



# THE PLAN



Bumpass Hell



Mudpot at Devils Kitchen



Black Bear

# The General Management Plan

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## Plan Vision

Lassen Volcanic National Park is a model for ecosystem management, wilderness preservation, and cultural resource protection. Park resources are passed on unimpaired for the benefit of present and future generations.

Resource conditions are known and basic trends of natural systems have been assessed. Scientifically sound mechanisms are in place to ensure that natural systems and processes are perpetuated. Cultural resources and their significance are documented and appropriate preservation standards are applied. All stakeholders play an active stewardship role.

A diversity of visitors are provided year-around opportunities for education, enjoyment, and understanding which inspire appreciation of resource values and dedication to stewardship. Wilderness visitors experience a landscape largely devoid of human impacts.

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## Plan Concept

This plan is intended to preserve, protect, and restore natural and cultural resources and wilderness conditions and to provide visitors with high quality park experiences throughout the calendar year.

Designated wilderness will be increased by approximately 25,000 acres. (See Map 8, Areas Considered for Wilderness Expansion.) Gathering of baseline data on natural and cultural resources will be accelerated. This information is essential for completion of scientific studies to guide resource preservation and restoration activities for such needs as exotic species control and habitat restoration for threatened and endangered species. Tested monitoring methods will be applied. Park staff will increase efforts to work with the U.S. Forest Service and other regional land managers toward ecosystem management. Visitor activity will be closely managed to prevent resource damage. Visitor service functions will be directed to enhance visitor experience throughout the year and provide for visitor safety and protection. Interpretive activities will be focused to provide basic orientation/information and encourage individual stewardship and resource protection. Facility improvements will be undertaken to achieve resource protection and improved management efficiency.

Budget increases for staff will be targeted to resource management staff, but will also include ranger activities, interpretation, and maintenance to support functions related to resource

management and provide for enhanced visitor experience. Staff and funding increases will result in:

- More effective control of exotic plant and animal species, including non - native fish species in lakes and streams;
- Analysis of the feasibility of reintroduction of selected extirpated species such as the wolverine and fisher in cooperation and consultation with adjacent land managers such as the U.S. Forest Service;
- Increased use of prescribed fire to restore natural conditions and reduce fuel loads;
- Inventory and monitoring of natural resources, especially targeted species such as the Cascades frog;
- Accession, catalog, and storage of park museum collections and archives to servicewide standards;
- Inventory, documentation, and preservation of park archeological sites and cultural landscapes;
- Completed ethnographic and administrative histories for use by staff, researchers, and the public;
- Better maintenance of trails and service roads to prevent resource damage;
- Stimulation of increased visitor stewardship through interpretive programs;
- Greatly improved visitor services at the southwest entrance;
- Increased ecosystem management efforts;

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- Increased "partnering" efforts with local communities, other government agencies, American Indian communities, and private organizations;
- Winterization of facilities to allow day use in winter and shoulder seasons;
- Provision of ranger-led programs in key visitor locations, including remote sites such as Butte Lake, Juniper Lake, and Warner Valley;
- Interpretation programming offering greater depth and variety of experiences that lead to stewardship of the park's natural and cultural resources;
- Improved campfire and amphitheater facilities to support interpretive programs;
- Improved pullouts on the main park road to provide interpretive and scenic view opportunities;
- Improved visitor information including radio broadcasts and written guides;
- Enhanced winter access at the northwest entrance; and
- Improved facilities for environmental education.

## Management Zones and Prescriptions

Management zones are used to describe the desired mix of resource conditions and visitor experiences to be achieved in different areas of the park.

Eight zones are identified at Lassen Volcanic National Park: Wilderness, Winter Backcountry, Scenic Drive, Summer Developed, Winter Developed, Remote Unit Access Road, Administration, and Inholder Zone. Division of the park into the various zones is displayed on Maps 9 and 10.

Management zone prescriptions provide the basis for a system of management intended to ensure that resources are passed on unimpaired to future generations and visitor experiences remain high quality. This approach is generally referred to as "managing within carrying capacity." The federal law requiring general management plans for all parks includes a provision requiring commitments to management within carrying capacity.

There is no evidence to suggest that Lassen Volcanic National Park is, on a parkwide basis, exceeding or even close to exceeding its carrying capacity, or that carrying capacity will be exceeded during the life of this general management plan considering the potential for

increased visitation. While resource damage is occurring at discrete locations within the park, both in developed areas and in backcountry locations, that damage is attributable to poorly located or designed facilities and/or insufficient management of visitors, and can realistically be remediated by measures other than visitation reduction. Moreover, existing facilities such as campgrounds, picnic areas, and parking lots are sufficient to accommodate much of the potential increased visitation, except that occurring at peak weekend and holiday periods.

The National Park Service uses a management system called Visitor Experience and Resource Protection (VERP) as its basic framework for managing within carrying capacity or achieving the resource conditions and visitor experiences prescribed for the zones. VERP provides for development of a set of measurable resource and visitor experience standards that are monitored on a regular basis. If the monitoring reveals that existing management is not achieving the prescribed resource and visitor experience conditions, then the management approach is revised as necessary. Generally a number of options will be available to achieve the desired conditions, ranging from staffing changes to physical facility and access changes. In some cases direct limitations on visitor use levels may be necessary.

The general management plan accomplishes only the initial steps toward implementation of the VERP program at Lassen Volcanic National Park. The remaining steps will be undertaken in future years, and it may be some time before Lassen Volcanic National Park's VERP program is fully implemented.

### **Wilderness Zone**

This zone, encompassing a majority of park land, consists of legislatively designated wilderness and lands considered for proposed designation. It is managed consistent with the Wilderness Act and National Park Service policies regarding wilderness. This zone encompasses approximately 104,594 acres.

**Resource Conditions:** Natural resource conditions are intended to be pristine in this zone, regulated fully by natural processes uninfluenced by human activities except as may be needed to restore natural conditions, e.g. removal of invasive and disruptive non-native species. Plant and animal communities function as part of an entire ecosystem, and natural geologic processes proceed unhindered. Fire is recognized as a normal process necessary for the restoration of natural vegetative communities.



Top: North entrance station

Bottom: Warner Valley Ranger Station

Historic structures and sites, cultural landscapes, ethnographic and archeological sites within the zone are documented and appropriate preservation standards applied.

**Visitor Experience:** Visitors to the wilderness experience a landscape where human impacts are minimized. Use of this zone requires a relatively high degree of physical exertion and an extended time commitment. The wilderness experience offers a moderate to high degree of challenge and adventure. Opportunities for independence, closeness to nature, tranquility, and the application of outdoor skills are high. There is a low probability of encountering other visitors or NPS staff except in the vicinity of lakes. Visitor use at lakes is dispersed and of low intensity.

**Management:** Resource protection is achieved primarily through appropriate visitor behavior and limitation of visitor numbers. Management for visitor protection and safety within this zone is very limited. Onsite controls and restrictions are minimized and those that are present are subtle. Offsite management of visitor behavior includes wilderness visitor education programs, such as "Leave No Trace" information, and wilderness permitting procedures. Restoration projects such as disturbed land reclamation and exotic species removal may be undertaken. Fire is used to help achieve natural processes.

Developed facilities are minimal in this zone, consisting of trails, minimal directional signing, and bridges where essential at key stream crossings. The designation of primitive campsites is an option to be applied if needed to achieve resource protection goals.

### ***Winter Backcountry Zone***

This zone goes into effect when the main park road is closed for the winter season. This includes the entire park except the Winter Developed Zone.

**Resource Conditions:** Natural processes are unimpeded in this zone. Cultural resources are documented and appropriate preservation standards applied.

**Visitor Experience:** Visitors to this zone experience wilderness-like conditions. While human improvements may be readily observable in some areas, they are generally not operational. Use of this zone requires a relatively high degree of physical exertion and a long time commitment. The environment offers a moderate to high degree of challenge, adventure, and risk. Opportunities for independence, closeness to

nature, tranquility, and the application of outdoor skills are high. There is a low probability of encountering other visitors or NPS staff except within one mile of the winter developed zone.

**Management:** Management in this zone is similar to wilderness. Management for visitor protection and safety within this primitive zone is low to moderate. Resource protection is achieved through visitor education, control of numbers as needed in sensitive areas, and regular patrols and enforcement. Some interpreter-led trips may be provided. There is no additional development in this zone, except for signing, to facilitate winter visitor use or park management.

### ***Scenic Drive Zone (Summer)***

This zone includes the main park road extending from the Highway 44 junction at the north entrance to the southwest entrance. It encompasses the paved roads, pullouts, overlooks, and associated trails and small picnic areas, parking areas, and other facilities that support visitor touring. It includes Manzanita Lake, Emerald Lake, Reflection Lake, Devastated Area, Sulphur Works, Lake Helen, Lassen Peak Trail, and Bumpass Hell Trail. Approximately 1,192 acres are included in this zone.

**Resource Conditions:** Although there is concentrated visitor use and extensive development in this zone, natural systems are not significantly affected. Biological inventories and assessments provide sufficient information to ensure that there are no impacts from development or visitor use on sensitive or threatened and endangered species habitat, wetlands are avoided in any new development and restored where already impacted, thermal areas are protected from inappropriate visitor uses, and streams are protected from erosion and polluted runoff.

Cultural resources in this zone, including the historic Route 1 landscape, are documented and appropriate preservation standards applied.

**Visitor Experience:** Visitors use the paved roadways, trails, and associated developments in the scenic drive zone to tour the park, enjoy scenic overlooks and interpretive media, and gain access into other park zones. Visitor attractions are convenient and easily accessible. Observing the natural environment is an important activity. The probability of encountering other visitors is very high, and moderate for encountering National Park Service staff. Many visitors may be present in some areas. Some trails and most facilities in this



Manzanita Lake amphitheater

zone are accessible to disabled persons. Lakes and trails have concentrated visitor use and developed visitor facilities.

**Management:** Intensive management is provided in the scenic drive zone to ensure resource protection and public safety with frequent ranger patrols and regular trail, road and roadside facility maintenance. Interpretation includes signs, displays, wayside exhibits and milepost guides. Some interpreter-led programs and tours may also occur in this zone. Development is evident, but is designed to harmonize with the natural environment. Facilities are rustic and consistent with the defining elements of the cultural landscape. Visitor facilities include unpaved maintained trails with bridges at key creek crossings.

Visitor stopping points along the road serve a number of different purposes and they are developed and managed accordingly.

Major interpretive sites and trailheads have rest rooms, trash cans, wayside exhibits, and paved parking areas designed for traffic flow and safety. Major sites include Bumpass Hell, Sulphur Works, Lassen Peak, Devastated Area, and Loomis Museum.

Minor trailheads and interpretive sites have wayside exhibits, are generally unpaved, but have designated parking. Trash cans and picnic tables may be provided.

Individual pullouts are located and designed to allow opportunities for a visitor or group of visitors to enjoy the views or other park resources for a period of time without the disruption of other visitors. Pullouts accommodate one to three vehicles. They are unpaved, but designed to prevent informal enlargement. Trash cans and picnic tables may be provided.

### ***Remote Unit Access Road Zone (Summer)***

This zone encompasses the major access roads serving Butte Lake, Juniper Lake, and Warner Valley areas. The zone includes approximately 334 acres.

**Resource Conditions:** Resource protection objectives are the same as in the Scenic Drive zone. Significant natural processes and sensitive habitat are not affected. Cultural resources are documented and appropriate preservation standards applied.

**Visitor Experience:** This zone provides a driving experience that gives visitors a sense of being in

a largely undisturbed natural environment. Regularly maintained roads and directional signs are the only facilities present. The probability of encountering other visitors is high, and it is moderate for encountering National Park Service staff.

**Management:** Regular ranger patrols occur on these routes for visitor and resource protection. Onsite controls and restrictions are subtle, such as berms, rocks, or vegetation used to prevent vehicles from leaving the road. Some development is evident, but design is such as to harmonize with the natural environment.

### ***Summer Developed Zone***

This zone includes areas with major visitor facilities that are accessible and usable in the summer months. Visitor service facilities, concession facilities, ranger stations, and major campgrounds and picnic areas are included in the developed zone. This zone encompasses approximately 246 acres of the park.

**Resource Conditions:** Natural resource protection objectives are the same as in the Scenic Drive Zone. Although there is substantial development and concentrated use, significant natural processes and sensitive habitat are not affected.

Cultural resources are documented and appropriate preservation standards applied. Some historic structures may be adaptively used.

**Visitor Experience:** Although buildings, structures, and the signs of people predominate, natural elements are present. The facilities are convenient and easily accessible. There is little need for visitors to physically exert themselves, apply outdoor skills, or make a long time commitment to see the area. Opportunities for adventure are minimal. Many of these areas provide opportunities for social experiences, interpretation and educational programs, and compatible recreation activities. The probability of encountering other visitors or National Park Service staff is very high.

**Management:** There is a high level of management for visitor protection and safety, with frequent ranger patrols. Interpretation is provided through wayside exhibits and interpreter-led programs. Facilities are designed to be rustic and non-intrusive and conform to parkwide architectural standards. Landscaping employs native plants. Most facilities are accessible to visitors with disabilities, and there are some accessible trails.

### ***Winter Developed Zone***

This zone includes areas at the two major entrances that are accessible and usable in the winter months. Visitor service facilities, concession facilities, and ranger stations are included in the winter developed zone.

**Resource Conditions:** Natural and cultural resource protection objectives are the same as in the Summer Developed zone.

**Visitor Experience:** Visitors experience a high degree of interaction with park staff and other visitors while acquiring the information and conveniences necessary to learn about and enjoy the park's winter environment.

**Management:** There is a high level of management for visitor protection and safety. Interpretation is provided through wayside exhibits and interpreter-led programs. Most facilities are accessible to visitors with disabilities.

### ***Administrative Zone***

This zone includes the developed areas used for administration and maintenance. Included in this zone are major administrative areas at headquarters and Manzanita Lake, minor service roads for administrative use, and minor administrative structures and utility features. There are approximately 80 acres within this zone.

**Resource Conditions:** Although buildings, structures, and signs of people predominate, conflicts with natural processes and sensitive species and habitats are avoided. Cultural resources are documented and appropriate

preservation standards applied. Historic structures may be adapted for current needs.

**Visitor Experience:** Visitors enter these areas only infrequently. When they do, they are confronted with developments reflecting environmental sensitivity and sustainability.

**Management:** There is a high level of management for protection and safety. Facilities are accessible to employees with disabilities. Facility design conforms to parkwide architectural design standards and is sensitive to historic settings and landscapes. Landscaping employs locally obtained native plants.

### ***Inholder Zone***

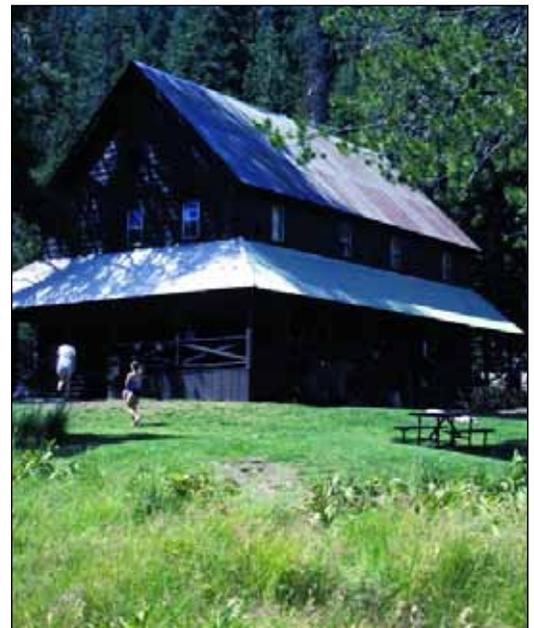
This zone includes the two areas of inholdings within the park, Hat Creek and Juniper Lake. The total area of the zone is approximately 6 acres. There are 14 privately owned tracts within the zone.

**Resource Conditions:** Buildings, structures, and signs of people predominate in privately owned lands in this zone. Roads across park land are maintained to avoid damage to significant resources.

**Visitor Experience:** Visitor presence in these areas is minimized.

**Management:** The park will acquire these tracts as they are offered for sale. Park staff will cooperate with property owners to achieve mutual objectives. Tracts that are acquired will be rezoned as appropriate.

left: snow shoe walk  
right: Drakesbad lodge





Top: Loomis Museum  
Bottom: Mudpot at Devils Kitchen

## Needed or Allowable Changes

A number of physical and operational changes are required to achieve the standards prescribed for the various zones and to achieve the objectives of the plan, and these are described below for each of the several zones. Map 11, Restoration and Development Projects, shows major projects to be undertaken at various locations in the park which are discussed below.

### **Parkwide**

Many of the visitor use facilities not available or fully functional in the colder months of the shoulder season will be winterized to facilitate use in a lengthened season. Also, a radio broadcast Traveler Information System will be installed at four locations and maintained to improve the dissemination of visitor information.

### **Wilderness Zone**

The Wilderness Zone will include existing designated wilderness plus an added area of approximately 25,000 acres, which will be evaluated as an area of consideration for inclusion into designated wilderness.

Education efforts will be undertaken aimed at instilling wilderness ethics in visitors and increasing stewardship by user groups to support wilderness values. The park will increase staff available for information and partnership activities with appropriate groups.

Inventorying and monitoring will determine existing wilderness conditions, where problems exist, and what type of management actions are needed. Studies will assess the most effective means of reducing concentrations of visitors on lake shores. Possible measures could include designating primitive campsites or using a permit system with quotas. Studies will determine how best to manage stock use to avoid adverse resource impacts. Measures will include reevaluation and possible revision to existing carrying capacities and group size limits, trailhead quotas, redesign of trails to withstand stock use, and dispersal of use to less sensitive areas. Information will be provided to visitors on low-impact backcountry practices.

Disturbed areas will be revegetated and historic structures rehabilitated.

Ranger patrol levels in the wilderness will be increased to provide education, prevention, and enforcement, and should decrease problems with dogs, cattle trespass, and vandalism.

A monitoring program will document the extent of flights over wilderness to determine impacts on wilderness values of solitude and quiet.

### **Remote Unit Access Road Zone**

Because these roads provide access to U.S. Forest Service, private lands, and park sites, management and maintenance will be coordinated among National Park Service, U.S. Forest Service, and the involved counties.

Roads will remain designed for low-speed travel, and alignments will not be changed except for sections of Warner Valley Road. The Warner Valley Road will be upgraded and segments realigned to prevent soil erosion, improve public safety, and improve road drainage. Abandoned sections of that road will be recontoured and revegetated.

Increased ranger presence will be provided on these roads for fee collection and resource protection. Fee stations will be improved to provide more information to visitors, and technology will be employed to make fee collection more user friendly.

### **Scenic Drive Zone**

A major effort will be made to improve interpretation of the park's natural and cultural history along the main road. More ranger-led interpretive programs will be conducted at major visitor attractions such as the Devastated Area, Bumpass Hell, and Sulphur Works. Non-personal services will be enhanced as well, to include a traveler information system (audio tape tour), milepost-keyed road guide, and organized information for use by bus tour organizations.

Improved information will encourage dispersal of visitors in the highly visited thermal areas to less crowded areas and educate visitors about hazards.

A monitoring program will document the extent of flights over Lassen Peak to determine impacts on park values of solitude and quiet.

The Lassen Volcanic National Park Highway cultural landscape will be preserved and interpreted for park visitors.

Physical improvements will be undertaken for resource protection purposes such as redesigning Bumpass Hell Trail in locations where resource damage is occurring, and realignment of portions of Lassen Peak Trail to bypass late season snow fields. Additional resource protection improvements will include redesign and relocation of the southwest entrance station, rehabilitation of several historic culverts, repair of road structural deficiencies, and restoration of disturbed lands

at the site of the old North District ranger station. Brokeoff Mountain trailhead will be improved to better delineate the parking area and, because this trailhead is outside the entrance station, a fee collection device will be installed along with increased visitor information exhibits.

Pullouts on the main park road will be reevaluated, redesigned, and relocated to eliminate safety deficiencies, to avoid resource damage, and to achieve improved visitor experience including scenic views, interpretation, and availability of convenience facilities.

Parking and picnic facilities will be replaced at Reflection Lake.

Parking lots at Bumpass Hell and Lassen Peak will be redesigned to improve their safety and appearance.

Increased staffing will better manage use on Lassen Peak Trail, especially early in the season when snow remains along the trail. Actions will include better marking the trail route, provision of trail signs, and temporary closures where use cannot be managed on a non-destructive basis.

Overall ranger presence will be increased for education, prevention, and enforcement.

### ***Summer Developed Zone***

Site assessments and plans for each key development area will be undertaken to determine means of reducing resource impacts and improving visitor safety. Site plans will also look for opportunities to improve accessibility for disabled persons, and consider the introduction of sustainable practices to conserve water and energy and reduce wastewater.

*Key operational and physical changes needed in the zone for specific areas are discussed below:*

**Southwest Entrance:** A new visitor services facility will be developed in this area to provide for visitor orientation, cooperating association sales of interpretive and educational materials, food service, gift shop, other appropriate commercial services, and ranger and maintenance operations. Parking areas will be redesigned to improve circulation, add some capacity, and enhance the esthetics of the area.

**Kings Creek:** This area will be redesigned to improve resource protection, safety, and visitor experience and the picnic area will be expanded to provide bus parking and areas suitable for group use.

**Lost Creek Group Campground:** This heavily used group campground will be retained at its existing scale and design, but will be redeveloped with improved restrooms and septic system, improved circulation, and better definition of campsite and parking areas. Interpretive programs and services will be initiated in this area, supported by a primitive amphitheater.

**Crags Campground:** This campground will be retained at its existing scale and design but will be managed solely as an overflow facility.

**Summit Lake:** The campgrounds will be redesigned to eliminate existing impacts to riparian areas and facilitate non-damaging visitor use of the area. Improvements will include upgraded restrooms/sewage treatment system, relocated campsites and internal roads, development of a new horse corral, and a rehabilitated amphitheater. Additional improvements in the area will include increased water storage, improved trailhead parking, and consolidation of the ranger station outbuildings.

**Manzanita Lake:** Several disturbed former developed sites in this area will be restored to natural conditions, including the Summertown development, former campground loops, and the existing interpretive workroom building and site. The abandoned telephone lines in the area will also be removed and a vegetation management plan will be implemented to provide for regeneration of Jeffrey pine.

A comprehensive site plan will be completed for this area to alleviate safety and environmental impact concerns. The plan will be expected to improve circulation in this oft-congested area, and pedestrian and bicycle trails will be developed to provide access between the lake, museum, store, campground, and amphitheater, and a trail will be developed to Reflection Lake. The boat launch and parking area will be relocated to a more functional and resource-sensitive location.

The former campground "A" Loop will be developed to serve as a picnic area. Accessible showers and restrooms will be provided in the campground and the existing facilities upgraded to meet health and safety codes. Existing campground roads and the amphitheater will be rehabilitated.

The historic naturalist residence at Manzanita Lake will be rehabilitated to provide space for interpretive staff to provide education programs year around for a variety of users, including school groups.



snowboarder

**Butte Lake:** Excess government structures and service roads will be removed and lands restored to natural conditions. The horse corral will be reestablished and an addition to the ranger station will provide interpreter housing.

Environmentally approved dust suppressants will be employed on campground roads. Interpretive programs and services will be initiated in this area, supported by a rehabilitated amphitheater.

**Juniper Lake:** A comprehensive site plan will be completed for the area to look at alternatives for relocation of the campground from its present location on the lakeshore and in the riparian zone to a less sensitive and more resilient area, retaining the same scale of 18-20 sites. A consolidated trailhead with adequate directional signing will be provided and a canoe put-in location will be designated. Environmentally approved dust suppressants will be employed on campground roads. Interpretive programs and services will be initiated in this area.

**Warner Valley:** A comprehensive site plan will be developed for Warner Valley to address natural and cultural resource conflicts and to improve parking and circulation. The existing trailhead parking will be relocated from its wetland location and the disturbed area restored, and historic structures in the area will be rehabilitated and maintained. The existing campground will be relocated to only the north side of the road, retaining approximately the existing scale, but eliminating riparian conflicts and safety concerns. A trail will be developed from the campground to Drakesbad Meadow and other existing trails. Environmentally approved dust suppressants will be employed on campground roads.

Visitor orientation and safety information will be provided at Drakesbad and interpretive programs and services will be initiated in this area.

### ***Winter Developed Zone***

Increased educational and interpretive programs and services will be provided at both entrances.

Resource protection and visitor information at the north entrance will be enhanced during peak visitation periods by increasing the current limited ranger station staffing to allow the facility to remain open eight hours per day Friday through Monday. In addition, the road will be plowed as far as the camper store, allowing the concession operation to provide limited food service and rental of skis and

snowshoes. A facility will also be provided in this area to accommodate winter environmental education groups.

The new visitor services facility at the southwest entrance will remain open in winter months to provide for visitor orientation, Museum Association sales of interpretive and educational materials, food service, gift shop, other appropriate commercial services, and ranger and maintenance operations.

### ***Administrative Zone***

A comprehensive site plan will be completed for the headquarters area to guide construction of new administrative and maintenance complexes, and reconversion of the four satellite administration buildings to housing. Utilities will be upgraded and replaced as needed for safe and dependable service, with provisions for back-up power for use on those frequent winter occasions when commercial electrical power is interrupted.

At Manzanita Lake, a comprehensive site plan will be completed to guide the development of a consolidated maintenance facility, other administrative facilities, and provision of landscaping for improved esthetics.

As staff is added to implement this plan, additional employee housing may be required. Specific housing needs will be addressed at that time following National Park Service housing policy.



snow plow

## Estimated Costs

The costs discussed below consist of rough estimates of recurring and one-time expenditures needed to achieve the goals of the plan. The estimates provide a rough measure of the resources needed to implement the plan but are not appropriate for use in developing budgets or seeking appropriations. All estimates are in 1998 dollars.

**Recurring** total operation costs will total approximately \$7.7 million, and FTE (full-time equivalent employees) will be about 137.

**One-time project costs** for implementing this plan, including detailed planning and information - collection projects as well as construction projects, are estimated at approximately \$73.6 million.

Construction project estimates include, in addition to actual construction costs, required predesign natural and cultural resource analysis, design, and an allowance for contingencies. The costs are summarized below. The highest funding priorities will be accorded to remediation of environmental intrusions in backcountry and developed areas and natural and cultural resource management activities, since those activities are urgently needed to preserve critical park resources. High priority will also be accorded to development of a visitor service facility at the southwest entrance, where visitor orientation is currently minimal and urgently needed, and to remediation of safety deficiencies at various parking lots on the main road.

**Table 1: Estimated Capital Improvement Costs**

Project Category	Total Cost
<b>Remediate Backcountry Environmental Intrusions</b> <i>Major Projects:</i> Remove Redundant Trails Revegetate Disturbed Areas Bumpass Hell Trail Improvements Lassen Peak Trail Realignment	\$ 1,680,000
<b>Remediate Developed Area Environmental Intrusions</b> <i>Major Projects:</i> Underground Utility Lines Implement sustainable water/energy/wastewater management practices Restore Disturbed Lands Remove Obsolete/Excess Structures Relocate Facilities from Wetlands and Riparian Areas Redesign/Reconstruct Parking Lots at Bumpass Hell and Lassen Peak Trailheads Expand/Relocate Manzanita Dump Station	\$6,480,000
<b>Natural Resource Management</b> <i>Major Projects:</i> Obtain Baseline Data Exotic Species Research and Control Design Monitoring Program Stock Carrying Capacity Analysis Evaluate Feasibility of Reintroducing Fisher and Wolverine Accelerate Exotic Species Control	\$6,360,000
<b>Cultural Resource Management</b> <i>Major Projects:</i> Obtain Baseline Data Rehab Historic Structures Construct Collection Storage Facility	\$4,225,000
<b>Developed Area Planning</b> <i>Major Projects:</i> Comprehensive Trail Plan Parkwide Design Standards for Structures and Landscapes Site Plans for All Major Developed Areas	\$725,000

**Visitor Facility/Orientation Improvements**

**\$16,350,000**

*Major Projects:*

- Southwest Visitor Service Facility
- Upgrade safety at Major Parking Lots
- Upgrade Toilets on Main Road
- Relocate/Upgrade Main Road Pullouts
- Construct Summit Lake and Butte Lake Horse Corrals
- Improve Boat Launch at Manzanita and Juniper Lake
- New Picnic Area at Manzanita Lake
- Improve Trails at Manzanita Lake
- Improve Water and Sanitation at Manzanita Lake CG
- Improve Water and Sanitation at Warner Valley CG
- Traveler Information System (audio tape tour)
- Winterize Facilities
- Interpretive Media
- Maintain Existing Trails
- Relocate and Redesign Pullouts on Main Road
- Picnic Area at Reflection Lake
- Amphitheaters at Lost Creek and Butte Lake

**Circulation Improvements**

**\$16,140,000**

*Major Projects:*

- Repair Main Road Structural Deficiencies
- Improve Traffic Controls and Signs
- Snow Removal Equipment and Storage
- Improve Drakesbad Roads and Parking
- Harden Warner Valley Road

**Administrative Facility Improvements**

**\$21,610,000**

*Major Projects:*

- New Headquarters Admin and Maintenance Facilities
- Upgrade Headquarters Utilities
- Upgrade/Modernize Manzanita Lake Facilities
- Butte Lake Interpreter Housing
- Winterize Manzanita Lake Maintenance Area

**Total Estimated One-Time Costs**

**\$73,570,000**



California Conservation Corps crew