. Trails are developed to provide access to a broad range of the park's ecosystems and environments. Partnerships with other public and private entities are fostered to provide a wide range of educational and

interpretative services to the public. Some interpretative activities and opportunities occur outside the park. Staffing levels increase for ranger and interpretative activities adding . full-time T 's. A transit system is evaluated and possibly developed to provide access for the public to some areas of the park. A base operating budget of ,4 4, 00 is needed to fund this alternative.

Achieving these changes in park operations re uires the e penditure of additional funds in the amount of 3, 34,000 which is 34,000 less than the no-action alternative. These funds are spent over the life of the plan for various projects provide some impacts e.g., increase in income, creation of jobs, etc. to individual firms and workers which would be moderate to major, short term, and beneficial. Impacts on the economic indictors within the affected area would be negligible because of the relative size of the regional economy appro imately .0 billion in earnings and about ,000 jobs in 200 and the phasing of the projects over the ne t to 20 years.

ommercial businesses/concessions, such as tours, would continue within the park and such businesses would be encouraged to provide interpretative information and services to park visitors. Any e pansion of these businesses would provide additional employment opportunities.

The pattern of increasing visitation is e pected to continue. Providing additional programs, services, and outreach would encourage more visitor use at the parks. The amount of additional use is indeterminate at this time. Also, attracting more visitors and offering visitor programs outside the park may result in additional tourism-related spending within the region and gateway towns, increasing business opportunities, income, and employment which would benefit some retail establishments, restaurants, or motels in the travel corridors.

The need for additional staff may increase the need for housing. ombined with this, the increasing desirability of living in the gateway communities adds to the demand for local housing and other locally provided goods. iring additional staff results in a small increase in the local population that contributes to the overall growth in the gateway communities. As described above, in conjunction with other past, present and reasonably foreseeable actions, alternative 3 would have minor to moderate long-term beneficial impacts on the socioeconomic climate of the local gateway communities but these changes in benefits are negligible at the three-county regional level.

C I Additional changes or shocks either positive or negative to the local and regional socioeconomic environment are not e pected. No other actions that could have cumulative effects when combined with the impacts of alterative 3 have been identified during this planning process, which has included public participation and input. In conjunction with other past, present, and reasonably foreseeable actions, no additional cumulative impacts are e pected.

C An increase in park staffing levels by . full-time employees would have a moderate impact on the local gateway communities' economies and a negligible impact on the regional economy. Additional employees would likely purchase some goods and services from within the gateway communities.

Appro imately 3, 34,000 in addition to ongoing actions and projects would be spent over the life of the plan on various projects, and an increase of only 34,000 compared to the no-action alternative. These e penditures could result in moderate to major, short-term, beneficial impacts on individual firms and employees increased business and profits, increased employment opportunities, increased income, etc. . verall impacts on the regional economy effects on the economic indicators of income, unemployment rate, poverty rate, etc. , however, would be negligible because of the size and the implementation timing of the projects over the ne t to 20 years. The actions of this alternative may encourage some increased visitation to the parks, with beneficial effects on the region and adjacent communities in terms of increased visitor e penditures for locally provided goods and services.

OI LE E SE EFFECTS

There would be no unavoidable adverse impacts of major intensity that would result from implementing alternative 3. A reduction in the range of interpretive programs would result in moderate long term adverse impacts to visitor enjoyment of interpretive programs. An increase in concessioner staffing to maintain and operate the shuttle system would result in moderate long-term adverse impacts on concession operations.

EL TIO S I OF S O T TE SES OF T E E I O E T T E I TE CE E CE E T OF LO TE O CTI ITY

The vast majority of the park would be protected in a natural state and would maintain its long-term productivity. Disturbance of soils, vegetation, and wildlife habitat from visitor use and constructing facilities would reduce the long-term productivity of the environment in localized areas. Increased contact with visitors could indirectly contribute to improved resource conditions and the long-term productivity of the environment.

I E E SI LE O I ET IE LE CO IT E TS OF ESO CES

onstruction materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds e pended on both labor and construction materials. ecause it takes so long for soils to form, the loss of soils due to development and visitor use in localized areas would be an irreversible commitment of resources.

I CTS OF I LE E TI LTE TI E

C LT L ESO CES

Implementation of this alternative would generally have the same impacts on archeological resources as those listed under alternative . Although the resource preservation emphasis of this alternative could be e pected to have some negligible to minor, long-term, beneficial impacts on archeological sites, removal of non-essential buildings could have some negligible to minor, long-term and permanent, adverse impacts on such resources.

C E . The cumulative effects to archeological resources would be similar to those described for alternative , with the addition of minor beneficial impacts resulting from the resource preservation emphasis of this alternative and some negligible to minor, long-term and permanent, adverse impacts on such resources resulting from removal of nonessential buildings. The minor beneficial impacts, as well as the negligible to minor, long-term and permanent adverse impacts associated with implementation of this alternative would, however, be a small component of any overall cumulative effect.

C . Implementation of this alternative would generally have the same impacts on archeological resources as those listed under alternative , although resource preservation emphasis could be e pected to have some negligible to minor long-term beneficial impacts on archeological sites.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with archeological resources.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on archeological resources would be no adverse effect.

S

Implementation of this alternative would have impacts on historic structures/buildings that are similar to those listed under alternative . Alternative 4 would have minor to moderate, long-term, beneficial impacts on historic structures/buildings because they would be subjected to less wear and tear as a result of reduced adaptive use, modifications, and winter use and appropriate preservation treatments would be determined for all historic structures in accordance with the Secretary of the Interior's *tan ar s* in consultation with the regon state historic preservation officer and the historic preservation community.

C E In the past, documented values of some historic structures/buildings in the park have been subjected to cumulative adverse, minor to moderate, long-term, and permanent impacts. Actions under this alternative would have impacts on historic structures/buildings that are similar to those listed under alternative including, among

other things, application of appropriate preservation treatments for all historic structures, would contribute beneficial, minor to moderate, long-term effects to any overall cumulative impact on historic structures/buildings.

C Implementation of alternative 4 would have minor to moderate, long-term, beneficial impacts on historic structures/buildings.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with historic structures/buildings.

S S . or purposes of Section 0 , the determination of effect of actions under this alternative on historic structures/buildings would be no adverse effect.

C L

Implementation of this alternative would have minor to moderate, long-term, beneficial impacts on cultural landscapes in the park because the Munson alley, im illage, and im Drive cultural landscapes would be managed as cultural heritage zones to ma imize preservation of their significant documented values and features. Although this alternative would have a minor to moderate, long-term, adverse effect on im Drive, because a portion of the road would be closed to vehicular traffic and thus alter historic use of the road, rehabilitation of most pull-offs, parking areas, and overlooks along the roadway to their original designed appearance would have minor to moderate, long-term, beneficial impacts on the im Drive cultural landscape. emoval of nonhistoric structures and facilities throughout the park would generally have minor to moderate, long-term, beneficial impacts on cultural landscapes in the park.

C E . In the past lack of concern for the preservation of cultural landscapes in the park has resulted in minor to moderate long-term adverse impacts on such resources because decisions about site development and resource management have compromised some of the character-defining patterns and features as well as the documented values of cultural landscapes. Actions under alternative 4, such as management of the Munson alley, im illage, and im Drive cultural landscapes as cultural heritage zones, and removal of nonhistoric structures and features, would contribute beneficial minor to moderate long-term effects to any overall cumulative effect on cultural landscapes.

C Implementation of this alternative would have minor to moderate, long-term, beneficial impacts on cultural landscapes in the park because the Munson alley, im illage, and im Drive cultural landscapes would be managed as cultural heritage zones to preserve their documented values, and nonhistoric structures and facilities would be removed throughout the park.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural

integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with cultural landscapes.

S S or purposes of Section 0 , the determination of effect of actions under this alternative on cultural landscapes would be no adverse effect.

E

Implementation of this alternative would generally have the same impacts on ethnographic resources as those listed under alternative . owever, emphasis on natural resource preservation and restoration and reduction of human presence on the natural landscape could be e pected to have negligible to minor, beneficial, long-term impacts on such resources. mphasis on natural resource preservation/restoration and reduction of human presence on the natural landscape could be e pected to reduce intrusion on sacred sites or landscapes and important traditional use activity areas, thus resulting in some negligible to minor, beneficial, long-term improvement in ethnographic resource conditions and access to and/or accommodation of various groups' traditional practices or beliefs relating to such sites.

C E . National Park Service development and administrative/ maintenance operations, as well as increasing visitor use of the national park since its establishment, have had and are continuing to have cumulative adverse, negligible to minor effects on ethnographic resources. As sacred sites in south-central regon have been lost over time, those remaining in the park have become more significant to the lamath Tribes and other affiliated Native American groups. Actions under this alternative such as natural resource preservation and restoration and reduction of human presence on the natural landscape would contribute negligible to minor long-term beneficial effects to any overall cumulative effect on ethnographic resources.

C . Implementation of this alternative would generally have the same impacts on ethnographic resources as those listed under alternative . owever, emphasis on natural resource preservation/restoration and reduction of human presence on the natural landscape could be e pected have negligible to minor beneficial long-term impacts on such resources.

There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with ethnographic resources.

S S . No Traditional ultural Properties are affected by actions under this alternative. Thus Section 0 determinations are unnecessary.

C

Implementation of this alternative would have beneficial minor to moderate long-term impacts on the park's museum collections because the increased volume of the collections that would result from

as ac uisition of pertinent park-related collection materials not currently owned or managed by the National Park Service, would be stored in an offsite facility that met professional and National Park Service museum standards. Thus, provision for ade uate storage and workspace would be provided to improve curation, protection, and access to the collections, and staffing would be increased to reduce the cataloging backlog.

C E . Since the national park was established the combination of limited staffing and lack of storage and workspace meeting professional and National Park Service museum standards have hindered endeavors to improve care of and access to the museum collections and address the ever-increasing cataloging backlog, thus having minor to moderate long-term adverse effects on such resources. Actions under this alternative such as e pansion of the collections and their storage in an offsite facility that meets professional and National Park Service museum standards and provision for ade uate storage, workspace, and staffing to improve curation, protection, and access to the collections would contribute to beneficial, minor to moderate, long-term effects to any overall cumulative effect on the park's museum collections.

C . Implementation of alternative 4 would have beneficial, minor to moderate, long-term impacts on the park's museum collections. There would be no adverse impacts on resources or values whose conservation is necessary to fulfill specific purposes identified in the national park's establishing legislation, 2 key to the cultural integrity or opportunities for enjoyment of the national park, or 3 identified as a goal in this *eneral anagement lan* or other relevant National Park Service planning documents. onse uently, there would be no impairment of resources or values associated with the park's museum collections.

T L ESO CES

C

The following actions would potentially have localized minor to more widespread moderate long-term beneficial effects on biotic communities. The intensity of the effects would likely be greater over time as more knowledge of the resources is accumulated, partnerships e pand, and resource management and restoration actions are implemented that further the preservation and restoration of native species, communities, and processes.

emoving facilities and restoring areas to more natural conditions and routing trails away from sensitive areas such as wetlands would reduce impacts to biotic communities.

panding resource management programs, data collection, resource staff, and partnering would indirectly contribute to improved resource conditions by enhancing the Park Service's knowledge and capabilities for restoring and maintaining native species, communities, and processes.

mphasizing visitor activities that have low environmental impact and focusing interpretive programs on resource stewardship would also indirectly contribute to improved resource conditions by reducing the potential for visitor related impacts.

losing roads i.e., portion of im Drive, rayback oad could reduce road kills,

disturbance to wildlife, and off-road driving and associated impacts to roadside resources e.g., soils, vegetation .

liminating snowmobiling along the North ntrance oad and winter plowing to the rim would seasonally reduce use and disturbance to wildlife in these areas and could enhance wildlife migration patterns. The plowed road corridor would be less of an impediment to wildlife movement e.g., elk, deer, bear .

Although snowmobiling would no longer be allowed, other winter recreational activities can create added energetic stress in winter when most wildlife species are already stressed. The Park Service would initiate a long-term data gathering and monitoring program to evaluate winter use and associated impacts to ensure long-term protection of park resources. Management actions, such as restrictions on off-trail use, specific area closures, increased patrols, visitor education, or limits on use or party sizes, would be taken as necessary to address impacts.

Adaptive use or removal of e isting buildings is not e pected to result in new resource impacts. These buildings are located in e isting, previously disturbed developed areas. Park functions relocated from the park to nearby communities would be housed in e isting structures if possible. owever, if new buildings were necessary, construction activities would have short-term effects on soils and vegetation. Depending on whether of not facilities were built on previously disturbed sites, the long-term, adverse effects with mitigation would be negligible to minor.

C I umulative impacts on biotic communities from land uses and activities in the park and surrounding lands would be similar to those described for the no-action alternative. verall cumulative impacts would be both long term, minor to major, adverse, and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs affecting lands both within and outside the park. Alternative 4's contribution to these adverse impacts would be negligible to minor. owever, actions under alternative 4, particularly reduced development and enhanced resource management programs, would promote the further protection, maintenance, and restoration of native biological communities. Therefore, alternative 4 would also contribute a minor to moderate beneficial effect to the overall cumulative impacts.

C The greater emphasis on reduction in development and e panded resource management programs and restoration in the park along with increased visitor education under this alternative would contribute to improved resource conditions within the park, potentially having localized minor to more widespread moderate, long-term, beneficial effects on biotic communities. iotic communities would not be impaired by the actions proposed under this alternative.

umulative impacts would be long-term, and both major adverse and beneficial. Adverse impacts would be primarily because of the widespread logging and fire suppression on lands surrounding the park and beneficial impacts would be from restoration and protection programs, affecting lands both within and outside the park. Alternative 4's contribution to adverse impacts would be minor and its

contribution to beneficial effects minor to moderate.

T E S S

Alternative 4 emphasizes preservation of native species and restoration of disturbed areas. A number of actions would reduce the e tent of impacts from development and human presence in the park. There would be fewer buildings and facilities in the park. rayback Trail could be removed and a large section of im Drive would be closed to motorized use. liminating snowmobiling along the North ntrance oad and winter plowing to the rim would seasonally reduce use and disturbance to wildlife in these areas and could enhance wildlife migration patterns and habitat for winter carnivores e.g., wolverine, fisher, lyn . A long-term data gathering and monitoring program would evaluate winter use and associated impacts to ensure long-term protection of threatened and endangered species. verall, alternative 4 would have a beneficial effect on threatened and endangered species and their habitat.

C I . umulative impacts on special status species and their habitat from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . Adverse impacts would occur primarily because of the alteration and fragmentation of forests surrounding the park due to the persisting impacts of logging and fire suppression. estoration and protection programs affecting lands both within and outside of the park may have adverse short-term effects, but would not be likely to adversely affect special status species over the long-term. Alternative 4 would contribute beneficial long-term effects to the overall cumulative impacts.

C . reater emphasis on resource evaluations, surveys, monitoring, and facility removal and restoration would enhance the opportunities for positive effects on threatened and endangered species and their habitat within the park. Thus, alternative 4 would not be likely to adversely affect and would not result in impairment to these species. Alternative 4 would contribute beneficial long-term effects to the overall cumulative impacts.

C L

Alternative 4 emphasizes the preservation of natural resources. In addition to the current preservation actions minimizing development with the caldera and lake drainage, and restricting access and boating as in alternative – the park would seek to restore the natural systems of rater ake. inter plowing to the rim would stop, e cept for spring opening. ehicular access to the rim would be via snow coach. Minimizing snow plowing to the rim would begin to restore natural deposition processes and would minimize potential hydrocarbons and other vehicle caused pollutants.

Snowmobile access along North unction oad would be stopped. Snowmobiles raise concerns about long-term impacts from high pollution emissions. missions from 2-stroke engine e haust include mono ide, hydrocarbons, nitrous o ides, and particulate matter NPS e . These concerns include the possibility that accumulations of pollutants in the snow pack and resultant snow pack runoff may be having adverse impacts on water uality and associated a uatic systems, although impacts from snow pack runoff that is contaminated with snowmobile pollutants

have not been found. Impacts on water uality are likely short term and localized along travel routes because of the low volume of use and because snowmobiles are restricted to the north entrance road, which does not follow near any streams. Although snowmobile use is not e pected to appreciably increase, the Park Service would initiate a long-term data gathering and monitoring program to evaluate use and associated impacts as part of an overall winter recreational use study.

Management actions to mitigate no point source pollution would be implemented if necessary. ater uality could benefit from increased protection measures, although the e tent of potential beneficial effects is unknown, but would likely be localized and minor.

The long-term program would e pand to monitor a diverse array of chemical, physical, and biological properties beyond those in alternative . Most of the sample and data collection would continue to occur in the summer months when the lake is easily accessible. ccasional winter studies are also conducted. The program would continue to add devices capable of year-round sample and data collection to gain a better understanding of processes occurring during the winter months. mphasis would be on ensuring that all research is as non-manipulative as possible. Sample and data processing, along with data analysis and trend monitoring, would occur on a regular basis. esults of the monitoring studies are documented on an annual basis with special emphasis on long-term trend analysis. Increased monitoring would result in long-term beneficial impacts on water uality.

C I . umulative actions would contribute both adverse and beneficial impacts to water uality. Implementation of this alternative would generally have the same cumulative effects on rater ake as those listed under alternative .

C Implementation of this alternative would generally have the same impacts on rater ake as those listed under alternative . This alternative would have a negligible, long-term, beneficial effect on water uality within rater ake. In accordance with the criteria for determining impairment, there would be no major adverse impacts on water uality, and therefore no impairment of water uality.

The removal or adaptive use of facilities would have the potential to impact water uality through ground disturbance, which would result in increased surface runoff and erosion. owever, due to the limited e tent of potential ground disturbance and implementation of mitigation measures such as silt fences, erosion control blankets, mulch, and revegetation to control impacts, increased sedimentation and turbidity would be temporary and negligible.

eduction in the e tent of facilities and use in the park would reduce water use in the park. This would likely have a minor beneficial effect on water uantity in Annie reek because although overall development would be reduced, the major developed areas in the park would remain. losure of the rayback Trail and a section of the im Drive to traffic and elimination of winter access to the rim via private vehicles, including snowmobiles, could benefit water uality because

vehicular emissions or deposition of petroleum products would be eliminated, at least seasonally, in these areas. eneficial effects would be localized and minor.

C I . umulative impacts on water resources from land uses and activities in the park and surrounding lands would be similar to those described for alternative no-action alternative . The park's fire management program may adversely impact water uality e.g., sedimentation, erosion due to the effects of fires, particularly high intensity fires. Park construction and rehabilitation proposals would also contribute to adverse impacts from increased surface runoff and erosion. est management practices such as erosion and sediment controls would be employed to minimize these impacts. Impacts would be localized, short-term, and minor. Minor beneficial cumulative actions would include ongoing trails rehabilitation and relocation within the park that would reduce localized erosion and runoff.

The replacement of the waterline from Munson Springs to arfield would likely reduce water loss by the system. Implementation of actions within the visitor services plan would also reduce water use within the park. eductions in water use would have a minor, beneficial effect on water uantity in Annie reek.

The impacts of other actions described above in conjunction with the impacts of alternative 4 would result in localized, minor, adverse, and beneficial impacts on water uality and minor to moderate beneficial effects on water uantity in Annie reek. Alternative 4 would contribute a localized, negligible, adverse, and minor, beneficial impact on water uality, and a minor increase in water uantity in Annie reek to the overall cumulative impact.

C . Alternative 4 would have a negligible adverse effect on water uality due to construction activities and a minor beneficial effect on Annie reek water uantity. ater uality could benefit from reduced vehicle use in some areas of the park, although the e tent of potential beneficial would likely be localized and minor. ater resources would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 4 would result in short- and long-term, negligible to minor, adverse, and beneficial impacts on water uality and uantity. Alternative 4 would contribute a localized, negligible, adverse, and minor, beneficial impact on water uality, and a minor increase in water uantity in Annie reek to the overall cumulative impact.

Possible closure and restoration of the rayback Trail would benefit air uality because of vehicular emissions would be eliminated in this area. losure of a section of the im Drive to traffic and elimination of winter access to the rim via private vehicles, including snowmobiles, would have similar seasonal effects. eneficial effects would be localized and negligible because air stagnation that would allow concentration of pollutants is rare and/or relatively low levels of use that would be eliminated.

There would be some short-term, localized impacts on air uality resulting from particulates or machinery fumes generated during removal or rehabilitation of facilities. The elevation and geography make the park susceptible to winds that tend to disperse particulates and other

pollutants. Mitigation measures, such as watering and revegetation of disturbed areas, re uiring machinery to meet emission standards, would be employed. ffects would be short-term and negligible, lasting only during the construction period.

C I . umulative impacts on air uality from actions in the park and surrounding lands would be similar to those described for the no-action alternative. The park's air uality is good with negligible effects from regional pollution sources outside the park. orest fires on surrounding lands could contribute particulates for limited periods of time. Degradation of air uality from the park's fire management program could result in moderate short-term impacts, but the program would be in conformance with the lean Air Act, regon State Smoke Management Plan, and the regon isibility Protection Plan. Park construction and rehabilitation proposals would cause localized increases in dust and emissions from construction vehicles and e uipment, resulting in localized, short-term effects on air uality. The cumulative actions in conjunction with the no-action alternative would result in short-term, moderate, adverse impacts on air uality. Alternative 4 would contribute a negligible, short-term, adverse and negligible, long-term, beneficial increment to the cumulative effect.

C . ong- term beneficial impacts to air uality within the park under this alternative would be negligible. Short-term construction related impacts would be negligible. Air uality would not be impaired by the actions proposed under this alternative. The cumulative actions in conjunction with alternative 4 would result in short-term, moderate, adverse impacts on air uality. Alternative 4 would contribute a negligible, short-term, adverse, and negligible, long-term, beneficial increment to the cumulative effect.

ISITO SE

O

elative to the no action alternative, Alternative 4 would reduce the range of visitor e perience. isitor e perience would stress low environmental impact on and harmony with the park's resources. During the summer, many e isting opportunities for scenic driving and back country hiking and camping would continue. Nature viewing and boat tours would also continue to be available. New opportunities for hiking and solitude along the caldera rim would be added with the closure of a portion of im Drive between leetwood ove and err Notch to vehicular traffic. isitors would be able to e perience the caldera rim and views of the lake without the intrusion of vehicular traffic. There would be a reduction in front country areas and a corresponding decrease in the number of short interpretive hiking trails. ackcountry hiking and camping opportunities would increase.

inter access to the park beyond Mazama illage would be by snow coach only, which would offer a new visitor e perience. There would be no winter private vehicle access to im illage, which would eliminate the traditional visitor e perience of driving to the rim in the winter. Snowmobile access along the north entrance road to North unction would not be allowed, resulting in a loss of this winter visitor e perience. There would be no motorized access and no maintained trail on rayback Drive, which would be allowed to return to natural

conditions. isitors would gain a new winter snowcoach e perience and the new e perience of hiking without vehicular traffic on a portion of im Drive. These new e periences would be offset by a loss of the im Drive automobile e perience which is very important to most visitors.

verall, the change in the diversity of visitor e perience would be readily apparent and would affect a relatively large number of visitors, resulting in moderate, adverse impacts on the diversity of visitor opportunity.

C

elative to the no action alternative, under alternative 4 motor vehicle accessibility to the park would be reduced. During peak use most of the park's road system would be accessible and visitors would be able to drive to many locations in the park. A portion of im Drive between leetwood ove and err Notch would be closed to motorized travel. The rayback Drive would also be closed to motorized travel and the centerpiece of the automobile tour e perience in the park would be lost. During the winter months the park would not be accessible via private vehicle beyond Mazama illage. To alleviate traffic congestion, especially along im Drive during the summer season, use of a mandatory alternative transportation system would be e plored. A feasibility analysis would determine whether the shuttle would be concession, Park Service operated, or a service contract.

hanges in motorized accessibility would be detectable and localized in area; however modification to traffic flow on im Drive would affect a large number of visitors, resulting in moderate, long-term, adverse impacts to motorized accessibility.

losure of a portion of im Drive may have moderate long-term, adverse, impacts on im Drive as the centerpiece of the olcanic egacy Scenic yway and All American oad.

Access to trailheads and opportunities for day hikes on frontcountry trails along the park's road system would be reduced and many front country short trail hiking e periences would be lost. The entire trail system would be reviewed and new backcountry trails might be provided e.g. low elevation nature trails . Some trails might be eliminated and the area rehabilitated. im Drive between leetwood ove and err Notch would be closed to private vehicles, and would thus offer new opportunities for non-motorized activities. oss of frontcountry trails is important because visitor surveys indicate that short trails are e tremely important to a majority of visitors. A reduction of frontcountry trail access would affect a relatively large number of visitors. verall, changes in the way visitors access the park would be readily apparent and would affect a moderate number of visitors resulting in moderate, long-term, adverse impacts to park accessibility.

E O

Under alternative 4 interpretive and educational programs would focus on stewardship and resource protection of the park's natural and cultural resources. Interpretive programs would offer in-depth information on park resources. Many orientation and education efforts would occur offsite to prepare visitors for and foster stewardship. Many interpretive opportunities at the park would be self-directed or self-serve, and contact with park interpretive staff would necessitate visitors stopping at isitor Information uilding or at im illage. hanges in interpretive programs would be detectable and would affect a relatively large number

of visitors resulting in moderate, long-term, adverse impacts on visitor opportunities to participate in interpretive programs.

F S

pportunities for visitors to access and use park facilities and services would decrease. Most e isting visitor use facilities would remain, however during the winter months facilities beyond Mazama illage would not be available. This decrease would be partially offset by a slight increase in visitor use of facilities at Mazama illage associated with snowcoach operations. Portions of park roads would be closed to private vehicles.

hanges in visitor e perience of park facilities would be readily apparent and would affect a relatively large number of visitors, resulting in a moderate, adverse impact on visitor e perience of park facilities and structures.

S S

pportunities to visit the backcountry to e perience natural sounds and tran uility would increase. rontcountry areas would be reduced and noise levels associated with trailheads and front country areas would also be reduced. During the long winter season, visitors would arrive at the caldera rim via snowcoach and would have the opportunity to e perience what they perceive as a pristine winter landscape and untrammeled lake views at the caldera rim. The number of frontcountry developments would be reduced resulting in a readily apparent change in the way visitors view and perceive the park's natural resources. Therefore alternative 4 would result in moderate, beneficial impacts to scenic vistas.

C I Past and ongoing projects including development of front country trails, reconfiguration of im illage, and adaptive reuse of historic structures in Munson alley and im illage have long-term major beneficial impacts on visitor e perience. Past actions, such as the relocation of the leetwood Trail and the development of the astle rest and odfrey Trails, have increased visitor access to front country trails. econfiguration of im illage would change the way visitors view the lake at im illage. verall these projects have the potential to increase the diversity, of visitor e perience, enhance the range of interpretative programs, e pand access to park facilities, and to improve the uality of visitor e perience values such as sounds of nature and scenic views. umulative actions in conjunction with alternative 4 would have an overall major long-term beneficial impact. Alternative 4 would contribute a moderate, adverse increment to cumulative impacts to visitor e perience. Alternative 4 would also contribute a moderate beneficial increment to cumulative impacts to scenic vistas.

C Alternative 4 would have a moderate, long-term adverse impact on the diversity of visitor opportunities, visitor accessibility, and on the ability of visitors to participate in educational and interpretive programs. There would be moderate, long term adverse impacts on visitor enjoyment of park facilities and services. There would also be a moderate, beneficial impact to winter scenic vistas at the rim. umulative actions in conjunction with alternative 4 would have an overall major, long-term, beneficial impact. Alternative 4 would contribute a moderate adverse increment to cumulative impacts to visitor e perience.

O E TIO S

O

Under alternative 4 the trend in the built environment would a reduction in facilities. uildings that are not historic and not essential to park functions would be removed and the area rehabilitated. emoval of some buildings and closing most buildings during the winter months would reduce maintenance and utilities re uirements. The park maintenance staff would continue to support park operations from the central maintenance facility located at Munson alley. Maintenance staff would continue to maintain park roads, utilities, and structures. The Munson alley oad to im illage would not be plowed snow during the winter months. Spring snow removal from im Drive would increase in difficulty and comple ity, because maintenance crews would first have to clear the park roads from Mazama illage up Munson alley before tackling the heavy snows on im Drive. This would increase the time for spring snow-clearing with the conse uent increase in maintenance responsibility.

Many park functions would be located outside of the park. Park functions that are by necessity park-based, such as maintenance and law enforcement would be retained in the park. Different options for accommodating operations outside the park boundary would be studied before implementing any actions. Actions that propose purchasing property outside the boundary would re uire additional authorization. The composition of the staff would increase in the areas of resource preservation, protection, restoration, and education activities. There would be a decreased need for maintenance operations during the winter months. The Munson alley oad would need some level of grooming to enable operation of the winter snowcoach. Decreased winter maintenance needs would be partially offset by a concentrated need in the early spring to open park roads to vehicular traffic. hanges in park operations would be readily apparent and would have appreciable effects on park and concession abilities to provide necessary services and facilities, resulting in a moderate, beneficial impact on park operations.

C I Past facility development, particularly at the rim, has affected park operations. ngoing actions including scaling back development at im illage and improving parking and circulation have had a moderate, beneficial, cumulative impact on park operations. Alternative 4 in conjunction with past and ongoing activities would have a moderate to major, beneficial cumulative effect. This alternative would contribute a moderate beneficial increment to beneficial cumulative impact to park operations.

C Alternative 4 would result in moderate, beneficial impacts to park operations. Alternative 4, in conjunction with past and ongoing activities, would have a moderate to major beneficial cumulative effect. This alternative would contribute a moderate increment to beneficial cumulative impact to park operations.

C O

During peak use in the summer concession activities would remain the same. inter access to the rim would be via snowcoach rather than private vehicle. The change is not predicted to have an impact on the small number of visitors to the rim in the

winter; however, the change in access could have a moderate, long-term, adverse impact on operations at the rim due to changes in access for supplies and employees.

C I Past actions, including restoration of the rater ake odge, and ongoing actions, such as reconfiguration of park facilities at the rim and at Mazama illage, have had a moderate, beneficial impact on concessioner activity. These actions, in conjunction with alternative 4, would have both moderate adverse and beneficial cumulative impacts on concession operations. Alternative 4 would contribute a moderate, adverse impact to the cumulative effect.

C Alternative 4 would result in a moderate, long-term adverse impact on concessioner activities and would contribute moderate, beneficial cumulative impacts on concession operations.

SOCIOECO O IC E I O E T

Natural resource preservation and restoration are driving elements of alternative 4. ow-impact visitor activities are emphasized. The built environment is reduced. Nonhistoric buildings that are not essential to park operations would be removed and the land restored. ehicle access to some parts of the park would be curtailed. Some trails and some roads may be removed and rehabilitated. Part of the im oad becomes accessible to pedestrians only. inter access would be limited to oute 2 and snowcoach from Mazama parking lot. This alternative calls for most park operations and visitor contact facilities to be relocated outside the park.

These and other actions would re uire an increased budget and an increased number of staff positions in the areas of resource preservation, restoration, protection, and education. Staffing would increase by additional T to achieve preservation and restoration goals. A base operating budget of 4,4 , 0 is needed to fund this alternative.

In addition, appro imately 3. million would be spent over the life of the plan on various projects and services, an increase of 40,000 compared to the no -action alternative. These e penditures could result in moderate to major, short-term, beneficial impacts on individual firms and employees increased business and profits, increased employment opportunities, increased income, etc. . verall impacts on the regional economy effects on the economic indicators of income, unemployment rate, poverty rate, etc. , however, would be negligible because of the size and the phasing of the projects over the ne t to 20 years.

Moving some administrative, operations, and visitor contact functions to areas outside the park would result in the purchase and/or long-term lease of land and building s and/or the construction of new buildings in gateway areas. The need for additional staff may increase the need for housing; this, combined with the increasing desirability of living in the gateway communities adds to the demand for local housing and other locally provided goods. iring additional staff results in a small increase in the local population that contributes to the overall growth in the gateway communities. New facility construction would result in a short-term, positive impact on the regional economy, mostly affecting the construction sector of the economy. The purchase of land on a willing-

buyer/willing-seller basis by the federal government would result in some long-term loss of local real-estate ta revenue. owever, the amount of property ta revenue lost to the three counties would be minor compared to the ta revenues collected by Douglas ounty ta revenues .2 million in 2002/03 , ackson ounty ta revenues 4 . million in 2002 and lamath ounty ta revenues of about 3 million, 2002 . Ac uisition of other federally owned land for these purposes would not result in any change in real estate ta es.

isitor use of the park would be reduced. emoval of facilities and services from the park and the shift to less use of motorized vehicles and reduced accessibility for motorized vehicles would tend to reduce the number of visitors to the park. oad closures and restoration, reduced winter snow plowing, and closing the north junction road to snowmobiling would also reduce access and use of some parts of the park. oncession businesses may be reduced or eliminated as incompatible with the new direction for this park.

The need for additional staff may increase the need for housing; this, combined with the increasing desirability of living in the gateway communities adds to the demand for local housing and other locally provided goods. iring additional staff results in a small increase in the local population that contributes to the overall growth in the gateway communities.

C I Additional changes or shocks either positive or negative to the local and regional socioeconomic environment within which the park e ists are not e pected. No other actions that could have cumulative effects when combined with the impacts of alterative 4 have been identified during this planning process, which has included public participation and input. In conjunction with other past, present, and reasonably foreseeable actions, no additional cumulative impacts are e pected.

C An increase in park staffing levels by full-time employee would have a moderate impact on the local gateway communities' economies and a negligible impact on the regional economy. Additional employees would likely purchase some goods and services from within the gateway communities.

Appro imately 3. million in addition to ongoing actions and projects would be spent over the life of the plan on various projects, an increase of 40,000 compared to the no-action alternative. These e penditures could result in moderate to major, short-term, beneficial impacts for individual firms and employees increased business and profits, increased employment opportunities, increased income, etc. . verall impacts on the regional economy effects on the economic indicators of income, unemployment rate, poverty rate, etc. , however, would be negligible because of the size and the phasing of the projects over the ne t to 20 years.

Moving park functions and visitor contact facilities outside the park may increase the numbers of visitors that stop in gateway towns. This may result in additional tourism related spending for locally provided goods and services within the region and gateway towns perhaps increasing business opportunities, income, and employment. n the other hand, reduced access to the park may reduce the numbers of visitors that come to the park, perhaps negatively affecting the gateway communities and the regional tourism related businesses.

Moving administrative functions and park employee housing outside the parks would result in the purchase or long-term lease of land and the construction of buildings in local gateway areas, with short-term, beneficial impacts on the local economy, mostly affecting the construction sector and a few landowners.

The need for additional staff may increase the need for housing; this, combined with the increasing desirability of living in the gateway communities adds to the demand for local housing and other locally provided goods. iring additional staff results in a small increase in the local population that contributes to the overall growth in the gateway communities.

OI LE E SE EFFECTS

oncession activities would also change in the winter to accommodate snowcoach access to the park, re uiring a year-round maintenance responsibility. These changes would result in a moderate adverse impact on concession operations. The negligible and minor impacts are described in the foregoing analysis.

EL TIO S I OF S O T TE SES OF T E E I O E T T E I TE CE E CE E T OF LO TE O CTI ITY

The vast majority of the park would be protected in a natural state and would maintain its long-term productivity. The short-term disturbance of soils, vegetation, and wildlife habitat from removing facilities and rehabilitating disturbed areas would be offset by the increased long-term protection of soils and restoration of vegetation and wildlife habitat.

I E E SI LE O I ET IE LE CO IT E TS OF ESO CES

onstruction and restoration materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds e pended on both labor and materials.

CONSULTATION AND COORDINATION

S Y OF LIC I OL E E T

onsultation and coordination among the government agencies, organizations, and the public were an important part of the planning process for the *raft eneral anagement lan nvironmental Impact tatement* for rater ake National Park. The public had two primary avenues by which it participated during the development of the plan participation in public meetings and response to newsletters.

LIC EETI S E SLETTE S

Public meetings and newsletters were used to keep the public informed and involved in the planning process for rater ake National Park. A mailing list was compiled that consisted of members of government agencies, nongovernmental groups, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *e eral egister* on May 2 , 200 . A newsletter issued anuary 200 described the planning effort. Public meetings were held during April 200 in lamath alls, Medford, oseburg, and Salem and were attended by people. A total of 2 written comments were received in response to that newsletter. A second newsletter issued in uly 200 summarized the comments received in the meetings and in response to newsletter . These comments were used to complete the park purpose and significance statements that serve as the foundation for the rest of the planning. omments on various issues facing the park were referred to during development of the general management plan.

A third newsletter distributed in the spring of 2002 described the draft alternative concepts and management zoning for managing the park. A total of comments were received in response to that alternatives' newsletter. In general opinions were fairly divided in support of individual alternatives and how to address the issues. A number of letters favored continued snowmobile use while other people favored elimination of snowmobiles in the park. pinions were divided on managing traffic on im Drive maintaining current two-way traffic, converting part of the road to one-way traffic, or closure of the road to traffic. Most respondents favored use of shuttles. A number of people who opposed partnering with private industry were concerned with large-scale commercialization within the park.

CO S LT TIO IT T E ST TE ISTO IC ESE TIO OFFICE T E ISO Y CO CIL O ISTO IC ESE TIO

Agencies that have direct or indirect jurisdiction over historic properties are re uired by section 0 of the National historic Preservation Act of , as amended US 4 0, et se . to take into account the effect of any undertaking on properties eligible for the National egister of istoric Places. To meet the re uirements of 3 00, the National Park Service sent letters to the regon historic preservation office and the Advisory ouncil on istoric Preservation on November , 2000, inviting their participation in the planning process. oth offices were sent all the newsletters with a re uest for comments.

CO S LT TIO IT TI E E IC S

etters were sent in November 2000 to the ow reek and of the Ump ua Indian Tribe and the lamath Tribes to invite their participation in the planning process. The tribes were informed on the scope of the planning project and the preliminary alternatives by newsletter. The first official government-to-government consultation with the lamath Tribes in relation to park projects took place in November 200 and can be credited largely to a meeting with members of the tribal council in August. oth meetings set some parameters for consulting with tribal staff while a cooperative agreement on conducting on-going consultation is being negotiated. The tribes would also have an opportunity to review and comment on this draft plan.

CO S LT TIO IT T E S FIS IL LIFE SE ICE

A list of federally threatened, endangered, and proposed species that may be present, or in the vicinity of rater ake National Park dated une 2 , 2002, was received from the U.S. ish and ildlife Service US S and is included in appendi . A meeting between the Park Service and the US S lamath alls ield ffice to discuss consultation responsibilities for the general management plan and other park projects was held in May 2003. Additional discussions with the US S concerning affects on federally listed species also occurred as part of the preparation of the draft plan and environmental impact statement.

The National Park Service has determined the preferred alternative may affect, but would not be likely to adversely the ost iver sucker, shortnose sucker, or anada lyn and may have some adverse affect on the following federally threatened species bald eagle, northern spotted owl, and bull trout. The National Park Service will initiate formal consultation with the US S regarding the effects on bald eagle, northern spotted owl, anada lyn , and bull trout. The US S will receive a copy of the public draft of this plan for their review and to serve as a biological assessment for consultation. omments from US S will be addressed and the results of the consultation included in the final environmental impact statement.

E CIES O I TIO S TO O T IS OC E T S SE T

F

Advisory Council on Historic Preservation
Forest Service
- Winema National Forest
- Rogue River National Forest
- Umpqua National Forest
- USFS Toketee Ranger Station
- Chiloquin Ranger District

Department of the Interior
- Fish and Wildlife Service
- National Park Service
- Office of Public Affairs
- Oregon Caves National Monument
- Water Rights Branch

EPA, Region 10

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- The Klamath Tribe
- Klamath Tribe Attorney
- Klamath Tribe Planning Department
- Cow Creek Band of the Umpqua Tribe

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Siskiyou Audubon Society
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I

There are more than 00 individuals to whom copies of this IS were sent. A complete listing of these names is available from the Superintendent, rater ake National Park, wy. 2, rater ake, 04.

APPENDIXES, BIBLIOGRAPHY, PREPARERS

6. Crater Lake National Park

An Act Reserving from the public lands in the State of Oregon, as a public park for the benefit of the people of the United States, and for the protection and preservation of the game, fish, timber, and all other natural objects therein, a tract of land herein described, and so forth, approved May 22, 1902 (32 Stat. 202)

Public lands. Crater Lake National Park, Oreg., established.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tract of land bounded north by the parallel forty-three degrees four minutes north latitude, south by forty-two degrees forty-eight minutes north latitude, east by the meridian one hundred and twenty-two degrees west longitude, and west by the meridian one hundred and twenty-two degrees sixteen minutes west longitude, having an area of two hundred and forty-nine square miles, in the State of Oregon, and including Crater Lake, is hereby reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart forever as a public park or pleasure ground for the benefit of the people of the United States, to be known as "Crater Lake National Park." (U.S.C., title 16, sec. 121.)

Boundaries.

Regulations, etc., by Secretary of Interior.

SEC. 2. That the reservation established by this act shall be under the control and custody of the Secretary of the Interior, whose duty it shall be to establish rules and regulations and cause adequate measures to be taken for the preservation of the natural objects within said park, and also for the protection of the timber from wanton depredation, the preservation of all kinds of game and fish, the punishment of trespassers, the removal of unlawful occupants and intruders, and the prevention and extinguishment of forest fires. (U.S.C., title 16, sec. 122.)

Settlement in, etc., prohibited.

Penalties.

Proviso.

Admission of visitors, etc.

Hotels, etc., permitted. (Amended by 39 Stat. 535, as amended. See pp. 9–12.)

SEC. 3. That it shall be unlawful for any person to establish any settlement or residence within said reserve, or to engage in any lumbering, or other enterprise or business occupation therein, or to enter therein for any speculative purpose whatever, and any person violating the provisions of this act, or the rules and regulations established thereunder, shall be punished by a fine of not more than five hundred dollars, or by imprisonment for not more than one year, and shall further be liable for all destruction of timber or other property of the United States in consequence of any such unlawful act: *Provided*, That said reservation shall be open, under such regulations as the Secretary of the Interior may prescribe, to all scientists, excursionists, and pleasure seekers and to the location of mining claims and the working of the same: *And provided further*, That restaurant and hotel keepers, upon application to the Secretary of the Interior, may be permitted by him to establish places of entertainment within the Crater Lake National Park for the accommodation of visitors, at places and under regulations fixed by the Secretary of the Interior, and not otherwise. (U.S.C., title 16, sec. 123.)

Act of Legislature of Oregon, approved January 25, 1915, ceding to the United States exclusive jurisdiction over Crater Lake National Park in the State of Oregon. (Oregon Laws, 1920, vol. II, p. 3487.)

Be it enacted by the people of the State of Oregon, That exclusive jurisdiction shall be, and the same is hereby, ceded to the United States over and within all the territory which is now, or may hereafter be, included in that tract of land in the State of Oregon set aside by an act of Congress, approved May 22, 1902, entitled "An Act reserving from the public lands in the State of Oregon, as a public park for the benefit of the people of the United States, and for the protection and preservation of the game, fish, timber, and all other natural objects therein, a tract of land herein described, and so forth," for the purposes of a national park, known and designated as Crater Lake National Park; saving, however, to the said State the right to serve civil or criminal process within the limits of the aforesaid park in any suits or prosecutions for, or on account of, rights acquired, obligations incurred, or crimes committed in said State but outside of said park; and saving further to the said State the right to tax persons and corporations, their franchises and property on lands included in said park: *Provided, however*, That jurisdiction shall not vest until the United States, through the proper officers, notifies the Governor of said State that they assume police and military jurisdiction over said park.

SEC. 2. All acts and parts of acts in conflict with this act are hereby repealed.

SEC. 3. Inasmuch as at this time there exists confusion concerning the jurisdiction of the Federal and State courts over the property and within the territory in this Act described, the passage of this Act is declared to be immediately necessary for the immediate protection of the peace, health, and safety of the State, and an emergency is hereby declared to exist, and this Act shall go into immediate force and effect from and after its passage and approval by the Governor.

An Act To accept the cession by the State of Oregon of exclusive jurisdiction over the lands embraced within the Crater Lake National Park, and for other purposes, approved August 21, 1916 (39 Stat. 521)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the provisions of the act of the Legislature of the State of Oregon, approved January twenty-fifth, nineteen hundred and fifteen, ceding to the United States exclusive jurisdiction over the territory embraced within the Crater Lake National Park, are hereby accepted and sole and exclusive jurisdiction is hereby assumed by the United States over such territory, saving, however, to the said State the right to serve civil or criminal process within the limits of the aforesaid park in suits or prosecution for or on account of rights acquired, obligations incurred, or crimes committed in said State but outside of said park, and saving further to the said State the right to tax persons and corporations, their franchises and property, on the lands included in said park. All the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said park. All fugitives from justice taking refuge in said park shall be subject to the same laws as refugees from justice found in the State of Oregon. (U.S.C., title 16, sec. 124.)

Crater Lake National Park, Oreg. Sole jurisdiction over, ceded by Oregon to United States. State process, etc.

SEC. 2. That said park shall constitute a part of the United States judicial district for Oregon, and the district court of the United States in and for Oregon shall have jurisdiction of all offenses committed within said boundaries. (U.S.C., title 16, sec. 125.)

Jurisdiction of Oregon judicial district.

SEC. 3. That if any offense shall be committed in the Crater Lake National Park, which offense is not prohibited or the punishment for which is not specifically provided for by any law of the United States, the offender shall be subject to the same punishment as the laws of the State of Oregon in force at the time of the commission of the offense may provide for a like offense in said State; and no subsequent repeal of any such law of the State of Oregon shall affect any prosecution for said offense committed within said park. (U.S.C., title 16, sec. 126.)

Punishment under Oregon laws.

SEC. 4. That all hunting or the killing, wounding, or capturing at any time of any wild bird or animal, except

Hunting, fishing, etc., prohibited.

dangerous animals when it is necessary to prevent them from destroying human lives or inflicting injury, is prohibited within the limits of said park; nor shall any fish be taken out of the waters of the park in any other way than by hook and line, and then only at such seasons and in such times and manner as may be directed by the Secretary of the Interior. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary and proper for the management and care of the park and for the protection of the property therein, especially for the preservation from injury or spoliation of all timber, mineral deposits other than those legally located prior to the passage of this Act, natural curiosities, or wonderful objects within said park, and for the protection of the animals and birds in the park from capture or destruction, and to prevent their being frightened or driven from the park; and he shall make rules and regulations governing the taking of fish from the streams or lakes in the park. Possession within said park of the dead bodies, or any part thereof, of any wild bird or animal shall be prima facie evidence that the person or persons having the same are guilty of violating this Act. Any person or persons, or stage or express company, or railway company, who knows or has reason to believe that they were taken or killed contrary to the provisions of this Act and who receives for transportation any of said animals, birds, or fish so killed, caught, or taken, or who shall violate any of the other provisions of this Act or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park or for the protection of the property therein, for the preservation from injury or spoliation of timber, mineral deposits other than those legally located prior to the passage of this Act, natural curiosities, or wonderful objects within said park, or for the protection of the animals, birds, or fish in the park, or who shall within said park commit any damage, injury, or spoliation to or upon any building, fence, hedge, gate, guidepost, tree, wood, underwood, timber, garden, crops, vegetables, plants, land, spring, mineral deposits other than those legally located prior to the passage of this Act, natural curiosities, or other matter or thing growing or being thereon or situate therein, shall be deemed guilty of a misdemeanor, and shall be subject to a fine of not more than $500 or imprisonment not exceeding six months, or both, and be adjudged to pay all costs of the proceedings. (U.S.C., title 16, sec. 127.)

Regulations, etc.

Evidence of violations.

Punishment for violations.

Forfeiture of guns, traps, etc.

SEC. 5. That all guns, traps, teams, horses, or means of transportation of every nature or description used by any person or persons within said park limits when engaged in killing, trapping, ensnaring, or capturing such wild beasts, birds, or animals shall be forfeited to the United States and may be seized by the officers in said park and

held pending the prosecution of any person or persons arrested under charge of violating the provisions of this Act, and upon conviction under this Act of such person or persons using said guns, traps, teams, horses, or other means of transportation, such forfeiture shall be adjudicated as a penalty in addition to the other punishment provided in this Act. Such forfeited property shall be disposed of and accounted for by and under the authority of the Secretary of the Interior. (U.S.C., title 16, sec. 128.)

Commissioner. Appointment, authority, etc.

SEC. 6. That the United States District Court for Oregon shall appoint a commissioner who shall reside in the park and who shall have jurisdiction to hear and act upon all complaints made of any violations of law or of the rules and regulations made by the Secretary of the Interior for the government of the park and for the protection of the animals, birds, and fish, and objects of interest therein, and for other purposes authorized by this Act.

Judicial power in violations of rules, etc.

Such commissioner shall have power, upon sworn information, to issue process in the name of the United States for the arrest of any person charged with the commission of any misdemeanor, or charged with a violation of the rules and regulations, or with a violation of any of the provisions of this Act prescribed for the government of said park and for the protection of the animals, birds, and fish in said park, and to try the person so charged, and if found guilty, to impose punishment and to adjudge the forfeiture prescribed.

Appeals.

In all cases of conviction an appeal shall lie from the judgment of said commissioner to the United States District Court for Oregon, and the United States court in said district shall prescribe the rules of procedure and practice for said commissioner in the trial of cases and for appeal to said United States District Court. (U.S.C., title 16, sec. 129.)

Procedure in criminal cases.

SEC. 7. That any such commissioner shall also have power to issue process as hereinbefore provided for the arrest of any person charged with the commission within said boundaries of any criminal offense not covered by the provisions of section four of this Act to hear the evidence introduced, and if he is of opinion that probable cause is shown for holding the person so charged for trial shall cause such person to be safely conveyed to a secure place of confinement within the jurisdiction of the United States District Court for Oregon, and certify a transcript of the record of his proceedings and the testimony in the case to said court, which court shall have jurisdiction of the case: *Provided*, That the said commissioner shall grant bail in all cases bailable under the laws of the United States or of said State. (U.S.C., title 16, sec. 130.)

Provise. Bail.

Service of process.

SEC. 8. That all process issued by the commissioner shall be directed to the marshal of the United States for

the district of Oregon, but nothing herein contained shall be so construed as to prevent the arrest by any officer or employee of the Government or any person employed by the United States in the policing of said reservation within said boundaries without process of any person taken in the act of violating the law or this Act or the regulations prescribed by said Secretary as aforesaid. (U.S.C., title 16, sec. 131.)

Salary.

SEC. 9. That the commissioner provided for in this Act shall be paid an annual salary of $1,500, payable quarterly: *Provided*, That the said commissioner shall reside within the exterior boundaries of said Crater Lake National Park, at a place to be designated by the court making such appointment: *Provided further*, That all fees, costs, and expenses collected by the commissioner shall be disposed of as provided in section eleven of this Act. (U.S.C., title 16, sec. 132.)

Proviso.
Residence.

Disposal of fees, etc.

United States fees, etc.

SEC. 10. That all fees, costs, and expenses arising in cases under this Act and properly chargeable to the United States shall be certified, approved, and paid as are like fees, costs, and expenses in the courts of the United States. (U.S.C., title 16, sec. 133.)

Deposit of fines and costs.

SEC. 11. That all fines and costs imposed and collected shall be deposited by said commissioner of the United States, or the marshal of the United States collecting the same, with the clerk of the United States District Court for Oregon. (U.S.C., title 16, sec. 134.)

Acceptance of cession.

SEC. 12. That the Secretary of the Interior shall notify, in writing, the governor of the State of Oregon of the passage and approval of this Act.

Excerpt from "An Act Making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1918, and for other purposes," approved June 12, 1917 (40 Stat. 152)

Crater Lake National Park. Acceptance of donated lands, etc. (Repealed by 46 Stat. 1028, but subject matter covered by U.S.C., title 16, sec. 6, 41 Stat. 917. See p. 13.)

The Secretary of the Interior is authorized to accept patented lands or rights of way over patented lands in the Crater Lake National Park that may be donated for park purposes. (U.S.C., title 16, sec. 135.)

An Act Accepting certain tracts of land in the city of Medford, Jackson County, Oregon, approved June 7, 1924 (43 Stat. 606)

Crater Lake National Park, Oreg. Acceptance from city of Medford of lots, as sites for buildings in.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized to accept certain tracts of land in the city of Medford, Jackson County, Oregon, described as lots numbered 15 and 16, block 9, amended plat to Queen Ann Addition to the city of Medford; and lot 3, block 2, central subdivision to the city of Medford, which have been tendered to the United States of America in fee simple by the city of Medford, Oregon, as sites for buildings to be used in connection with the administration of Crater Lake National Park, Oregon.

An Act To add certain land to the Crater Lake National Park in the State of Oregon, and for other purposes, approved May 14, 1932 (47 Stat. 155)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all of that certain tract described as follows: Beginning on the south boundary line of Crater Lake National Park at four mile post numbered 112; thence west along the south boundary line of said park four and twenty-six one-hundredths chains which is the northwest corner of this tract; thence south one hundred and fourteen and forty-two one-hundredths chains; thence south forty degrees fifty-nine minutes east, eighty-four and thirty-nine one-hundredths chains; thence east fifteen and thirteen one-hundredths chains to highway stake numbered 130; thence north eighty-nine degrees thirty minutes east, eighteen and six one-hundredths chains; thence north twenty and eighty-three one-hundredths chains; thence north nineteen degrees and forty minutes west, one hundred and twenty-six and four one-hundredths chains; thence north twenty-seven degrees fifty-two minutes west forty-three and fifty one-hundredths chains to the south boundary of Crater Lake National Park; thence west twenty-four chains following the south boundary of said park to the place of beginning, in the State of Oregon be, and the same is hereby, excluded from the Crater National Forest and made a part of the Crater Lake National Park subject to all laws and regulations applicable to and governing said park. (U.S.C., 6th supp., title 16, sec. 121a.)

Crater Lake National Park, Oreg.

Land added to. Description.

Transferred from Crater National Forest.

An Act To authorize the acquisition of additional land in the city of Medford, Oregon, for use in connection with the administration of the Crater Lake National Park, approved May 14, 1932 (47 Stat. 156)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized to acquire on behalf of the United States for use in connection with the present administrative headquarters of the Crater Lake National Park, that certain tract of land in the city of Medford, Jackson County, Oregon, adjoining the present headquarters site and described as lot 4, block 2, central subdivision to said city of Medford, Oregon, which tract of land has been offered to the United States for the purpose aforesaid by the city of Medford, Oregon, free and clear of all encumbrances for the consideration of $300.

Crater Lake National Park, Oreg.

Purchase of certain tract from Medford, Oreg., as addition to, authorized.

SEC. 2. That not to exceed the sum of $300 from the unexpended balance of appropriations heretofore made for the acquisition of privately owned lands and/or standing timber within the national parks and national monuments be, and the same is hereby, made available for the acquisition of land herein authorized.

Price. Fund available. Vol. 46, p. 1184.

Public Law 96-553
96th Congress

An Act

To revise the boundary of Crater Lake National Park in the State of Oregon, and for other purposes.

Dec. 19, 1980
[S. 2318]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) the first section of the Act entitled, "An Act reserving from the public lands in the State of Oregon, as a public park for the benefit of the people of the United States, and for the protection and preservation of the game, fish, timber, and all other natural objects therein, a tract of land herein described, and so forth", approved May 22, 1902 (32 Stat. 202), is amended to read as follows:

Crater Lake National Park, Oreg., boundary revision.

16 USC 121.

"That in order to preserve for the benefit, education, and inspiration of the people of the United States certain unique and ancient volcanic features, including Crater Lake, together with significant forest and fish and wildlife resources, there is hereby established the Crater Lake National Park in the State of Oregon. The boundary of the park shall encompass the lands, waters, and interests therein within the area generally depicted on the map entitled, 'Crater Lake National Park, Oregon', numbered 106-80,001, and dated February 1980, which shall be on file and available for public inspection in the office of the National Park Service, Department of the Interior. Lands, waters, and interests therein within the boundary of the park which were within the boundary of any national forest are excluded from such national forest and the boundary of such national forest is revised accordingly.".

(b) The Act entitled "An Act to add certain land to the Crater Lake National Park in the State of Oregon, and for other purposes", approved May 14, 1932 (47 Stat. 155), is repealed.

Repeal.
16 USC 121a.

SEC. 2. To make possible more effective protection of the Alpine Lakes Wilderness and more comprehensive and effective management of the management unit within the Alpine Lakes Area, established by the Alpine Lakes Area Management Act of 1976, the Secretary of Agriculture is authorized to acquire any or all of the following described lands in the State of Washington: in township 23 north, range 9 east, Willamette meridian, the southeast quarter of

16 USC 1132 note.

E I S FIS IL LIFE SE ICE
LETTE O T E TE E E E E O OSE S ECIES
IT TT C E LIST

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
6610 Washburn Way
Klamath Falls, OR 97603
(541) 885-8481 FAX (541) 885-7837

TAKE PRIDE IN AMERICA

October 16, 2003

Memorandum

RECEIVED
OCT 20 2003
CRATER LAKE NAT'L PARK

In reply refer to 1-10-04-SP-007

To: Park Superintendent, Crater Lake National Park
Crater Lake, Oregon

From: Field Supervisor, Klamath Falls Fish and Wildlife Office
Klamath Falls, Oregon

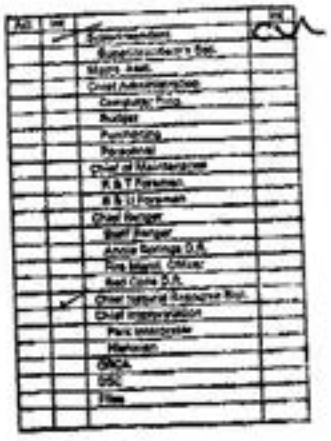
Subject: Species List Update

We are updating your list of Federally threatened, endangered and proposed species that may be present on, or in the vicinity of Crater Lake National Park. The previous list was valid for 90 days or until we sent a letter with any changes that occurred. An updated list is attachment with a current compilation date (Attachment A). The list should not be considered evidence as to the presence or absence of species at proposed project locations.

Please distribute this letter and enclosure to the appropriate personnel in your office.

Thank you for your efforts to conserve, protect and recover listed and candidate species. If you have questions regarding this letter, please contact Leonard LeCaptain at (541) 885-8481.

Attachment A



Attachment A

SPECIES LIST

The federal agency or designated representative shall use the following list(s), along with relevant biological studies, literature reviews, views of species experts, and site inspections, to determine if the project may affect (negatively or positively) listed or proposed species or proposed or designated critical habitat. If the subject project may affect a listed species and the proposed action is funded, permitted, or implemented by a Federal agency, the Federal agency must prepare a biological assessment if the project is a construction project which may require an environmental impact statement [1/]. If a biological assessment is not required, the Federal agency still has the responsibility to review its proposed activities and determine whether the listed species may be affected. If, based on an analysis it is determined that the project will have "no effect" on listed or proposed species, then no additional correspondence with the Service is necessary under the Act's requirements. If the action agency requires a letter indicating Service review of the "no effect" determination, then please provide a summary of the project, relevant maps and species information, a copy of the species list provided by the Klamath Falls Fish and Wildlife Office (KFFWO), and justification for the effects determination to the KFFWO.

The species list(s) also includes Federal candidate species of concern that may be present within each county. While not protected under the Endangered Species Act (Act), the Service encourages Federal agencies and private land owners to utilize their authorities to conserve and protect candidate species, so activities which they authorize do not contribute to the need to list these species as either threatened or endangered under the Act. We also encourage Federal agencies and private land owners to provide the Service with information on status surveys, monitoring and other studies related to candidate species, and to address these species during consultation. During the assessment or review process, the Federal agency may engage in planning efforts, but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act. If a listed species may be affected, the Federal agency should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to listed species prior to a written request for formal consultation.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. The conference

process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

The action agency and applicant should be aware that section 9 of the Act prohibits the "take" of any listed species. The definition of "take" includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. "Harm" in the definition of 'take' in the Act means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Anyone who engages in a take would be subject to prosecution under section 9 of the Act. Such taking may occur only under the authority of the Service's pursuant to section 7 (if a Federal agency is involved with this project) or through a section 10(a)(1)(B) permit, as mandated in the Act.

[F] "Construction Project" means any major Federal action which significantly affects the quality of the human environment designed primarily to result in the building or erection of man-made structures such as dams, buildings, roads, pipelines, channels and the like. This includes Federal actions such as permits, grants, licenses, or other forms of Federal authorizations or approval which may result in construction.

LISTED, PROPOSED AND CANDIDATE SPECIES THAT MAY OCCUR ON CRATER LAKE NATIONAL PARK

LISTED SPECIES

Mammals		
Canada lynx	*Lynx canadensis*	T
Birds		
Bald	*Haliaeetus leucocephalus*	T
Northern spotted owl	*Strix occidentalis caurina*	T, CH
Fish		
Shortnose sucker	*Chasmistes brevirostris*	E, PCH
Lost River sucker	*Deltistes luxatus*	E, PCH
Bull trout (Klamath River population segment)	*Salvelinus confluentus*	T, PCH
Plants		
None		

PROPOSED SPECIES

None

CANDIDATE SPECIES

Birds		
Yellow-billed cuckoo (Western continental US)	*Coccyzus americanus*	C
Amphibians and Reptiles		
Oregon Spotted frog	*Rana pretiosa*	C

(E) - Endangered (T) - Threatened (CH) - Critical Habitat
(C) - Candidate (PE) - Proposed as endangered (PT) - Proposed as threatened
(PCH) - Proposed critical habitat

(List compiled October 2003)

E I C O ECTE COSTS OF LTE TI ES

O S		
	Adapt historic 2 building for visitor contact	4,432,000
	ehabilitate im ultural andscape	00,000
	emove im illage Dorm	3 0,000
Mazama illage	*onstr ct e esta rant an pan ar ing ot*	*4*
	onstr ction oncession aintenance acilit	*4*
	Develop group campsites	0, 00
leetwood ove	Improve bulkhead	00,000
	onstruct seasonal shade structure	200,000
	Improve leetwood Trail	3 0,000
	total rivate ollars	*4*
	Subtotal ederal Dollars	,402, 00
	TOT L	

O		
Area	Description	Net ost
Muson valley	ehabilitate Superintendent s / hief anger's esidences	, 00,000
uildings	Adapting isting buildings	2,000,000
	TOT L	

T E I O		
Area	Description	Net ost
Munson alley	ehabilitate Superintendent s / hief anger's esidences	, 00,000
ast im Drive	New trails	2 ,000
rontcountry Sites	New trails	2 ,000
	Picnic Sites	2 ,000
	aysides	200,000
uildings	Adapting isting buildings	2,000,000
Parking Improvements		00,000
ffice elocation out of park		,000
	TOT L	

T E E E		
Area	Description	Net ost
Munson alley	ehabilitate Superintendent s/ hief anger's esidences	, 00,000
rontcountry Sites	New trails	2 ,000
	Picnic Sites	2 ,000
	aysides	200,000
Shuttle us	im	0,000
	Mazama to im	0,000
	Shuttle stop/improvements	00,000
ffice elocation out of park		44,000
	TOT L	

F E		
Area	Description	Net ost
im illage	ehabilitate Superintendent s/ hief anger's esidences	, 00,000
rontcountry Sites	New trails	2 ,000
uildings	Nonhistoric buildings removed, site restored	,200,000
inter Snowcoach	Mazama to im	00,000
ffice elocation out of park		,000
	TOT L	

Project/Location: Crater Lake National Park - General Mangement Plan

7/10/00

Subject: Functional Component

Description:

Project Life Cycle = 25 Years

Discount Rate = 7.00%

Present Time = Current Date

				Alternative 1		Alternative 2		Alternative 3		Alternative 4	
INITIAL COSTS	**Quantity**	**UM**	**Unit Price**	**Est.**	**PW**	**Est.**	**PW**	**Est.**	**PW**	**Est.**	**PW**
Construction Costs											
A. Rehab Superintendent Hou			$0.00	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
B. Building Space			$0.00	2,000,000	2,000,000	2,000,000	2,000,000		0	1,200,000	1,200,000
C. Trails/Picnic/Campsites			$0.00	0	0	755,000	755,000	490,000	490,000	265,000	265,000
D.											
E. Parking Improvement					0	100,000	100,000	0	0		0
F. Shuttle Bus					0		0	1,600,000	1,600,000		0
G. Snow Coach					0		0		0	500,000	500,000
H. Office Relocation					0	88,000	88,000	44,000	44,000	176,000	176,000
I.					3,800,000		4,743,000		3,934,000		3,941,000
J.							(943,000)		(134,000)		(141,000)
Total Initial Cost											
Initial Cost PW Savings (Compared to Alt. 1)											
Description	**Year**		**PW Factor**								
REF Shuttle bus replacement	5		0.7130		0		0	500,000	356,493	250,000	178,246
Shuttle bus replacement	10		0.5083		0		0	500,000	254,174	250,000	127,087
A. Shuttle bus replacement	15		0.3624		0		0	500,000	181,223	250,000	90,611
B. Shuttle bus replacement	20		0.2584		0		0	500,000	129,209	250,000	64,604
B.	0		1.0000		0		0		0		0
B.	0		1.0000		0		0		0		0
C.	0		1.0000		0		0		0		0
D.					0		0		921,099		460,548
E.											
Total Replacement/Salvage Costs											
Description	**Escl. %**		**PWA**								
ANN Leasing	0.000%		11.654		0	12,880	150,098	6,400	74,583	25,760	300,196
Staffing	0.000%		11.654	0	0	687,500	8,011,838	687,500	8,011,838	125,000	1,456,696
A. Bus Operation/Maintenance	0.000%		11.654		0		0	734,000	8,553,730	242,000	2,820,167
B.	0.000%		11.654		0		0		0		0
C.	0.000%		11.654		0		0		0		0
D.	0.000%		11.654		0		0		0		0
E.					0		8,161,937		16,640,151		4,577,061
F.											
Total Annual Costs (Present Worth)					3,800,000		12,904,937		21,495,250		8,978,609
							(9,104,937)		(17,695,250)		(5,178,609)
Total Life Cycle Costs (Present Worth)											
Life Cycle Savings (Compared to Alt. 1)			**PP Factor**			-1.35 Years		-0.09 Years		-0.33 Years	
			0.0858	326,080 Per Year		1,107,379 Per Year		1,644,519 Per Year		770,459 Per Year	

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National Park Service, U.S. Department of the Interior

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0b *e stic an scape of im illage 4 rater a e ational ar regon*, by athy A. ilbert and retchen A. u enberg, Pacific Northwest egion.

0c *istoric American il ings rve nson alle s esigne an scapes A o 44*, by Stephen . Mark, rater ake National Park.

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E E S CO S LT TS

TIO L SE ICE

C L

harles . undy, Superintendent
ent Taylor, hief of Administration
Mac rock, Supervisory eneral iologist, Project iaison
ordon Toso, acilities Manager
David rennan, Supervisory Park anger
Marsha Mc abe, Supervisory Park anger
Steve Mark, istorian
Mark uktenica, A uatic cologist

C C S O

eith Dunbar, Team eader Planning and Partnerships, Project iaison

S C

Mark Matheny, Project Manager
laine ideout, Natural esource Specialist
ane Sikoryak, ultural esource Specialist
Sandy Schuster, ditor
Phillip Thys, isual esource Specialist
arlan Unrau, ultural esource Specialist
Terri Urbanowski, Team aptain, andscape Architect and Planner

F C

eith Morgan, Interpretive Planner

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reg ody, Technical Specialist for ultural esources
Debbie ampbell, former Project Manager, Denver Service enter
David reger, Technical Specialist for Natural esources
ay Todd, former Project Manager, Denver Service enter

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obert . Abelin, Project ngineer,. obert Peccia Associates
ichard ichtkoppler, Ph.D, Natural esource conomist, U. S. ureau of eclamation
Douglas idmayer, Transportation Division Manager, obert Peccia Associates

I E

As the nation's principal conservation agency, the Department of the Interior has 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 historical 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.

NPS D-344 / May 2004