

Bend-Fort Rock Ranger District
Deschutes National Forest

ROAD 18 CAVE PROJECT

ENVIRONMENTAL ASSESSMENT

USDA Forest Service
Deschutes County
Bend-Fort Rock Ranger District
Deschutes National Forest
1230 NE 3rd St., Suite A-262
Bend, OR 97701

**REQUEST FOR COMMENTS COVER LETTER WITH PREFERRED
ALTERNATIVE (June 2001)**

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DECISION NOTICE (August 30, 2001)

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/coverindex.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/coverindex.html>

Last Update: 9/6/01

R.A. Jensen

Request for Comments

Road 18 Caves Project Environmental Assessment

Deschutes National Forest

Bend-Fort Rock Ranger District

Deschutes County, Oregon

This letter is to inform you that the Road 18 Caves Project Environmental Assessment (EA) has been completed. Public comment on the preferred alternative is now being requested. This letter provides a summary of the purpose and need for action and the alternatives developed and analyzed. If you requested an EA during the scoping period, an EA will be provided with this mailing. Copies of the EA are available on request at the end of this letter.

The comment period for these actions is 30 days. In order for your comments to be considered, they must be postmarked or faxed by July 5, 2001.

Location

The Road 18 Caves project area is approximately eight miles southeast of Bend, Oregon, in the northeastern portion of the Bend/Ft. Rock Ranger District of the Deschutes National Forest. The project lies within portions of T19S, R13E; Sections 4, 8, 14, and 27 Willamette Meridian. The area is located east of the Northwest Forest Plan boundary line, and lies outside the range of the northern spotted owl. It is located in the Kelsey Butte/Arnold Subwatershed.

Purpose and Need for Action

The primary purpose and need for this EA is to preserve and protect cave resources of the eight caves located within the Arnold lava tube system and Skeleton Cave. The EA addresses emerging impacts of a visitor use philosophy that promotes mostly unrestricted cave access. Management adjustments are designed to reduce or eliminate impacts to caves and cave resources from human use. This approach is designed to provide the Forest Service with a template for uniform and consistent management for each cave discussed in this EA.

Alternative C is the Preferred Alternative. It best meets the purpose and need for action and responds to issues identified during analysis and scoping. It would balance the need for reducing impacts to cave resources while maintaining a quality recreation experience and access to most caves throughout the year. Alternative C proposes the following:

- Boyd Cave: The existing parking area will be improved with rock barriers to eliminate motor vehicles driving near the cave entrance and over vegetation. The parking lot would be better defined to accommodate large Recreational Vehicles and vehicles towing horse trailers. A trail would be improved to provide a defined footpath to the cave entrance. The area would remain open for equestrians using this site to ride shorter loop trails rather than those using the Horse Butte Trailhead. Also, an information kiosk would be installed near Road 18. The kiosk would direct visitors to the caves. It would provide useful cave information such as existing closures and "leave no trace" ethics.
- Skeleton Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. The alteration of rocks on the floor in the entrance area of Skeleton Cave would be designed to provide for public/climber safety, but in a manner that would be more natural appearing (to be determined by the Forest Service, spelunkers, and the local climbing community). There would be a seasonal closure during the bat winter hibernation period (October 15 - May 1).
- Wind Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. Two bat gates would be installed. One at the main entrance to the cave and one at the skylight area to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).
- Hidden Forest Cave: Completed existing bolted routes would be authorized for climbing. Incomplete routes would be removed. New climbing routes would not be authorized in this or any other cave in the project area.
- Bat Cave: Two bat gates would be installed. One at the main entrance to the cave and one at the skylight area to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).
- Charlie-the-Cave: A bat gate would be installed to improve nursery habitat conditions (April 15 - Sept. 30).
- Charcoal Cave #1: A year around closure order would remain in place until further analysis is completed.

The following "Actions Common To All" would also occur:

- For caves with parking facilities, institute a self-issuing permit program to collect information on the visitor's name, purpose, number in party, comments and use patterns. There would be cave information and proposed cave etiquette on the permits or information board.
- Should the need arise; allow additional Special Use tours under authorized permit. Permittees should display a public need with an approved operating plan. Limit existing and future group size to 6-8 people at one time and no more than three tours per cave per day. Appropriate caves for this activity include Boyd, Skeleton, and Wind. Permittees would be responsible to include cave sensitivity/conservation etiquette for each group. Other special uses, such as movie making, would be authorized on a case-by-case basis.
- Restrict access to foot traffic only to promote public safety and to protect cave resources. Do not allow mountain bikes, horses, or motorized vehicles in caves. Continue to evaluate new

recreational attractions and make recommendations based on impacts to cave resources and visitor safety.

- Prohibit use of internal combustion engines (such as generators) in caves.
- Prohibit the use of glass containers within caves to reduce litter and provide a safer environment to visitors.
- Maintain current populations of unique plant species in and near cave entrances by encouraging foot traffic in designated areas only.
- Add the wording " . . .and possession of" to the ban on use of hand drying agents {36 CFR 261.9 (a)(j)}.
- Prohibit possession and use of alcoholic beverages as defined by state law in all caves. Current restrictions are from sunset to sunrise.
- To provide multi-agency consistency with seasonal closure periods, hibernacula closure dates would be October 15 to May 1. Maternity closure dates would be April 15 to September 30.

Additional Information

Address written comments to Walter C. Schloer, Jr., District Ranger. Comments should include your name, address, and telephone number; title of the document reviewed, and specific comments and rationale you feel should be used in reaching a final decision. All comments received would become a matter of public record.

For further information or to request a copy of the Road 18 Caves Environmental Assessment contact Leslie Moscoso at the Bend/Fort Rock Ranger District, 1230 NE 3rd St., Suite A-262, Bend, OR 97701. Telephone: (541) 383-4712; FAX (541)383-4700.

Published one time only in The Bulletin June 6, 2001.

WALTER C. SCHLOER, JR.
District Ranger

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/requestcomments.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/requestcomments.html>

Last Update: 6/6/01

R.A. Jensen

ROAD 18 CAVE PROJECT

ENVIRONMENTAL ASSESSMENT

CHAPTER I - INTRODUCTION

I. PLANNING AREA DESCRIPTION

The Road 18 Caves Environmental Assessment (EA) (hereinafter referred to as the Caves EA) project is designed to analyze effects of humans on wildlife resources (including bat habitat), recreation opportunities, geologic features, native vegetation, and cultural resources at nine caves in regards to past, present and future use. The project includes low and high use caves that were addressed in the Cave Strategy in 1999: Boyd Cave, Arnold Ice Cave, Skeleton Cave, Charcoal Cave, Hidden Forest Cave, Wind Cave, Bat Cave, Deg Cave, and Charlie-the-Cave.

The project is located approximately eight miles southeast of Bend, Oregon, in the northeastern portion of the Bend/Ft. Rock Ranger District of the Deschutes National Forest. The project lies within portions of T19S, R13E; Sections 4, 8, 14, and 27 Willamette Meridian. The area is located east of the Northwest Forest Plan boundary line, and lies outside the range of the northern spotted owl. It is located in the Kelsey Butte/Arnold Subwatershed.

II. MANAGEMENT DIRECTION

The Deschutes National Forest Land and Resource Management Plan (LRMP), as amended in June 1995 by the Decision Notice for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (hereinafter referred to as the Interim Management Direction), and Inland Native Fish Strategy, establishes broad direction for the Forest. The analysis conducted for the Caves Planning Area tiers to the LRMP and its supporting documentation. Cultural resources on the Deschutes National Forest are regulated by the guidelines in a 1995 Regional Programmatic Agreement between the USDA-Forest Service, the Advisory Council on Historic Preservation, and the Oregon State Historic Preservation Office. Forest Service Manual (FSM) 2356 also provides direction for the management of caves on National Forest land. The EA would incorporate significance criteria found in the Federal Cave Resources Protection Act (FCRPA) of November 18, 1988.

III. PURPOSE AND NEED FOR ACTION

The primary purpose and need for this EA is to preserve and protect cave resources of the eight caves

located within the Arnold lava tube system and Skeleton Cave. The EA addresses emerging impacts of a visitor use philosophy that promotes mostly unrestricted cave access. Management adjustments are designed to reduce or eliminate impacts to caves and cave resources from human use. This approach is designed to provide the Forest Service with a template for uniform and consistent management for each cave discussed in this EA.

The purposes of the FCRPA are: (1) to secure, protect, and preserve significant caves on Federal lands for the perpetual use, enjoyment, and benefit of all people; and (2) to foster increased cooperation and exchange of information between governmental authorities and those who utilize caves located on Federal lands for scientific, education, or recreational purposes." It is the policy that Federal lands be managed in a manner, which protects and maintains, to the extent practical, significant caves (as classified under the act). (102 Stat. 4546; 16 U.S.C. 4301-4309)

Direction from the Forest Service manual states: "Caves are dynamic natural systems affected by surface and subterranean environmental changes. The policy of this manual is to manage caves as nonrenewable resources while maintaining their geological, scenic, educational, cultural, biological, paleontological, and recreational values." It is also the policy to "emphasize wild cave management with few or no facilities to aid or facilitate use."

Currently, all of the caves in the project area qualify as significant caves under the definition of the Act. All activities within significant caves (as defined by FCRPA) have the potential to cause damage to the geology or biota of the caves. This includes but is not limited to, walking, breathing, touching, and adding or removing materials to the cave floor, ceiling, or walls. The extent to which these activities alter or damage the cave resources varies with the type of activity, the location of the activity in reference to important cave resources, the visibility and duration of the activity, and the amount of alteration of the natural condition of the cave that results from the activity.

A Cave Strategy, completed by the Deschutes National Forest in 1999, identified conditions and recommendations related to the cave resources. Some of the identified conditions pose a threat to caves and cave resources and to the quality of the recreation experience of these caves. Generally, the Cave Strategy recognized a need to maintain caves and cave resources through time by reducing, eliminating or changing human use patterns.

Specifically, the Cave Strategy identified the following long-term goals:

1. As recreational use has expanded over the last five to eight years at some caves, and due to projected population growth of central Oregon, there is a need for actions to achieve long-term management goals. These goals are:
 - Prevent damage to cave resources, including, but not limited to, wildlife habitat and cultural resources. There is a need to reduce disturbance to bats during their hibernation and maternity periods.
 - Restore to a more natural level cave resources that have been damaged by previous human

use or management actions. There is a need for reducing vandalism, graffiti and garbage at the caves.

- Where provided, recreation management and facilities should reduce or eliminate cave resource impacts caused by visitation and use patterns. There is a need for eliminating impacts caused from visitation and the use of chalk and bolts in the caves.
2. 2. Furthermore, human use is impacting the characteristics and resources of caves in terms of the following:
- New use patterns and trends have changed the "sense of discovery" and solitude that could be found at many caves. There is a need for maintaining or restoring this type of experience and setting within the project area.
 - Current parking area design and location causes impacts to cave resources. There is a need for improving facility function and design.
 - The quality of wildlife habitat, especially for bats, has diminished with increased visitation to some of these caves and the types of human activities that occur. Because of concerns for the maintenance of viable populations of some bat species using the caves, there is a need for restoring and/or maintaining the quality of wildlife habitat, especially as it relates to roosts, breeding sites, maternity sites, and hibernacula for bats.

IV. EXISTING CONDITION

1. Recreation

Cave resources have deteriorated with increased visitation and recreation activities over the last five to eight years. With little if any site definition at the caves (i.e., visitor facilities, designated parking areas, pathways, etc.), new user-defined parking areas, roads and trails have developed on the landscape. This has resulted in the loss of vegetation, wildlife habitat and aesthetic quality, especially at cave entrances.

The more popular caves (Wind, Skeleton, Arnold and Boyd) are accessed from system roads off of Road 18 (China Hat). Parking areas are not well defined on the ground, which has led to vegetation impacts through expansion of the sites by the public. This mostly occurs through the development of more parking and somewhat from the development of campsites (mostly to accommodate camp trailers or large recreation vehicles). None of the interior of the caves in the project is accessible by people in wheelchairs. Though people in wheelchairs cannot access the cave mouths or interiors they can get to the cave entrances and peer in.

With increased uses and visitations, there has been a corresponding increase in dispersed trails, littering, bolting and chalk accumulation in cave ceilings and walls, vandalism and graffiti as well as damage to other cave resources including, but not limited to, loss of wildlife habitat and cultural resources. This increased use has changed this unique habitat and increased disturbance to wildlife as well as changes to traditional, aesthetic, and recreational experiences that people have come to enjoy and anticipate. Such use can also diminish the experience of solitude, quiet, or scenic beauty that people have enjoyed in the past.

In the past, limiting vehicle access to caves has shown to minimize human disturbance as well as to diminish vandalism. However, many of the road closures continue to be illegally breached due (in part) to the loss of vegetation from the Wind and Skeleton Fires, topography (the area is flat with little to no natural barriers), and also a lack of support for the closures from a small segment of the public who use the caves.

There are three basic types of legitimate activities that occur at these caves: sport climbing, bouldering, and spelunking.

a. Sport climbing emphasizes extremely difficult moves and relatively short and uncomplicated approaches and descents while minimizing risk. The climbing experiences at some Road 18 caves are a good example of the diverse climbing opportunities and unique environments that climbers seek in the United States. Several caves offer the opportunity to suspend horizontally from the cave ceiling while sport climbing or bouldering. This area is the only known place in the country where sport climbing in caves on Federal lands is permitted. Despite the fact that the type of climbing found here is technically very difficult, virtually all climbers who have visited the caves believe they offer a unique climbing experience that should be available to the public. The various types of technical climbing are generally defined by the characteristics of the experience.

Bolt anchors and overhanging rock typify climbing areas. Not all sport climbers place bolts; only the first ascent party places bolts, and all subsequent parties use these bolts. Historically, climbers have been responsible for determining when and where to place and replace bolts, modify handholds or place artificial handholds. Climbs generally end at fixed anchors where the sustained difficulty of the climb diminishes or the character of the rock changes. The climber descends by being lowered or rappelling from these top anchors.

b. Bouldering is the term for climbing that concentrates on short sequential moves on rock usually no more than 20 ft. off the ground. Each climbable sequence of moves is called a "boulder problem", and each boulder problem varies in difficulty. Some bouldering is practiced for bigger climbs while others pursue it as a rewarding sport in its own right. Bouldering requires relatively little equipment other than rock shoes, chalk and sometimes the use of a "crash pad". Crash pads (usually 4' X 3' and up to 5" thick) may be placed below climbs to soften falls and lessen risk of injury from accidental bad landings. Bouldering embraces a greater degree of risk than sport climbing and a sense of freedom that derives from the focus on pure movement rather than on equipment.

Sport climbers and boulderers use magnesium carbonate powder (chalk with or without additives) to improve their grip on rock. In steep, technically difficult, humid environments, the use of chalk is widely considered essential to participate in this activity.

The climbing opportunities by cave are summarized as follows:

- Hidden Forest Cave - Sport climbers using bolts have approximately 10 completed routes and

one other route (on the right/east side of the entrance) that is top-roped (accessed from above via a rope) from above the main cavern. This route has the first three bolts removed from the bottom. There is a small bouldering site at the north collapse site that leads to Hidden Forest Cave.

- **Skeleton Cave** - The entrance to the cave is used for bouldering with no bolting. Movement or realignment of rocks is not allowed in the cave. However, it does occur usually by those wanting to have a campfire, or by those wanting a safer area to land if they fall while bouldering.
- **Charcoal #1** - There are three sport-climbing routes at the left side of the cave entrance. Bolts have been removed at this cave in the past. There is a year-round closure in effect here to protect cultural resources. There is also a seasonal closure to protect bat habitat.

c. **Caving (Spelunking)** has been a popular recreation activity for a variety of visitors at these caves for decades. Some come to explore the cave from entry to end, curious about the geology and the cave environment. Others only venture near the entry, as a retreat from the summer heat. Some are family groups, or a few friends out for an afternoon picnic, while others are avid cave enthusiasts that explore caves as part of a formalized club. Other formalized groups, such as the Boy Scouts, have nature study outings to the caves. Overall, the caves provide an opportunity for seclusion, exploration and relaxation for an array of local and non-local visitors.

2. Wildlife Habitat

The following species can be found within and adjacent to caves and cave entrances.

Big Game

This project occurs within Deer Habitat (MA 7) as identified by the Deschutes National Forest Land and Resource Management Plan (LRMP, 1990), and is subject to the standards and guidelines described in the LRMP. A small number of elk also inhabit the project area during the winter months. There is no cooperative road closure in this portion of the deer winter range so all roads (unless otherwise noted) are open to vehicle traffic during the winter months. OHV traffic also occurs during this time. The disturbance from vehicles and OHVs to big game varies throughout the winter depending on snow depth. This disturbance is increasing as the population of Bend increases and the number of people recreating (sightseeing, wildlife watching, OHV trail riding, and caving) increases within the winter range.

Raptors

There are currently no known raptor nest sites adjacent to the caves within the project area. Historically, kestrels have been known to nest in the cavities of trees near or within the sink at the cave entries to Hidden Forest Cave. Some of these trees have been used for climbing or rappelling, thus likely disturbing any kestrels that would nest here. With the use at this cave increasing to climbers, the kestrel's use of this habitat is unlikely.

Raptors are known to drink the melt-water in the cave entry of Arnold Ice Cave.

Woodpeckers

Habitat occurs for several woodpecker species within the project area. There are a few trees that occur within the sink to Hidden Forest Cave that contain cavities for woodpeckers and other cavity nesters. Some of these trees have been used for climbing or rappelling, thus likely disturbing any woodpeckers that would nest here. With the use at this cave increasing to climbers, woodpecker use of these trees is unlikely.

Woodpeckers have been known to drink the melt-water in the cave entry of Arnold Ice Cave.

Special Habitat/Ecological Indicators

As of January 1994, cave distribution on National Forest lands in Oregon and Washington was: 45% of all known caves in Oregon and Washington occur on the Deschutes National Forest and 75% of caves in Oregon occur on the Deschutes National Forest (USDA 1997).

Cave entrances are both sensitive and critical to cave ecosystems. Entrances are a focus of biological activity that contributes nutrients to deep cave organisms. The moderating effect of warm moist air creates microenvironments, which promote growth and occupation by unusual plants and animals. It is common, for example, to find plants and animals occurring at cave entrances that are otherwise many miles outside their normal range (Nieland 2000).

Caves share with other discrete habitats vulnerability to trampling and physical disturbance, and because of their conformation, have a much lower human carrying capacity than most surface environments. Cave systems can be disrupted to a much greater degree than most other habitats because of the confined space involved, limited escape routes for species using caves, and the fragile ecosystems within caves. Small passages suffer greater disturbance than large passages because a greater percentage of small passage area is affected (Nieland 2000).

The caves within the project area provide habitat for many vertebrate and invertebrate species. Factors that attract the species include solitude, darkness, stable temperatures, and hydrologic values. The following are species that can be found to utilize the caves that occur within the project area:

Insects - (flies, beetles, etc.) - The majority of cave inhabiting organisms are insects and range from accidental to true troglobites (animals that live in caves and are not found elsewhere). Included in this group would be the fleas associated with mammals and perhaps nests, some flies which have larval stages in animal droppings, other flies with larval stages in decaying bodies, several species of moths which often hibernate near entrances, a variety of fungus flies which swarm at skylights and entrances, a couple of fungus flies which appear to be troglobites with the larvae feeding on mold on the walls, crickets which hibernate in caves or move in and out daily to feed outside, beetles, and finally the grylloblattids, a relatively large wingless predaceous form (USDA 1997). Several of these insect species, especially moths, are an important prey base for bats.

Arthropods - A variety of arthropods are present in caves. Some of these are:

Millipedes and Centipedes - these creatures live primarily in the surface debris on soil and thus are often present in entrances and cave twilight zones.

Arachnids (spiders, mites, ticks, and harvestmen)- Spiders are common in cave entrances and twilight zones where they feed on insects. Mites are commonly found in rodent nests where they feed on the rodent, the debris left by it in and around the nest and on the vegetable matter. Some apparently feed on fungi that might grow on various organic sources including mammal droppings. Hibernating harvestmen are often found near the entrances during the winter.

Reptiles - Resident snakes will enter caves for hibernation in winter but probably tend to use smaller cavities.

Frogs - Frogs and toads are unable to survive long in the dark zones but are encountered in the twilight zone.

Salamanders - Several groups of salamanders are capable of living in caves, primarily in the twilight zone. They can lay eggs in damp debris such as rotting moss-covered logs that are often present in the entrance and twilight zones.

Birds - Great horned owls, red-tailed hawks, kestrels, vultures, wrens, robins, juncos, thrushes, woodpeckers, sapsuckers, flickers, swallows, and ruby crowned kinglets will nest in or near the entrances but are capable of surviving elsewhere. Some owls may hunt bats near cave entrances.

Rodents - Packrats and porcupines may have dens or nests near the entrances but seem to prefer smaller passages and rooms. Chipmunks, golden-mantled ground squirrels and gray squirrels will enter the twilight zones to shell cones. None of these require caves but the litter and droppings they bring into the cave may be a significant input to the energy of a cave. Deer mice and pika are also seen. Snowshoe hares have been known to use them for shelter.

Carnivores - Bobcats, cougars, coyotes and other smaller carnivores use caves for shelter in some areas, but can survive without them.

Bats - Bats include small-footed myotis, long-eared myotis, long-legged myotis, fringed myotis, California myotis, big brown bat, little brown bat, western big-eared bat, and hoary bat. Caves are often used as winter hibernation sites or summer maternity sites.

During the summer, some bats may roost in caves during the day and fly outside to feed in the evening. Additional information regarding bats is given in the following section below.

Recreational caving can disturb many of these species. Besides bats, woodrats and pikas will abandon caves if disturbed (Senger and Crawford 1984). The introduction of sport climbing and bouldering at several caves may prevent use by some of these species (including bats at one cave, which is currently closed year around) by disruption of cave walls, ceiling, and floor habitat. Humans have used the caves within the project area for centuries. Habitat has been moved or removed (rocks, logs, vegetation) that some of the above listed species need for their survival. It is unknown what the populations of many of the cave dwellers are, with the exception of bats at each of the caves within the project area. Biological inventories have not been conducted and would be difficult for most species. We can only assume that with the history of human use, and the types of uses that occur within the caves, that these species have been disrupted in some way by disturbance to cave habitat.

None of the bat species that use the caves are Federally designated as sensitive (Region 6), threatened, or endangered. The small-footed myotis, long-eared myotis, long-legged myotis, fringed myotis and western big-eared bat (considered critically sensitive in Oregon, indicating that listing as threatened or endangered may be appropriate if immediate conservation actions are not taken) are all listed as sensitive by Oregon Department of Fish and Wildlife. These same species are also listed by the United States Fish and Wildlife Service as species of concern (SOC). The long-legged myotis has received special habitat protection status on Federal lands in western Oregon in order to prevent population declines. The western big-eared bat was listed as a regionally sensitive species, but was not included in the most updated list dated November 2000. It is recognized as a management indicator species for the Deschutes National Forest. Two other subspecies of big-eared bat, the Ozark big-eared bat and the Virginia big-eared bat, are listed as endangered in the eastern U.S.

Interest in recreational caving is increasing in America. Along with the obvious benefits the educated, conservation minded cavers offer to cave management come the undeniable negative impacts that increased roost visitation has on sensitive bat species. All bats are sensitive to disturbance from humans entering hibernating and maternity colonies. Humans passing under a hibernating group of bats, or spending only a short time in the roost, may not be aware that they have disturbed the animals. Nervous conduction is very much a function of temperature, and bat behaviors that would indicate disturbance to humans (wriggling, scanning, taking flight) may not be evident until the bat has warmed sufficiently to move its muscles. This may take some time and human visitors may leave before agitation is evident. But the warming process is irreversible and will proceed until the bat is fully warm and able to fly, even though the source of the disturbance has disappeared. By simply shining a light on cluster of bats can trigger an awakening response (Twente 1955). Repeated disturbances of hibernacula and the consequential

excessive loss of the bats' limited winter energy reserves may result in reproductive failure, abandonment of the site or death due to starvation. Each arousal costs an individual bat 14 to 21 days of stored fat from its vital reserve. Such arousals substantially effect the winter survival of the bat (Senger and Crawford 1984).

Unlike many species, which seek refuge in crevices, the western big-eared bat will form highly visible clusters or roost as single bats on open surfaces, such as domed areas of caves, making them extremely vulnerable to disturbance. This species is highly susceptible to human disturbance and may abandon roost, nursery, or hibernating areas if disturbed (Marshall 1992). The western big-eared bat is a colonial species with relatively restrictive roost requirements. In general, hibernacula for the western big-eared bat in the western United States contain mixed-sex groups that generally are comprised of fewer than 40 individuals, and only exceptionally exceed 200 animals (Dobkin 1992). Western big-eared bat roost fidelity, longevity and low reproductive capability all combine to intensify any negative effects of anthropogenic threats to the species.

Population declines have been documented for the northwest including populations in Oregon (Perkins 1986 and Dobkin 1992). The western big-eared bat was considered common in the 1930's (Marshall 1992). In Central Oregon, oral accounts indicate that more bats hibernated in these caves between 1950 and 1970 (Becker 1995). Based on population counts in hibernation caves between 1970 and 1985, the decline had continued (Perkins 1986). The decline is attributed to several factors: increased human activity in caves, the sensitivity of the bats to human disturbance, the narrow range of temperature and humidity conditions required by bats for hibernation, raising young, and roosting, and forest fires.

Western big-eared bats are insectivorous, feeding primarily on Lepidoptera (Whitaker et al. 1981). They forage in a broad range of forested conditions, from open savanna to fully stocked conifer stands. Prey species are strongly associated with bitterbrush, ceanothus, and other shrub species (Miller 1995). Most foraging is suspected to occur within five miles of their day roosts. Past studies have shown that foraging along forest edges occurred most often, apparently related to availability of prey species (moths) and protective habitat from predation (Clark 1993).

Most caves within the project area provide ideal habitat conditions for the western big-eared bat and several other bat species for hibernation and maternity colonies.

Surveys conducted over the past 15 years have found 2 maternity roosts and 6 hibernation roosts used by western big-eared bats within the project area. All these roosts were burned over in the 1996 Skeleton wildfire. The population is estimated to be 600 individuals in Central Oregon (including the Deschutes National Forest and immediately adjacent areas). The total population in Oregon is approximately 2,300 to 2,600 (Perkins, 1986). About

25% of the known Central Oregon winter population hibernates in the project area; 65% of the winter population hibernates within 1 mile of the project area; and, 10% hibernates about 20 miles southeast of the project area. Maternity roosts have been surveyed for occupancy in 6 of the last 14 years; they have been occupied for 3 of the 6 years. Two other maternity roosts were found about 30 miles southeast of those in the project area. They have been occupied in both years they were surveyed. Population trends for Central Oregon, based on winter counts in hibernacula, have declined about 25% since 1986 (see the attached graphs in Appendix A). The decline is most likely related to increased human activity, disturbance to maternity and hibernating colonies, and the impacts of recent wildfires. Within the project area, surveys between 1990 and 2000 have found as few as 1 bat in the smallest cave to as many as 94 in the largest cave.

The above hibernation roosts are also used by several myotis species. Although populations of myotis remain healthy across the state, disturbance during the hibernation period has negative impacts on their survival also. There is one big brown bat maternity colony within the project area. As few as 1 myotis in the smallest cave, to as many as 31 myotis in the largest cave were found hibernating between 1990 and 2000 surveys.

Recreational use of the caves has been increasing over the past 10 years (see the Recreation Specialist Report in the EA). Contemporary levels of human disturbance and various human activities may be displacing bat species, especially the western big-eared bat. At present, two hibernating caves are open year around to the public, and four have administrative seasonal closures. These closures are continuously ignored by a small segment of the public. Currently, none of the hibernacula caves are 100% secure to protect hibernating bats. In caves and mines in other areas of the U.S. where disturbance has been controlled, the numbers of hibernating bats has increased dramatically within a few years of the closures. This has prompted administrative seasonal closures to several caves to protect roosting bats and evaluate preferred bat use in the absence of human disturbance. These closures are continuously ignored by a small segment of the public, making it difficult to evaluate this habitat.

Besides forest fires, clearly, the single greatest threat to bats is human disturbance. This can come from recreational use and/or intentional harassment. Seasonal closures and gates are needed to prevent disturbance to these bats. Disturbance from human visitation (noise and lights) awakens the bats. To avoid the disturbance, the bats may awaken and fly. The effort causes them to expend energy, which they need to survive the remainder of the winter. Because the bats eat only insects, and insects are not active in the winter, the bats depend on stored fat reserves for energy during hibernation. They lose between 30 to 50% of their weight during winter hibernation. Any extra activity reduces their chances of survival until spring when insects become available again.

Western big-eared bat's sensitivity to human disturbance of roost sites is well documented. Western big-eared bat maternity and hibernation roosts that experience increased

visitation rates during critical use periods experience concomitant losses in colony populations. Graham (1966) blamed the abandonment of several maternity sites through the species range to an increase in recreational cave activity. Pierson et. al. (1991) has shown that those colonies with the greatest population declines also experience frequent disturbance. A long-term study of a number of cave roosts in West Virginia (Stihler and Hall 1993) has shown that excluding humans from roost sites by gating or fencing has resulted in an increase in big-eared bat populations. When gates have been breached, populations have dropped precipitously, and been slow to recover. The summer after the cave was illegally entered, the colony numbered only 286, and four years later had only recovered to 40% of its pre-vandalism levels.

The most acceptable method of restricting access is through the use of gates. Gates placed on caves to protect bat species are usually constructed of horizontal angel iron bars, welded to support posts. Bars are spaced (5 3/4 inches) wide enough for bat passage, but narrow enough to block humans.

Many of the caves within the project area occur within habitats that have been impacted by wildfire. The fires killed extensive areas of bitterbrush and sagebrush, and increased grass cover. This has reduced the amount of vegetation adjacent to cave entrances and most likely changed bat prey abundance and species composition. Vegetation surrounding entrances not only provides habitat for bat prey species, but also helps maintain environmental conditions needed by many other animals. Shading, and protection from strong winds, provided by trees, may be essential for maintaining temperature and humidity regimes necessary for bats. Vegetation surrounding roost entrances may also provide protection from predation (Nieland, 2000).

3. Geology

The caves considered in this Environmental Assessment all developed during volcanic activity and have been affected by subsequent volcanic activity. Though the source of these lava tubes is not known positively, its thought that most were formed within lava flows erupted from Lava Top Butte to the south of the project area sometime between 30,000 and 200,000 years ago. More recent volcanic eruptions have spread thin layers of ash over the landscape including a one-foot layer from the catastrophic eruption of Mt. Mazama (Crater Lake) 7,700 years ago.

The natural features of these lava caves have created a host of microenvironments. The cave entrance allows volcanic ash, soil, water, seeds, pollen, plants, light, animals, and air to enter. Ash and soil accumulate on the cave floor at the entrance and may be spread by water a short distance into the cave. A strong gradient of moisture and light extends from the cool, moist soils of the cave floor at the entrance to the darker and lower moisture areas further into the cave. Many microenvironments exist in this relatively small area. This gradient is modulated by "breathing" of the cave where air constantly moves into and out of the cave as a result of barometric pressure changes. Plants and animals occupying this lighted, dynamic region can be readily affected by human activities.

Deeper in the cave, open spaces in the heavily fractured rock carry water, air, and fine-grained soil. Water from rain and melting snow percolates downward through the cave on its way to the water table hundreds of feet below. Human activities on the surface and in the cave can change the chemistry and particulate material carried in these waters, which can affect cave life and the deposits on cave walls.

Vast amounts of air flow through the caves and all their surrounding fractures every time the barometer changes, which is hundreds of times a year. Smoke, dust, pollen, and anything small enough to be carried by air are spread throughout the cave and its fractures. Dense smoke from human fires in the cave, smoking or from forest fires outside can affect cave life, including bats.

These lava caves are very strong, except at a few places including cave entrances and areas of unstable fractured rock inside the caves. Over geologic time, earthquakes, ice wedging, and accumulated tiny movements from daily heating and cooling of rocks dismantle these caves. New lava flows can bury the caves. Over human-scale time, the influences on these caves are related to people, fires, and climate.

4. Scenic Quality

The Road 18 caves project area is located along a secondary travel route with close proximity to the urban interface area near the city of Bend, Oregon. Both humans and animals have used the caves in the past for shelter and recreation throughout the pre-history and history of Central Oregon. Over the years, these caves have been used and abused. Intensive recreation, vandalism, graffiti and unsightly deposit of trash and other remains are a constant concern for land managers and the general public. Unmanaged foot and vehicular traffic have worn down the areas around the entrances to these caves area.

Vegetation, such as trees, shrubs, and grass species, have been reduced or eliminated from the immediate area at most caves. Erosion, by both wind and water is a threat to cave and scenic resources.

The current impacts to these caves have altered the existing landscape character from a "natural appearing landscape" into a more altered landscape.

The desired scenic condition for the caves is a "natural appearing landscape" where land management and recreational use would not drastically alter the existing landscape character.

5. Proposed, Endangered, Threatened, and Sensitive Plants (PETS)

a. Vascular plants

The areas close to the caves and above the entrances have a plant association of bitterbrush, sagebrush, bunch grasses, such as Idaho fescue, and some ponderosa pines. These potentially offer habitat for the green-tinged paintbrush, *Castilleja chlorotica*, although none were located during plant surveys. The areas at the entrances to the caves are generally lower than ground level and contain a more diverse flora including Desert-sweet, *Chamaebatiaria millefolium*, Giant wildrye, *Elymus cinereus*, and Ocean-spray, *Holodiscus dumosus*. Although the plant species at the entrances are common plants, it is unusual to find them in this area of the district and they offer an interesting variety of flora in these smaller more confined places. Caves within the area of the Skeleton Fire suffered damage to the plants, but during this

year's visits it was noticed that most plants had recovered and were thriving. Disturbance from foot traffic is visible at all the caves and there are areas of bare soil. Foot traffic will continue, but if pedestrians remain on the existing footpaths further damage to the flora is likely to be minimal.

No proposed Threatened, Endangered, or Sensitive (PETS) species were found at the cave entrances or in the area immediately above the caves.

b. Non-vascular plants

1b. Lichens. There are three types of lichens; crustose, foliose and fruticose, and representatives of each type inhabit these caves. Crustose lichens such as *Diploschistes spp.*, *Xanthoria spp.* and *Candelaria spp.* were common in the entrances and on the rocks outside the caves. Crustose lichens when dry are, for the most part, fairly hardy. They will, however, be worn away by constant foot traffic especially when wet. Where trails into the caves go over the rocks few crustose lichens were seen. In Skeleton Cave, *Lepraria spp.* was growing on the rock inside the cave about 20 feet from the entrance to about 60 feet back. This bright green lichen also grows in a small patch near the entrance on the east side and had some chalk marks on it. Studies that were begun in the City of Rocks National Monument found that although chalk will discolor crustose lichens, it will not kill them. Foliose lichens such as *Peltigera spp.* were seen growing on many of the rocks in the areas of the cave entrances and frequently on the rocks above the caves. Foliose lichens are susceptible to damage by abrasion (foot damage) and are more sensitive than crustose lichens to changes in air quality. Few were seen in the area of rock immediately above the entrance to Skeleton Cave. This may be a result of past campfires in the entrance of the cave. Some fruticose lichens such as *Cladonia spp.* were also found in the lower areas outside the caves. The *Cladonia spp.* tended to grow in the sheltered area below shrubs, but they too would be susceptible to foot damage should the shrubs be damaged or removed.

2b. Bryophytes. Mosses are most likely to be rubbed off the rocks by foot traffic and climbing activities, and few were found on the rocks at the cave entrances. Some *Rhacomitrium spp.* and *Grimmia spp.* were found growing in a few places in the lower areas outside the caves. *Tortula spp.* grew where protected either by shrubs or by being in less accessible locations. At Skeleton Cave, there was some damage to the mosses that were growing on the vertical rock wall outside the cave. This appeared to have been caused by climbing on the rocks, but it could have been a natural event.

No Lichens or Bryophytes are listed as Threatened, Endangered, or Sensitive Plant Species on the Deschutes National Forest.

6. Noxious Weeds and Exotic Plants

Cheatgrass, *Bromus tectorum*, grows near many caves in this project area. There is a lot of cheatgrass at Boyd, Wind and Skeleton caves. It grows around the top of Charlie-the-Cave in the disturbed area. It also grows among the shrubs around the top of Arnold Ice cave and Charcoal and it has been seen along the trails to these two caves. There was a little cheatgrass in the areas of the other caves. Although it is not considered a noxious weed, it is a very aggressive and undesirable non-native. Part of a Russian thistle, *Salsola Kali*, was found near the entrance to Skeleton Cave and some yellow sweet clover,

Melilotus officinalis, was seen along Road 242 near Boyd Cave. No other noxious weeds have been found close to the caves.

7. Cultural Resources

a. Prehistory

Human occupation of Central Oregon and Deschutes County in particular, spans at least the last 11,500 years, falling with the recent geologic/climatic period known as the Holocene. Three historically known Indian tribes inhabited and/or seasonally used areas within the County, the Northern Paiute, the Tenino/Tygh (Warm Springs) and Klamath. These tribes represent small bands of hunting and gathering peoples who were adapted to the high desert (steppe) and woodland/forest environments of Central Oregon by a nomadic or semi-nomadic foraging and collecting way of life. Faunal, floral and geologic resources sustained their economies. Tool kits, such as hunting and gathering implements, adornments and clothing were also supplied by faunal and floral resources, and in addition, geologic resources provided tool stone for lithic tools, such as obsidians, basalts and micro-crystalline silicates, and pigments, such as iron oxide (red ochre).

The caves are located on the northern flanks of Newberry Volcano, located between likely winter village locations on the middle Deschutes and Crooked River drainages and the rich lithic resource patches, in the form of vast obsidian flows of the volcano's caldera. It is likely that prehistoric Native Americans traveled through this area on the way to procure new tool stones to replenish their supplies. The availability of water, sometimes in the form of ice, would have been the sole source of water in this area, and thus is potentially responsible for the presence of lithic scatter sites. It is also likely that large and small terrestrial game species were also hunted and gathered opportunistically in this area as well. The Native Americans consider the caves in this analysis area a spiritual and sacred area to be protected from damage and defacement. Furthermore, the presence of rock art in the area, indicate both the acquisition and use of mineral pigments for spiritual/symbolic activities in the area, which are generally associated with moderate to intensive prehistoric use or occupation.

b. History

The historic period for Central Oregon began as Euro American explorers transected the area during the first half of the 19th Century. These expeditions were associated initially with fur trapping, then military/scientific surveys, and later, military campaigns against insurgent Indian populations. While these expeditions left little physical evidence, they did spur later settlement by providing accounts of the land and resources, such as John C. Fremont's popular travelogue of his 1843 survey of the Deschutes River with Kit Carson and Indian guide, Billy Chinook.

The Prineville area was settled after 1870 and by the 1880s pioneer ranchers and settlers were coming to the Arnold Cave system area by wagon and horseback for picnics, overnight camping and recreation. Later the ice caves, such as Arnold, were ice-mined, where blocks were cut and transported out of the cave in chutes and carried by wagons to the community of Bend, which was settled in the early 20th Century, for use in taverns, distilleries and grocery stores. Once Bend was connected to the intercontinental railroad routes in 1911, Central Oregon pine forests were opened up to large scale industrial logging operations, with the establishment of the Brooks-Scanlon and Shevlin-Hixon mills and

railroad logging systems. In the early 1920s the Brooks-Scanlon logging operations moved into the Arnold Ice Cave area. Recreation use of the caves increased, particularly following the close of the WWII era, when road access improved, and the local population had more free time and expendable income. That trend of increased use of the caves has been on the rise ever since.

There are few intact historic sites and features within the project area of any significance. Much of the evidence of early 20th Century recreation, ice-mining and logging did not leave any lasting traces, save for the presence of linear features in the form of old trails, road and logging railroad grades. However these linear features have not retained their original integrity due to subsequent uses and natural deterioration.

Caves in central Oregon hold special meaning to the Native Americans whose ancestors used these caves in the past. The increase in recreation use has had an effect on the cultural resources and values of some of the caves in the project area. Loss of materials is due to pot hunting, vandalism, or through the effects of climbing chalk on rock art. An assessment of Hidden Forest Cave was accomplished in summer 2000. It provides a basic condition assessment for the cave, with regard to conservation needs associated with current recreation use and impacts and natural deterioration.

In regards to cultural conditions, hand-drying agents (especially chalk) is of main concern. The primary complaints surrounding the use of climbing chalk in close association with rock art sites are that the chalk residue is unsightly (affecting scenic quality and integrity), it is very hard to remove, and residues contaminate rock art making them impossible to date. Also, if not removed it is likely to become "fixed" in place by any natural mineral accretion activity and the formation of natural weathering crusts, making it even harder if not impossible to remove. The impacts of chalk (either climbing chalk or blackboard/school chalk as both are carbonate based) on the dating of rock art are based on simple chemistry. As the various methods used for the dating of pictographs all rely on a form of radio carbon dating, the presence of carbonates would prevent the use of some methods. The existence of organic binders in the composition of chalk (used to make both types of chalk cohesive and form lumps) would affect the use of all dating methods. Likewise, because the chalk is used to absorb sweat and body oils, the chalk residue is in fact a mixture of processed chalk compounds, binders and other organic matter derived from the user. This provides a source of contamination that renders dating methods unusable. Professor Marvin Rowe, who developed the use of accelerated mass spectrometry for the radio carbon dating of pictographs, reiterated these problems. He also voiced concerns over the introduction of pigments to color climbing chalk. The pigments used are likely to have an organic component, which makes it difficult to see and avoid when sampling pictographs for dating. Organic compounds are also a probable component of antiperspirants now being included in some climbing chalk formulations, and are an additional source of contamination.

In some areas, chalk accumulation from rock climbers has impacted rock art at Hidden Forest Cave. The problems of chalk becoming fixed in place by the natural formation of weathering crusts on rock surfaces has been demonstrated by Professor Ron Dorn, who recently found grains of school chalk (used to highlight a petroglyph) embedded in newly formed desert varnish in a sample taken from a site in Wyoming. The problems of applied materials in general becoming fixed in place are well known and

widely observed, with many examples of old vandalism (chalking of glyphs, spray paint, crayon) becoming sealed in place by natural mineral deposition.

The close examination of the residues at Hidden Forest Cave demonstrates the fine size of the chalk particles and their embedded nature filling the tiny depressions and interstices of the rock surface. The smooth appearance of the surface of these accumulations also suggests a certain compaction and burnishing, presumably the result of the repeated action and use of localized points as handholds. Removing this material is not simple. Water introduced onto dry porous surfaces, such as rock, has a tendency to be drawn into the rock by capillary forces, resulting in the transportation of chalk particles even deeper into the rock fabric, rather than washing them out.

V. PROPOSED ACTION

The proposed action (Alternative B) is described on pages 20-23. It was designed to be consistent with the Forest Plan, existing laws and Forest Service Manual (FSM) 2356. The purpose of the proposed action is to maintain and restore a healthy cave ecosystem that includes a range of habitat conditions for biota and recreation experiences for the public.

1. Decision to be Made

The purpose of this document is to display the effects of the proposed action and the various alternative methods of addressing the purpose and need and issues identified for the Caves EA. It documents an environmental analysis of the alternatives including the no-action alternative. Based on this information and public comments, the Bend/Fort Rock District Ranger will determine which alternative will be implemented in the Caves project area and if so, where and under what conditions. An Interdisciplinary Team (IDT) conducted a site-specific environmental analysis. The analysis is supported by reports and background material from resource professionals.

2. Incorporated by Reference

Specialists' reports and their professional references used in the preparation of this Environmental Assessment are found in the appendices and incorporated by reference.

GOTO:

- [Chapter II](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/chapter1.html)

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Last Update: 6/6/01

R.A. Jensen

ROAD 18 CAVE PROJECT

ENVIRONMENTAL ASSESSMENT

CHAPTER II - ALTERNATIVES

I. SCOPING

The scoping process identifies public, Forest Service and other agencies issues regarding a proposal to implement an action. Public scoping was initiated early in the process by including this project in the spring, summer, fall and winter (2000) editions of the Schedule of Projects (SOP) for the Ochoco and Deschutes National Forests and the Prineville District of the Bureau of Land Management. Letters were mailed to the Project mailing list requesting comments on the Proposed Action (April 4, 2000). Public comments are used by the IDT to identify issues, further develop the proposed action and develop alternatives to the proposed action. There were 71 responses to the scoping letter. Thirty seven of the responses came in a form letter, two from WillametteValley Grotto, one from Bat Conservation International, one from Wanderlust Tours, two from the Access Fund, four phone conversations, nine e-mails and fifteen individual letters.

The following comments were made to the proposed action-scoping letter:

a. Form Letters

The form letters requested that "sport climbing" be allowed in Charcoal #1 and Hidden Forest Caves. They requested the use of bolts and drying agents (chalk) be considered as viable parts of climbing. They felt using colored chinks, like gray or black, could minimize the visual impact of white chalk. They do not believe chalk is detrimental to rock's integrity. They urged working together to work out a compromise.

b. Caving Organization

Willamette Valley Grotto wrote two letters. In the first letter their position is that damage is caused by the use of bolts in caves. They feel the placement of bolts in the entrances of caves to facilitate sport climbing violates the Federal Caves Resources Protection Act and established caving ethics. In the second letter, they requested permission to remove the bolted climbing anchors from Charcoal and Hidden Forest Caves. Their position is that rock climbers have had, and will continue to have, a negative impact on the caves and cultural resources, requiring continued monitoring and active management.

c. Climbing Organization

The Access Fund is concerned that sport climbing had been singled out in the EA as an especially undesirable recreational use of the caves, in terms of resource impacts and alleged conflict with aesthetic

values. They felt this was a bias based on not enough evaluation of the caves as a unique climbing opportunity. Their position is that climbers are not entirely responsible for all the illegal or inappropriate activities in the caves. They felt the EA should consider in more detail how climbers would be affected by a proposal that would eliminate all climbing in the Road 18 caves.

They feel the EA should analyze how the values (wildlife, cultural, plants and geology) have diminished below the specified described values and what their potential is for restoration. It is not clear what value these specific caves have in relation to other lava tube cave resources in Central Oregon.

They would like to see an alternative that allows sport climbing in at least one of the caves on a trial basis. They believe there is little proof that hand-drying agents constitute excavation, damage, or removal of cave resources as per the Federal Cave Resources Protection Act. They suggest that prohibiting the mere possession of hand drying agents in the Road 18 caves may infringe on basic legal rights of cave visitors.

Their second letter was a follow up to the field and office meeting on June 19 & 20, 2000. This meeting was held to acquaint the Access Fund with the proposal for this project and familiarize them with the process for completing it.

d. Wildlife Organization

Bat Conservation International Inc. (BCI) felt that bats have lost their traditional roosts in caves due to human disturbance and commercialization. They would like to have parking areas at Skeleton and Wind caves relocated away from the caves to limit disturbance. They agreed with all the proposed management goals in the proposed action and suggested a seasonal closure at Charcoal Cave to monitor the brown bat maternity colony.

e. E-mail Comments

Most of the email comments were concerned that access for the elderly would be restricted. They also wanted to have enough parking and turn-a-round or drive through area for a pickup and horse trailer. There were concerns that rock climbers were defacing the caves by using chalk, bolts and prying rocks out of the cave ceilings. One commenter thought the Forest Service should use photo monitoring at each of the caves to monitor and lessen impacts caused by visitors. They also wanted the trails inside the caves marked better so people would stay on the right paths. One commenter wanted to remove the existing bolts at the caves. One commenter was concerned that all the caves would be put off limits to sport climbers forcing them to find and use other caves not on maps and felt this treatment was unjust.

f. Individual's Letters

Commenter (#42) supports moving the parking areas away from the cave entrances to discourage drinking parties. He supports the removal of bolts from all the caves to lessen impact on wildlife.

Commenter # 44 did not support imposing restriction at the caves. Instead he thought the Forest Service should redirect the money planned for the kiosks and hire a person to supervise the activities at the caves

increasing the odds of making those destructive individuals responsible for their actions.

Commenter # 45 does not want access limited and felt if cars had to be parked further away they could be vandalized easier. He felt that limiting access would discriminate against low income or single parent families. He feels that limiting access will not stop vandalism, just move it somewhere else.

Commenter #46 felt that sport climbing should be allowed in the caves and sport climbers should not be classified as hooligans.

Commenter #47 felt the proposed action is biased against spelunkers and discriminates against sport climbers. He felt the Forest Service should build a relationship with the sport climbing community and work with them to clean up or do other work around caves. At Skeleton Cave, he felt the parking lot should be at least 1/2 mile from the cave entrance. He felt it should be permissible to move the rocks to allow sport climbing, and allow hand-drying agents until it is proven to destroy the rock. He thought climbing should only occur in the mouth of the cave where sunlight shines. At Hidden Forest Cave he thought the parking area should be 1/2 mile from the entrance of Arnold Ice Cave. Existing bolts and maintenance of the bolts should be allowed as well as allowing the painting of existing bolts to hide any reflection. He felt the entire south wall should be open to climbing and allow climbing only in the mouth of the cave.

Commenter #48, felt that parking areas should be 1/2 mile from cave entrances, include kiosks, improve paths to the most scenic caves, improve trails to those cave floors that are already accessible, remove the existing steel ladders, replace rocks piled on the floor by past rock concert and partygoers. He felt that bolting on a few specific routes should be allowed and a few warm up bouldering routes allowed. He thought the Forest Service should find and designate some of the one hundred cave entrances that can be used for just advanced climbing and keep the areas clean with the help of users.

Commenter #58 had several comments relating to caves and cave management. He thought the EA discouraged recreation use. He claims that caves are part of a cultural landscape and urban landscape and no longer a part of a natural landscape. He thinks that smoke in caves, whether from campfires, wildfires or smoking, is inhaled into the caves and affects the vadose zone. The vadose zone is the subsurface open space in the earth's crust above the ground water level.

He felt that educating the public about the effects of litter, use of liquids (washing cave walls); and the effects of graffiti on resources would be a good idea in minimizing or preventing damage to cave resources. He was concerned that installing gates at cave entrances could prevent good airflow and animal use.

He said if Stookey Ranch Cave is the major bat hiberniculum, why would the Forest Service place restrictions at Wind Cave to protect Western big-eared bats?

He was concerned that relocating parking lots could affect handicap use and not meet ADA if travel

distance exceeds 1/4 mile.

He wondered why the Forest Service would eliminate climbing, the use of chalk and bolting.

He asks the IDT to define and demonstrate a microenvironment and effects on it.

He wonders why these caves are considered unique when we have over 450-named lava tube caves in Oregon. He says the plant community around caves is not unique, but common.

He doesn't believe that restoration of caves is realistic.

Commenter #66 thought the caves should be less accessible to minimize vandalism. Thought if groups like the Boy Scouts visited the area they and their leaders should be educated to not disturb or destroy cave resources.

II. ISSUES AND MEASURES

The scoping process for the Caves Environmental Assessment, including public involvement, identified a total of four issues related to the proposed action. The issues, together with applicable laws, regulations, and policies, were used as alternative design criteria. The ability of how each alternative addresses each issue involves the use of "key indicators" or "measures of responsiveness" (measures). Measures were used in this analysis to clarify and compare the difference between alternatives and not as a strict quantitative measure of environmental effects. Measures must be taken in context when interpreting effects.

Issue 1 -Access to Caves

The proposed action would relocate parking areas at Boyd, Skeleton, and Wind Caves and make access to the caves non-motorized use only. Most visitors would be required to walk the closed road to access these caves. There would be an ADA trail built at Boyd Cave with a road to trail project. Trails would be self discovery with no system trails developed. There is a concern that relocating the parking areas from proximity to the caves would compromise safety and encourage theft and vandalism to vehicles. The new parking areas would not be large enough to accommodate the parking of vehicles towing horse trailers or large RVs. Relocating parking areas and not developing system trails would discourage the elderly and handicapped from viewing the caves or accessing the area.

Units of Measure -

Distance of parking areas to caves.

Parking capacity/design of parking areas to accommodate horse users and large RV's.

ADA Accessible.

Issue 2 - Availability of climbing opportunities.

The proposed action would reduce the type, variety and location of climbing opportunities at several of

the Road 18 caves. The elimination of chalk use and the removal of bolts from caves and routes would prevent climbing activities.

Unit of Measure - Availability of climbing opportunities by alternative (bouldering and sport climbing).

Issue 3 -Effects of activities at each cave on wildlife (bats) habitat and populations.

Increased use at the caves by recreationists may be negatively impacting bat species that use the caves. Despite seasonal closures that have been implemented at several caves during maternity and hibernation periods, many cave users continue to ignore these closures, and disturb bats during the critical periods. Alternative 3 addresses this issue with gate installations and hibernation period closures.

Unit of Measure -

Timing of disturbance to bat species by alternative. Timing of disturbance includes maternity, hibernation, and day/night roosting.

Issue 4 - Inappropriate Cave Use

Currently, all of the caves in the project area are listed as significant caves as per the Federal Cave Resources Protection Act. Most of the caves receive moderate use from a variety of visitors seeking a variety of experiences. The most inappropriate or impactful activities are those that destroy or alter cave resources, such as: acts of vandalism, graffiti and spray painting, dumping garbage or litter, removal or damage of cave resources, or other such destructive behaviors or activities.

The extent to which these activities alter or damage the cave resources varies with the type of activity, the location of the activity in reference to cave resources, and the amount of alteration of the condition of the cave that results from the activity. Providing measures to counter these activities is key to reducing and/or eliminating their effects.

Unit of Measure -

The distance from the parking area to the caves.
Availability of cave conservation information.

III. ALTERNATIVE DESCRIPTIONS

Alternatives are designed to move towards the desired condition specified in the Forest Plan consistent with the standards and guidelines in that Plan.

A. Alternatives Considered But Eliminated From Further Analysis

1. An alternative was considered that would allow the use of hand drying agents. However, not knowing, or likely ever knowing (due to trade secrets, competition between companies) what the chemical make-up of the agents are, or if there are potential effects on biological and physical resources, hand-drying agents would not be allowed until such effects are better documented.

2. Another alternative was considered that would restrict or eliminate public use of the caves. This was eliminated because it would not meet the Federal Cave Resources Protection Act for providing recreation opportunities at caves.

3. Another alternative considered would have installed a fee system for cave use or visitation. This was considered impractical at this time as it could make the Forest Service liable for any mishap or injury while visiting the caves. Also, the Forest Service does not have the personnel or budget to implement a fee system and projected revenue would not cover the cost of operations due to the low/moderate use of the caves.

B. Actions Common To All Alternatives

The Federal Cave Resources Protection Act states, "Any person who, without prior authorization... knowingly destroys, disturbs, defaces, mars, alters, removes or harms any significant cave or alters the free movement of any animal or plant life into or out of any significant cave located on Federal lands, or enters a significant cave with the intention of committing any act described in this paragraph shall be punished in accordance with subsection (b) Punishment." To comply with this, any existing bolts would be removed and scars rehabilitated. The placement of any new unauthorized bolted climbing routes would not be allowed. Other actions that occur in the caves that fall into this definition would also not be allowed. The removal of bolts and the rehabilitation of the scars would return the caves to a more natural condition, while removing impacts to cave resources.

Similarly, the current restriction on the use of hand-drying agents, including chalk, would be put into effect permanently. Chalk and hand-drying agents could be ingested by wildlife, especially bats, that could be dangerous to their health. Because of the uncertainty of the chemical make-up of hand-drying agents, or their potential affect on wildlife, this measure would remove any potential threat to wildlife or invertebrate species that rely on caves to survive. If further evidence or research indicates there is no or negligible effect, this restriction could be removed in the future.

The preceding would occur regardless of which alternative is selected by the Deciding Official. Alternative C would be the exception to this, where some bolted climbing routes would be authorized.

Under the action alternatives, the following activities would occur:

- For caves with parking facilities, institute a self-issuing permit program to collect information on the visitor's name, purpose, number in party, comments and use patterns. There would be cave information and proposed cave etiquette on the permits or information board.
- Should the need arise; allow additional Special Use tours under authorized permit. Permittees should display a public need with an approved operating plan. Limit existing and future group size to 6-8 people at one time and no more than three tours per cave per day. Appropriate caves for this activity include Boyd, Skeleton, and Wind. Permittees would be responsible to include cave sensitivity/conservation etiquette for each group. Other special uses, such as movie making, would be authorized on a case-by-case basis.

- Restrict access to foot traffic only to promote public safety and to protect cave resources. Do not allow mountain bikes, horses, or motorized vehicles in caves. Continue to evaluate new recreational attractions and make recommendations based on impacts to cave resources and visitor safety.
- Prohibit use of internal combustion engines (such as generators) in caves.
- Prohibit the use of glass containers within caves to reduce litter and provide a safer environment to visitors.
- Maintain current populations of unique plant species in and near cave entrances by encouraging foot traffic in designated areas only.
- Add the wording ". . .and possession of" to the ban on use of hand drying agents {36 CFR 261.9 (a)(j)}.
- Prohibit possession and use of alcoholic beverages as defined by state law in all caves. Current restrictions are from sunset to sunrise
- To provide multi-agency consistency with seasonal closure periods, hibernacula closure dates would be October 15 to May 1. Maternity closure dates would be April 15 to September 30.

C. Alternative A - No Action

The no action alternative is a baseline by which to measure relative changes that would result from implementation of the action alternatives. Under this alternative, the proposed project would not take place. There would be no self-issuing permits. There would be no limit in the number of people who could use the caves at any one time. Visitors would continue to access the caves from the current parking areas. The lack of enforcement personnel and education kiosks would contribute to continuation of inappropriate use of cave resources.

D. Alternative B - Proposed Action

Under the proposed action the existing bolted routes in caves would not be authorized and bolts would be removed. It would also authorize a restriction on the use of hand-drying agents. The restriction on hand-drying agents, chalk and bolting is in accordance with the regulations for preventing damage to significant caves and cave resources.

Alternative B would define parking areas and trails that minimize the adverse impacts to vegetation and habitat near cave entrances. This would improve the vegetative and scenic quality at Boyd, Skeleton, Wind, Hidden Forest and Arnold Ice caves.

Alternative B would restore some cave resources to a more natural state and maintain others. For example, efforts to define parking areas and foot paths would improve or restore vegetation conditions, while relocating parking areas would reduce impacts from vandals which would in turn maintain the caves for future generations.

Alternative B would relocate the parking area for Boyd Cave to Road 18. The new parking area would accommodate large RVs and horse trailers. Also, the relocation of Skeleton and Wind parking areas would act as a deterrent for those dumping garbage or otherwise vandalizing cave resources. The caves

would still be available to hikers, and other non-motorized visitors. ([See Appendix C](#))

Under the proposed action an information kiosk would be installed at the Boyd Cave parking area/trailhead near Road 18. The kiosk would direct visitors to the caves. Also, an advance notice sign would be installed on Road 18 to inform travelers of the kiosk. Bold lettering that states "Cave Information" would identify the kiosk. It would provide useful cave information such as existing closures and "leave no trace" ethics. The kiosk would inform visitors of cave etiquette and restrictions and provide information to promote a better understanding and appreciation for caves and caves resources. Self-issued permits for Boyd, Skeleton, Wind and Arnold Ice caves would be available at the Kiosk. ([See Appendix D](#))

A bat gate would also be installed at Charlie-the-Cave to protect and maintain bat habitat.

In Charcoal Cave #1 a year around closure order would remain in place until further analysis is completed.

Deg Cave would be closed year-round to reduce confusion to the public on the availability of this cave for exploration. Currently, Deg Cave is open from 45 days in the fall. With the proposal to change closure dates, the availability of this cave to the public would be reduced 15 days.

The following table summarizes the proposed actions on a cave-by-cave basis.

Table 1: Proposed Actions by Cave.

CAVE	PARKING	ACCESS	PROPOSED RESTRICTIONS
Boyd	Relocate the parking area to near the junction with Road 18 making it large enough to accommodate large RV's and vehicles towing horse trailers.	Close 1/4 mile of road to cave. Allow non-motorized use to the cave on closed road converted to an ADA compliant trail.	See Appendix A. Existing CFRs, and proposed actions
Arnold Ice	Redesign the parking lot and footpaths for Arnold Ice Cave to divert unnatural seasonal water flows away from the cave entrance.	Close all unauthorized user-made roads that originates from the parking lot.	"

Skeleton	Relocate the parking area to near the junction with Road 1819-200.	Close road to cave with removable bollards. Allow non-motorized use to the cave on closed road.	"
Charcoal #1	Provided at Arnold Ice Cave parking area.	Self-discovery; no system trail will be developed.	Year-round closure order in place until further analysis is completed. Also closed for bat maternity 4/15-9/30
Hidden Forest	Provided at Arnold Ice Cave parking area.	Self-discovery; no system trail would be developed.	
Wind	Relocate the parking area to near the junction with Road 18.	Close road to cave with removable bollards. Allow non-motorized use to the cave on closed road.	Closed for bat hibernaculum 11/1- 4/15
Bat	Provided at Wind Cave parking area.	Self-discovery; no system trail would be developed.	Closed for bat hibernaculum 11/1- 4/15
Deg	None.	Not to be displayed on Forest maps.	Closed to all use year- round to reduce confusion on open dates.
Charlie	None.	Install a gate to the lower passage; self-discovery; no system trail would be developed.	Lower passage closed for bat hibernaculum. 11/1- 4/15 Upper chamber closed for bat nursery 4/16-9/30.

Alternative C

All actions identified in the proposed action would be the same as Alternative B except for the following:

- Boyd Cave: The parking area would not be relocated. It would remain at the current location but barriers to eliminate motor vehicles driving near the cave entrance and over vegetation would be improved. Based on comments received from the public, the parking lot would be better defined to accommodate large RVs and vehicles towing horse trailers. A trail would be improved to provide a defined footpath to the cave entrance. The area would remain open for equestrians using this site to ride shorter loop trails rather than those using the Horse Butte Trailhead. It would also provide closer/easier access for disabled and elderly visitors.

- **Skeleton Cave:** The alteration of rocks on the floor of Skeleton Cave would be designed to provide for public/climber safety, but in a manner that would be more natural appearing (to be determined by the Forest Service, spelunkers, and the local climbing community). There would be a seasonal closure during the bat winter hibernation period (October 15 - May 1).
- **Wind Cave:** Two bat gates would be installed. One at the main entrance to the cave and one at the skylight area to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).
- **Hidden Forest Cave:** Completed existing bolted routes would be authorized for climbing. Incomplete routes would be removed. New climbing routes would not be authorized in this or any other cave in the project area.
- **Bat Cave:** Two bat gates would be installed. One at the main entrance to the cave and one at the skylight area to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).

The following table compares the Issues by cave and Alternative.

Table 2 - Issues Comparison by Alternative.

Issues/Measures	Alternative A No Action	Alternative B Proposed Action	Alternative C
Issue 1 - Access to Caves			
Measure- a. Distance from parking to caves Boyd Cave Arnold Ice Cave Skeleton Cave Charcoal #1 Cave Hidden Forest Cave Wind Cave Bat Cave Deg Cave Charlie Cave	@ Cave entrance @ Cave entrance @ Cave entrance @ Arnold Cave @ Arnold Cave @ Arnold Cave @ Cave entrance @ Wind Cave @ Wind Cave @ Wind Cave	1/8 mile, near Road 18 @ Cave entrance 1/8 mile from cave @ Arnold Cave @ Arnold Cave 1/2 mile from Wind Cave " " "	@ Cave entrance @ Cave entrance 1/8 mile from cave @ Arnold Cave @ Arnold Cave 1/2 mile from Wind cave " " "
b. ADA accessible	None for cave interiors, but parking at caves is within sight distance.	ADA trails to Boyd Accessible parking, Kiosk and info signs.	Parking closer and more accessible at Boyd. Same Kiosk/sign as in Alt. B.

c. Parking for horse users and large RV's	Parking at Boyd, Arnold, Skeleton and Wind.	Relocate parking at Boyd. Make it large enough for horse trailers and RVs. None at Arnold, Skeleton, & Wind Caves.	Parking not relocated at Boyd. Still available for horse users. None at Arnold, Skeleton, & Wind Caves.
Issue 2 - Availability of climbing opps.			
Measure-Bolting or bouldering permitted	No hand drying agents, bolts pulled at Hidden Forest Cave. No placement of bolts. Year round closure at Charcoal #1.	No hand drying agents, removal of bolts at all caves. Keep closure at Charcoal #1.	Allow sport climbing with existing routes at Hidden Forest, no climbing on rock art panel. Skeleton allows planned location of rocks for safety. No hand drying agents.
Issue 3-Effects to bat species populations			
Measure - Timing of disturbance			
Boyd Cave	Hibernation	Hibernation	Hibernation
Arnold Ice Cave	N/A	N/A	N/A
Skeleton Cave	Hibernation	Hibernation	Hibernation**
Charcoal #1 Cave	Maternity *	Maternity *	Maternity *
Hidden Forest Cave	N/A	N/A	N/A
Wind Cave	Hibernation *	Hibernation *	Hibernation +
Bat Cave	Hibernation *	Hibernation *	Hibernation +
Deg Cave	Maternity, hibernation*	Maternity, hibernation*	Maternity, hibernation *
Charlie-the-Cave	Hibernation*	Hibernation +	Hibernation +
Issue 4-Inappropriate Cave Use			
Measure - Distance of parking area to caves.	Same as 1A	Same as 1A	Same as 1A
Cave conservation information.	Info boards at Boyd, Skeleton, Arnold & Wind	Info Kiosk, self issuing permit, info board	Info Kiosk, self issuing permit, info board

*Although seasonal closures are in place, disturbance currently occurs and is expected to continue to

occur by a small segment of the population.

**New seasonal restriction (hibernation) would be implemented. Similar to other caves where seasonal closures are in place, disturbance would occur by a small segment of the population.

+Gates would be placed at these cave entrances and closed during the hibernation period.

IV. MITIGATIONS

The following mitigation measures would be applied to all the action alternatives whenever the applicable site-specific conditions are present.

Mitigation Measures Common to All Action Alternatives

a. Wildlife

Activities associated with alternatives B and C (parking access changes, cave gate installation) should not occur during the period from December 1 through March 31 to reduce disturbance to wintering big game.

Cave closures for hibernating bat colonies (October 15 - May 1) would include a closure buffer of 300 feet. Activities from alternatives B and C should not occur at Skeleton or Wind caves during this time period.

Heavy equipment would not operate within 100 feet of a cave opening and not within 100 feet of a cave's underground passage (to be identified during project implementation). The objective is to avoid collapsing the cave.

b. Noxious Weeds

Use contract provisions for equipment cleaning.

Seed areas of disturbance with native plant species.

Monitor project work areas during and after work is completed and pull weed populations as necessary.

c. Cultural Resources

To reduce the possibility of destroying resource information by humans with easy access to historically important areas, dispersed roads would be closed by natural means, such as placing boulders and other means which would not disturb the surface layer of soil.

GOTO:

- [Chapter I](#)
- [Chapter III](#)
- [Chapter IV](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)

[Deschutes and Ochoco National Forests Website](#)

<http://www.fs.fed.us/centraloregon/manageinf>

ROAD 18 CAVE PROJECT

ENVIRONMENTAL ASSESSMENT

CHAPTER III - ENVIRONMENTAL EFFECTS

I. ENVIRONMENTAL EFFECTS

This section describes the beneficial and adverse impacts to the environment that would occur if the alternatives were implemented. Estimated effects are discussed in terms of environmental changes from the current situation and include qualitative as well as quantitative assessments of direct, indirect, and cumulative effects.

1. Recreation

Alternative A (No Action)

Recreation use patterns and activities will continue as is under this alternative (except those noted in the Action Common To All Alternatives section), with an upward trend (associated with population increasing in Central Oregon) in the amount of visitors seeking the caves along China Hat Road. Existing regulations (Appendix A Current Cave Restrictions) would continue to be enforced. However, these plus past management actions have had limited effect on deterring harmful or damaging activities/impacts from occurring at some caves.

Where visitation would continue and increase, impacts to surrounding vegetation will eventually result into a system of hardened trails and roads. Some of these trails would be redundant, in that where there are several trails leading to a single destination, likely only one is needed.

More likely, vandalism and other destructive behavior would continue to occur in all areas of the cave (see Existing Conditions section), from litter and trash at the entrances, to areas further back in the caves where graffiti and campfires occur sporadically throughout the year at several caves.

Visitors would continue to access the caves as per current conditions: parking (where available) near the cave entrances themselves (Boyd, Skeleton, Arnold and Wind caves). With the parking areas remaining in their current locations, visitors would be able to quickly access the caves without having to hike 1/8 to 1/2 mile. Because there is little to no site definition at the four major caves off of Road 18 (Boyd, Skeleton, Wind and Arnold Ice caves), impacts from motor vehicle traffic would continue, and in some cases, expand to unaffected areas. Some motorists park outside of previously impacted areas, which leads to soil compaction, and potentially the spread of noxious weeds. In the case of Arnold Ice Cave, the topography of the parking area funnels much of the runoff directly into the cave entrance. This

occurs to a lesser degree at Skeleton Cave, where vehicles sometimes traverse or park all around the cave opening.

Since the parking areas are very close to the cave entrances at Boyd, Skeleton, Arnold Ice and Wind caves, motor vehicles and private property are less likely to be vandalized or broken into. The uncertainty of when someone would exit the cave is a possible deterrent to vandals and thieves at these locations.

The continued restriction on the use of hand-drying agents, in conjunction with the removal of all bolts from the caves, would affect the amount of bouldering and sport climbing use. (See discussion on sport climbing and bouldering in Action Common to All Alternatives section, page 18). Where hand-drying agents do provide for a safer situation to boulder (chalk/hand-drying agents reduce/remove moisture from the hand to give the climber a better gripping surface), it isn't essential under certain conditions. On a given day, dry and/or non-humid weather conditions can be conducive to bouldering without the use of these agents. Even so, the amount of bouldering days available to these recreationists would be reduced under this alternative.

With the bolt restriction (Action Common to All Alternatives, page 18), sport climbing would be eliminated under this alternative. It's possible that some sport climbers may find other caves in Central Oregon to engage in this activity. It is more likely that sport climbers would participate in their sport at more traditional use areas, such as nearby world-renown Smith Rock State Park. The removal of bolts would have the most effect through the elimination of sport climbing at these caves. However, it is possible that some future technology may devise another less or non-impactive system that would be more consistent with the FCRPA.

However, because the bolted routes are technically quite difficult to attempt and complete, it's been suggested that less than two-dozen people in the local area are able to make use of the available routes at Hidden Forest Cave (personal communication with members of the local climbing community). Therefore, the effect of removing bolts is limited in the amount of people that would be displaced.

Bouldering currently occurs at only Skeleton Cave. This type of activity would continue to impact the cave habitats by removing molds and lichens that species feed on from the cave walls, moving rocks and other obstacles, and by disturbing nesting/denning wildlife species.

Alternative B

This alternative would have the most effect on access and types of activities that would be allowed at the caves. Parking area relocations at Boyd, Skeleton and Wind caves would require visitors to hike approximately 1/4 to 1/2 mile to access the cave itself. This could result in less use at the caves by all user types. It has the potential to limit those that would have difficulty, or could not travel the distance to access the caves, such as the elderly or disabled. The relocation of Boyd parking area would still allow this site to be used by visitors with large motor homes or those pulling horse trailers. Equestrians would still be able to use this site, giving them shorter trail loop opportunities than those at the Horse Butte

Trailhead.

The parking area relocations should help reduce vandalism and other impacts at the caves (littering, spray painting, partying, etc.). It's less likely that individuals or groups would make the effort to drive cross-country to access and vandalize the caves. Enforcement of parking area breaches should also be made easier since tire tracks going around the parking barriers and/or bollards would be readily apparent. Also, defining the Arnold Ice Cave parking area would improve the scenic integrity of the area as well as reduce the amount of seasonal runoff that currently funnels into the entrance.

The relocated Skeleton and Wind parking areas would not be visible from either the cave entrance itself, or from Road 18. This could potentially put private property (motor vehicles and/or trailers) at risk of vandalism or break-ins, which does occur occasionally in isolated areas. This is more likely to occur at the proposed Skeleton and Wind cave parking areas, which would be more isolated and less visible than the new Boyd Cave parking area. It is still possible for break-ins or vandalism to occur at Boyd, though it is less likely since the parking area is within sight of Road 18, where traffic passing by would help deter illegal activities at this site.

The same effects would apply to bouldering and sport climbing opportunities as described in Alternative A.

Alternative C

This alternative provides the least effect on access and types of activities allowed. Whereas Skeleton and Wind cave parking areas would still be relocated, and the effects would be the same as Alternative B, the Boyd Cave parking area would remain in the same location. Site definition there would allow this area to continue to be used by equestrians as a trailhead to access the adjacent horse trail, while deterring impacts off the designated pathway.

The authorization of the existing completed routes at Hidden Forest Cave (approximately 10) would occur in this alternative. No new routes or bolting would be allowed in any other cave. Climbing would only be allowed at the bolted routes at the entrance. There would be no climbing allowed on the warm up wall to the south. Furthermore, due to the technical difficulty rating of these routes, sport-climbing use at this cave would likely remain low when compared to Smith Rock State Park. However, with Smith Rock State Park being world renown for its climbing opportunities, it makes the increase in use by upper-end climbers at Hidden Forest Cave a distinct possibility. Owing to the uniqueness of this type of sport climbing, and the availability of it nowhere else in the western United States, that use could increase in the future.

The installation of gates on Wind, Charlie-the-Cave and Bat caves would change the recreation use patterns here. The gates would reduce disturbance to the threatened Western big-eared bat during their hibernation period. The gate would be closed during the annual hibernation period, 10/15 to 5/1. Similarly, the same seasonal closure would be implemented at Skeleton Cave, but without a gate. Visitors who come to these caves during this seasonal closure would be displaced to Arnold Ice and

Boyd caves. However, because the closures are at a time of year when use is low, there should be few if any detrimental effects (ex. crowding, expansion of parking areas or trails) to resources or conditions at Arnold or Boyd caves. There would be some inconvenience to visitors that want to visit these restricted access caves.

2. Wildlife

Big Game

Alternative A - With this alternative, access to caves would remain the same on the current road system. Habitat conditions for wintering big game would remain unchanged.

This alternative does propose to remove all bolts from caves. This may reduce the amount of vehicle traffic by reducing climbers who prefer to use bolts. No direct, indirect, or cumulative adverse impacts are expected.

Alternative B (Proposed Action) - With this alternative, parking areas at Boyd, Skeleton, and Wind caves would be moved away from the caves. Boyd and Skeleton Cave parking areas would be moved 1/8 of a mile, and Wind Cave parking area would be moved 1/2 mile from the cave for a total of 3/4 of a mile. Although this is not a high amount of road mileage, it may potentially reduce the number of vehicles and recreationists (those who do not wish to walk to the caves) within the project area during the winter months.

Activities associated with re-constructing the parking areas may disturb wintering big game during the winter months (**mitigation measure would apply**).

This alternative also proposed to remove all bolts from caves. This may also reduce the amount of vehicle traffic by reducing climbers who prefer to use bolts. No cumulative adverse impacts are expected.

Alternative C - Impacts associated with this alternative would be similar to alternative B, but to a lesser degree. Vehicle traffic would not be reduced as much because authorized bolts would remain at Hidden Forest Cave and less road miles would be closed (5/8 of a mile) because the parking area at Boyd Cave would remain at its current site. No cumulative adverse impacts are expected.

Raptors

Alternatives A and B (Proposed Action) - With these alternatives, all bolts would be removed at all caves (Hidden Forest and Charcoal Caves are the only known caves with bolts. Most of the bolts at Charcoal Cave have already been removed). This may reduce the use that occurs at Hidden Forest Cave. This could potentially prompt future use of the trees within and adjacent to this cave to kestrels. No direct or cumulative adverse impacts are expected.

Alternative C - This alternative would allow the use of existing routes at Hidden Forest Cave. Use at this cave by climbers would continue to increase, making use of the trees that provide habitat for kestrels

unlikely. No direct or cumulative adverse impacts are expected.

Woodpeckers

Alternatives A and B (Proposed Action) - With these alternatives, all bolts would be removed at all caves (Hidden Forest and Charcoal Caves are the only known caves with bolts. Most of the bolts at Charcoal Cave have already been removed). This may reduce the use that occurs at Hidden Forest Cave. This could potentially prompt future use of the trees within and adjacent to this cave to woodpeckers and other cavity nesters. No direct or cumulative adverse impacts are expected.

Alternative C - This alternative would allow the use of existing routes at Hidden Forest Cave. Use at this cave by climbers would continue to increase, making use of the trees that provide habitat for woodpeckers and other cavity nesters unlikely. No direct or cumulative adverse impacts are expected.

Special Habitats/Ecological Indicators

Alternative A - Bouldering would continue at Skeleton and Hidden Forest Caves, but the current ban on the use of hand-drying agents would also continue, possibly reducing the amount of people participating in this activity. The chemical make-up of the hand-drying agents is unknown, and if used could possibly accumulate externally or be ingested by cave dwellers that utilize habitat near the entrances of caves. Not allowing them would remove any potential health risk to these species. The bouldering activity that would continue to occur would continue to impact cave habitats by removing molds and lichens that species feed on from the cave walls, by moving rocks and other obstacles, and by disturbing nesting/denning wildlife species. Sport climbing would not occur at Hidden Forest Cave, which would reduce these impacts at this cave.

Alternative B (Proposed Action) - Impacts to caves and cave dwellers would be similar to those found in alternative A. A gate would be placed at Charlie-the-Cave. Placing a gate within a cave could disturb cave dwellers with the noise and the fumes from welding. This disturbance would be short-term. It may cause some insects and rodents to abandon that particular portion of the cave. They would eventually come back after the disturbance has ceased.

Alternative C - Impacts to caves and cave dwellers would be similar to those found in alternatives A and B. Sport climbing would continue to take place at Hidden Forest Cave, which would increase the total amount of area impacted in combination with the bouldering that takes place. The molds and lichens that occur within the designated routes would eventually be rubbed off.

Bats

Alternative A

Bat prey species are strongly associated with several shrub species near cave entrances. By encouraging foot traffic into designated areas, impacts to shrub species by trampling would be reduced.

Bouldering would continue at Skeleton and Hidden Forest Caves, but the current ban on the use of hand-drying agents would also continue, possibly reducing the amount of people participating in this activity.

The chemical make-up of the hand-drying agents is unknown, and if used could possibly accumulate externally or be ingested by bats that roost near the entrances of caves. Not allowing them would remove any potential health risk to the bats.

Sport climbing (with bolts) would not be allowed at any caves. Hidden Forest cave is currently the only cave that it is occurring at. This cave is not a high use roosting cave, but bats are known to use it for night roosting, so the current activity of sport climbing during the day would have no impact to bat species. Not allowing this type of use at any other cave would most likely prevent disturbance from occurring to day roosting bats, or hibernacula or maternity colonies.

The parking areas at Skeleton, Wind, and Boyd Caves would remain at their current locations. According to Nieland (2000), roads should not be constructed over cave systems, within 300 feet of cave passages or within a 1/4 mile visual proximity of a cave. Road construction should not cause erosion, alter the climate, or the flow of water in or around caves. Other inappropriate activities include those that compact soils or any other activities or projects that contribute to the alteration of water percolation above and into the caves. Having parking areas so close to caves increases the risk of percolation of fluids that may leak from vehicles. These types of impacts would continue to occur with this alternative.

The current year around closure at Charcoal Cave would remain in place and provide continued protection for day and night roosting bats and the big brown bat maternity colony that occurs here.

The current seasonal closure during the hibernation period, which occurs from November 1 through April 15, would be changed to October 15 through May 1 to provide multi-agency consistency with the BLM. This would lengthen the seasonal closure by one month, which would benefit hibernating bat species that may begin hibernating in these caves earlier in the season and those that may stay later in the season. The lack of enforcement personnel and education kiosks would contribute to continuation of breaches of the administrative closure.

This alternative would not provide for 100% security on public access to any known bat hibernacula sites. Continued public access and use of caves during this critical period is expected to continue to contribute to a decline in use of hibernacula sites by western big-eared bats and other bat species populations within the project area. Loss of the population of western big-eared bats in this portion of the Deschutes National Forest may drastically decrease the local population and gene pool in Central Oregon.

Alternative B (Proposed Action)

Bat prey species are strongly associated with several shrub species near cave entrances. By encouraging foot traffic into designated areas, impacts to shrub species by trampling would be reduced.

Bouldering would continue at Skeleton and Hidden Forest Caves, but the current ban on the use of hand-drying agents would also continue, possibly reducing the amount of people participating in this activity. The chemical make-up of the hand-drying agents is unknown, and if used could possibly accumulate

externally or be ingested by bats that roost near the entrances of caves. Not allowing them would remove any potential health risk to the bats.

The parking areas at Skeleton, Wind, and Boyd Caves would change from their current locations to areas where recreationists would have to walk 1/8 to 1/2 a mile to reach the caves (**mitigation measure would apply**). This would follow direction provided by Nieland (2000) stating that roads should not be constructed over cave systems, within 300 feet of cave passages or within a 1/4 mile visual proximity of a cave. Moving the parking area would reduce erosion around the caves, rehabilitate compacted soils and reduce the alteration of water percolation (and possible fluid leakage from vehicles) above and into the caves. Moving the parking areas further away from the caves may also potentially reduce the number of recreationists (those who do not wish to walk to the caves) within the project area.

The current year around closure at Charcoal Cave would remain in place and provide continued protection for day and night roosting bats and the big brown bat maternity colony that occurs here.

The current seasonal closure during the hibernation period, which occurs from November 1 through April 15, would be changed to October 15 through May 1 to provide multi-agency consistency with the BLM. This would lengthen the seasonal closure by one month, which would benefit hibernating bat species that may begin hibernating in these caves earlier in the season and those that may stay later in the season. Education kiosks would be provided to inform the public about these closures. This may help reduce the number of recreationists ignoring the closures.

This alternative would provide for a strengthened restriction on public access during the hibernation period at Charlie-the-Cave. The other known hibernation sites would see continued public access and use of caves during this critical period (see Table 2, p. 24). This would continue to contribute to a decline in use of hibernacula sites by western big-eared bats and other bat species populations within the project area. Loss of the population of western big-eared bats in this portion of the Deschutes National Forest may possibly be devastating to the local population and gene pool in Central Oregon.

The Deschutes National Forest Land and Resource Management Plan states that if "monitoring determines that human disturbance is having a detrimental effect on significant numbers of this species, restrictions would be imposed on human visitation to reduce disturbance to an acceptable level." These restrictions may require an entrance closing structure permeable to bats. Gating is considered a serious undertaking, and should only be done when less impacting alternatives are unworkable, or have failed. Alternative techniques include seasonal closures and signing, public education, limiting road access, and non-disclosure of the cave locations. These alternative techniques have been used, but seasonal closure periods continue to be ignored by a small segment of the public. As a last resort, to protect bats and their habitat, one cave that provides habitat conditions for hibernating western big-eared bats and other bat species is proposed for gating (to strengthen the closure) (**a seasonal restriction mitigation measure would apply**). The cave proposed for gating (Lower Charlie Cave) provides the second highest wintering population of western big-eared bats within the project area (an 11-year average of 10).

The purpose of the gate construction is to restrict public entry during the hibernation period in an effort to protect habitat and promote historical levels of use by western big-eared bats that hibernate in the cave. This restriction of public entry during this seasonal closure would also protect other bat species such as the small-footed myotis, California myotis, and long-legged myotis.

The gate would be designed to permit passage by the bats and to prevent human access. The gate would be closed seasonally between October 15 and May 1 during the bat hibernation period. It would be open to access by the public between May 2 and October 14. The cave proposed for gating is currently closed to all public entry during the hibernation period. (October 15 to May 1). An interpretive sign placed near the cave entrance would explain why the cave has been closed for part of each year and when it would be open. It would help educate the public about their sensitivity to disturbance. Without the sign, the public would have no understanding of the cave closure. Both the gate and sign would be designed to deter vandalism.

The gate installed would be an American Cave Conservation Bat Gate, which has been used successfully in hundreds of locations to protect bat colonies. The design of this gate allows laminar airflow between bars, and virtually no turbulence. These are important factors for maintaining optimal temperature and humidity. Vertical supports can be placed up to ten-feet apart, providing wide horizontal openings for bat passage. The gate must be constructed to allow access to the cave for monitoring. The bat gate design includes an access door, and lock mechanism. The door opening is usually kept small but scaled to allow a stretcher to pass through, in the event of an accident or rescue.

The location selected for placement of the gate would determine both its effectiveness and acceptance by bats. The gate would be placed near the edge of the dark zone, to reduce the chances of predation and placed in an area that doesn't restrict airflow.

Gate construction would be timed when hibernating bats are absent (May through September). Construction creates noise, fumes, and increased traffic, all of which can create disturbance. Welding creates clouds of fume that may be noxious. Selection of welding rod with low toxicity, and which can be used in damp conditions would be a priority.

After installation, the cave would be monitored for effectiveness of the gate in reducing disturbance of western big-eared bats and other bat species, and to monitor the effects of the gate on use of the caves by bats. After the gate is installed, bat acceptance of the gate would be established. Surveys would occur annually for the first three years and then bi-annually after that.

It is expected with the absence of any human disturbance during the hibernation period that populations of western big-eared bats and other bat species in this cave would increase.

Alternative C

Bat prey species are strongly associated with several shrub species near cave entrances. By encouraging foot traffic into designated areas, impacts to shrub species by trampling would be reduced.

Bouldering would continue at Skeleton and Hidden Forest Caves, but the current ban on the use of hand-drying agents would also continue, possibly reducing the amount of people participating in this activity. The chemical make-up of the hand-drying agents is unknown, and if used could possibly accumulate externally or be ingested by bats that roost near the entrances of caves. Not allowing them would remove any potential health risk to the bats.

Sport climbing (with bolts) would still be allowed at Hidden Forest cave only. This cave is not a high use roosting cave, but bats are known to use it for night roosting, so the activity of sport climbing during the day would have no impact to bat species.

The parking areas at Skeleton and Wind Caves would change from their current locations to areas where recreationists would have to walk 1/8 to 1/2 a mile to reach the caves. This would follow direction provided by Nieland (2000) stating that roads should not be constructed over cave systems, within 300 feet of cave passages or within a 1/4 mile visual proximity of a cave. Moving the parking areas would reduce erosion around the caves, rehabilitate compacted soils and reduce the alteration of water percolation (and fluid leakage from vehicles) above and into the caves. Moving the parking areas further away from the caves may also potentially reduce the number of recreationists (those who do not wish to walk to the caves) within the project area.

The parking area at Boyd Cave would remain at its current location, but barriers to eliminate motor vehicles driving near the cave entrance and over vegetation would be improved. Although it doesn't follow along with Nieland's recommendations (as in alternative B), barriers placed at the parking area would place it 50-75 feet away from the cave entrance. Having the parking area at this distance may still reduce erosion around the caves, rehabilitate compacted soils and reduce the alteration of water percolation above and into the caves, but not as effectively as completely moving the parking area.

The current year around closure at Charcoal Cave would remain in place and provide continued protection for day and night roosting bats and the big brown bat maternity colony that occurs here.

The current seasonal closure during the hibernation period, which occurs from November 1 through April 15, would be changed to October 15 through May 1 to provide multi-agency consistency with the BLM. This would lengthen the seasonal closure by one month, which would benefit hibernating bat species that may begin hibernating in these caves earlier in the season and those that may stay later in the season. Education kiosks would be provided to inform the public about these closures. This may help reduce the number of recreationists ignoring the closures.

With this alternative, an administrative seasonal closure would be placed at Skeleton Cave during the hibernation period from October 15 through May 1. This cave currently has very few hibernating bats (an 11 year average for western big-eared bats is 4 bats). Historically, this cave was known to have numbers in the 20's. Having an administrative closure on this cave, which is a high use cave, especially during the winter months, may be tough to get compliance. Ignorance of the closure by some recreationists would be expected, but as a whole, disturbance to hibernating bats would decrease. It is

expected, than even with just an administrative seasonal closure during the hibernation period, population numbers of western big-eared bats and other bat species may increase.

As a last resort, to protect bats and their habitat, three caves (Bat, Wind and Charlie-the-Cave) that provides habitat conditions for hibernating western big-eared bats and other bat species are proposed for gating (to strengthen the closure) (**a seasonal restriction mitigation measure would apply**). The three caves proposed for gating provide approximately 17% of the wintering population in Deschutes County. These caves include Bat Cave, which provides the fourth highest wintering population of western big-eared bats within the project area (an 11 year average of four), Lower Charlie Cave, which provides the second highest wintering population of western big-eared bats within the project area (an 11 year average of 10), and Wind Cave, which contains the highest wintering population of western big-eared bats within the project area and on the Deschutes National Forest (an 11 year average of 62) (see the attached graphs). The proposal to restrict public access to Wind, Charlie, Bat, and Skeleton (seasonal restriction) Caves under this alternative has a high potential to benefit local and regional bat populations. A reduction in the level of human disturbance within these caves would likely result in increased use of hibernacula habitat.

All other information regarding the placement of bat gates is given in alternative B.

3. Scenic Quality

Alternative A - No Action

Under this alternative, the effect on the scenic resource would remain unchanged from the existing scenic condition. No improvements to the existing landscape character would be made. The degradation of cave resources and the environment would continue. The desired scenic condition of "natural appearing landscape" would not be met.

Alternatives B and C

Under alternatives B and C, the effect on scenic resource would be improved over the existing scenic condition. Site improvements would be made to the existing landscape character. The degradation of cave resources and the environment would be reduced, if not eliminated by the proposed actions. The site would be moving closer toward the desired scenic condition of "natural appearing landscape." The proposed new facilities and structures, such as parking, information kiosks, and interpretive signs, would be designed to meet or exceed the desired scenic condition and ADA. This would improve and facilitate foot and vehicular traffic to these caves and thus improve scenic quality and reduce environmental impacts.

4. Proposed, Endangered Threatened, and Sensitive (PETS) Plants

Alternative A (No Action)

Under this alternative, there would be no direct effects on PETS plants.

Alternatives B and C:

There would be no indirect, direct or cumulative effects on TES plants. No Lichens or Bryophytes are

listed as Threatened, Endangered, or Sensitive Plant Species on the Deschutes National Forest.

All the lichen and bryophyte species found at the caves, either at the entrances, or in the areas above the caves, are common species on the Bend/Fort Rock Ranger District. It should be noted, however, that these small plants add greatly to the diversity of the plant species at the caves and the scenic value of the rocks and rocky outcrops. Retaining the prohibition against campfires within and at the entrances to the caves would be beneficial for most lichens. Some activities, such as installing a gate at Wind Cave, may result in the loss of some lichens and bryophytes. Foot traffic and climbing would cause additional loss of lichens and bryophytes, if new routes were established. These losses are unlikely to affect the total populations of the lichen and bryophyte species on the district, but they may detract from the scenic value of the caves.

5. Noxious Weeds

There is a high risk of spreading cheatgrass due to the extent of existing populations near the caves. Any soil disturbance from project work would likely allow cheatgrass to spread and proliferate. All activities involve a risk of spreading noxious weeds into the areas where there is bare soil. Visitors may accidentally carry noxious weed seeds into the areas on their shoes and clothing and any activities that involve any ground disturbance, such as relocating the parking areas, may allow non-native plants (cheat grass) to spread and noxious weeds to invade.

6. Cultural Resources

Alternative A - No Action

Within the Arnold Cave complex, which includes Arnold, Charcoal and Hidden Forest Caves, there would be no new authorized ground disturbance. Existing footpaths system would be used.

Alternatives B and C

An appropriate inventory has been conducted for this undertaking and property(s), which may be eligible for inclusion in the National Register of Historic Places (NRHP), have been located. Avoidance measures would be implemented per Stipulation III. B.2 (a-d). The hand-drying agent restriction and no climbing on the warm-up wall at Hidden Forest Cave would alleviate any cultural impacts caused by climbing. Therefore the undertaking meets the criteria given in Stipulation III.B.W of the Programmatic Agreement (PA).

The parking lot located adjacent to Arnold Cave would not be expanded or graded, but improved by bringing in fill to reduce the slope towards the cave.

There are no cultural concerns with the proposed bat gates at Wind, Charlie-the-Cave and Bat caves.

II. OTHER EFFECTS

All alternatives are in compliance with relevant Federal, State and local laws, regulations, and requirements designed for the protection of the environment. None of the alternatives establishes a precedent for future actions, or a decision in principle about a future consideration.

1. Consumers, Civil Rights, Minority Groups, and Women

Effects on consumers, minorities and women are within the scope of effects described in the Final Environmental Impact Statement for the Deschutes Land and Resource Management Plan (LRMP 8/90).

2. Unique Landforms/Geologic Hazards

Under alternatives B and C there would be some modification to Wind, Charlie-the-Cave and Bat caves due to gate installations. There would be no effect to unique characteristics of the geological or ecological resources of the caves.

3. Effects on Noise

There would be some noise associated with this project during parking lot relocation and gate construction in alternatives B and C, but it would be short term, less than three months.

4. Effects on Water Quality

None as there are no water sources, streams or lakes within the project area. There would be no effect to water quality or resources of the caves.

5. Public Health and Safety

No adverse effects to public health or safety have been identified. There is some concern that chalk and hand-drying agents are essential for climbing activities to occur at Skeleton and Hidden Forest caves. Without the use of these aids, climbers who boulder at Skeleton Cave, as well as sport climbers at Hidden Forest Cave would not be able to participate in this activity. Or, would be limited to those days where temperatures and humidity levels would allow the sport to occur without chalk/hand-drying agents. Although climbing is sport inherent with risk of injury with or without climbing aids, some climbers may be at greater risk of injury if they choose to participate in climbing activities without the use of these aids.

6. Irretrievable/Irreversible Resources

There would be some irretrievable commitments of resources due to the proposed parking lot relocations included in the action alternatives.

7. Roadless

There are no inventoried roadless areas within or adjacent to the project area. There would be no change to the unroaded or undeveloped character as defined by the current proposed rule for roadless areas.

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CHAPTER IV - CONSULTATION

CONSULTATION WITH OTHERS

Public scoping for this project began with the mailing of the proposed action to the public on April 4, 2000. This letter identified specific areas being considered for caves management, project issues, and timelines for providing input (Appendix G). This project was also included in the spring, summer, and Fall 2000 Schedule of Projects. The responses were incorporated by the IDT into the Issues in Chapter II. The effects of the issues are discussed in detail in Chapter III, Environmental Consequences. The list of organizations and people, who were notified by letter regarding this proposal, as well as persons and organizations responding to the proposed action, and a copy of their comments, can be found in Appendix G.

List of Interdisciplinary Team

Wayne Gammon	Writer/Editor
Leslie Moscoso	IDT Leader/Recreation
Lew Becker	Wildlife Biologist
Shelley Borchert	Wildlife Biologist
Paul Claeysens	Archeologist
Chris Lipscomb	Archeologist
Patricia Joslin	Ecologist
Richard Carlson	Cave Specialist
Ronnie Yimsut	Landscape Architect
Lawrence Chitwood	Geologist

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APPENDIX A

Current Cave Restrictions

General

ALL CAVES

Current Restrictions:

- Willfully defacing, removing, or destroying plants or their parts, soil, rocks or minerals, or other cave resources {36 CFR 261.9 (a)(j)}.
- Building, maintaining, attending or using a fire, campfire or stove fire is prohibited {36 CFR 261.52(a)}.
- Smoking in caves {36 CFR 261.52(c)}.
- Camping in caves {36 CFR 261.58 (e)}.
- Discharging a firearm, air rifle, or gas gun {36 CFR 261.58 (d)}.
- Digging, excavating, or displacement of natural and/or cultural features {36 CFR 261.58 (a)(b)(c)(d)(g)(h)(i)}.
- At caves designated by official signs, between sunset and sunrise each day, possessing a beverage which is defined as an alcoholic beverage by state law {36 CFR 261.52(bb)}.
- Possessing a domestic animal (dogs) in caves {36 CFR 261.58 (s)}.
- Depositing human waste in caves {36 CFR 261.58 (ee)}.
- The caves open for "sport climbing" are only Skeleton, Hidden Forest, and Stout (currently closed; see Stout Cave specific restrictions).
- A moratorium has been enacted on installation or removal of permanent anchors (bolted hangers) in all caves {36 CFR 261.9 (a)(j)}.
- A ban on use of hand drying agents is in effect {36 CFR 261.9 (a)(j)}.

Boyd Cave

Current Restrictions: No additional restrictions

Skeleton Cave

Current Restrictions: No additional restrictions

Hidden Forest Cave

Current Restrictions: Climbing closure on warm-up wall south of cave in breakdown (to protect sensitive forest resources, i.e. pictographs; approximately 100 ft.).

Charcoal #1

Current Restrictions: Emergency closure order is in place until further data recovery is completed (#97-001).

Arnold Ice Cave

Current Restrictions: No additional restrictions

Charlie-the-Cave

Current Restrictions: Lower passage is closed for bat hibernaculum (Nov. 1 - April 15 {#95-02}). Upper Chamber is closed for bat nursery colony (April 15 - September 30).

Deg Cave

Current Restrictions: Closed for bat hibernaculum (Nov. 1 - April 15). Closed for bat nursery colony (April 15 - September 30).

Bat Cave

Current Restrictions: Closed for bat hibernaculum (Nov. 1 - April 15).

Wind Cave

Current Restrictions: Closed for bat hibernaculum (Nov. 1 - April 15).

Stout Cave

Current Restrictions: Emergency closure order is in place until May 1, 2001 to determine effects of human use on bat populations and habitat.

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APPENDIX B

FEDERAL AUTHORITIES

Organic Administration Act of June 4, 1897

This Act authorizes the Secretary of Agriculture to regulate occupancy and use of the National Forests. Regulations issued under the Act authorize protection of cave resources from theft and destruction (36 CFR 261.9a, 9b, 9g, and 9h). Under 36 CFR 294.1, classification is authorized for special interest areas that are managed for recreation use substantially in their natural condition. Special closures are authorized under 36 CFR 261.53 to protect threatened cave resources. (16 U.S.C. 551)

Preservation of American Antiquities Act of June 8, 1906

This Act provides for the protection of historic or prehistoric remains or any object of antiquity on Federal land. Criminal sanctions are authorized for destruction or appropriation of antiquities. Scientific investigations of antiquities on Federal lands are permissible subject to permit and regulations. Uniform rules and regulations pursuant to this Act are in FSM 1530.12. (34 Stat. 225; 16 U.S.C. 431 et seq.)

National Historic Preservation Act of October 15, 1966

This Act authorizes the Secretary of Agriculture to use measures to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony. The Department of Agriculture shall assume responsibility for the preservation of historic properties that are located on lands administered by such agency. If such properties are listed or may be eligible for the National Register that these properties are managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values. (80 Stat. 915, as amended; 16 U.S.C. 470h)

National Environmental Policy Act of 1969

The purpose of the Act is to create and maintain conditions under which man and nature can exist in productive harmony. The responsibilities include the preservation of caves that are part of our national heritage. (42 U.S.C. 4331)

Endangered Species Act of December 28, 1973

The Act describes the process for determining endangered and threatened species, establishes prohibited acts, prescribes penalties, mandates a recovery plan, and defines interagency and State cooperative

relationship requirements. (87 Stat. 884, as amended; 16 U.S.C. 1531)

Federal Land Policy and Management Act of 1976

This Act declares that the policy of the United States is that lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values. Where appropriate these lands will be preserved and protected in their natural condition. (43 U.S.C. 1701)

Archaeological Resources Protection Act of October 31, 1979

This Act clarifies and defines "archaeological resources," prohibits the removal, sale, receipt, and interstate transport of archaeological resources obtained illegally from public lands. The Act authorizes confidentiality of site location information, authorizes permit procedures to enable study and investigation of archaeological resources on public lands by qualified individuals; provides for substantial criminal and civil penalties, forfeiture of equipment used in the crime, and rewards for citizens who report the crime. The Act supplements but does not replace the Antiquities Act of 1906. (16 U.S.C. 470aa)

Federal Cave Resources Protection Act of November 18, 1988

The purpose of the Act is to secure, protect, and preserve significant caves on federal lands for the perpetual use, enjoyment, and benefit of all people, and to foster increased cooperation and exchange of information between government authorities and those who utilize caves located on federal lands for scientific, educational, or recreational purposes. It is the policy that federal lands be managed in a manner that protects and maintains, to the extent practical, significant caves. (102 Stat. 4546; 16 U.S.C. 4301-4309)

The Code of Federal Regulations

A codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. These regulations as set forth by the Secretary of Agriculture govern the protection and administration of National Forest System lands. (36 CFR)

FSM 2356

Caves are dynamic natural systems affected by surface and subterranean environmental changes. The policy of this manual is to manage caves as nonrenewable resources while maintaining their geological, scenic, educational, cultural, biological, hydrological, paleontological, and recreational values.

Deschutes National Forest Land and Resource Management Plan

Developed to guide all natural resource management activities and establish standards and guidelines. The purpose is to provide for the use and protection of Forest resources, fulfill legislative requirements, and address local, regional, and national issues and concerns.

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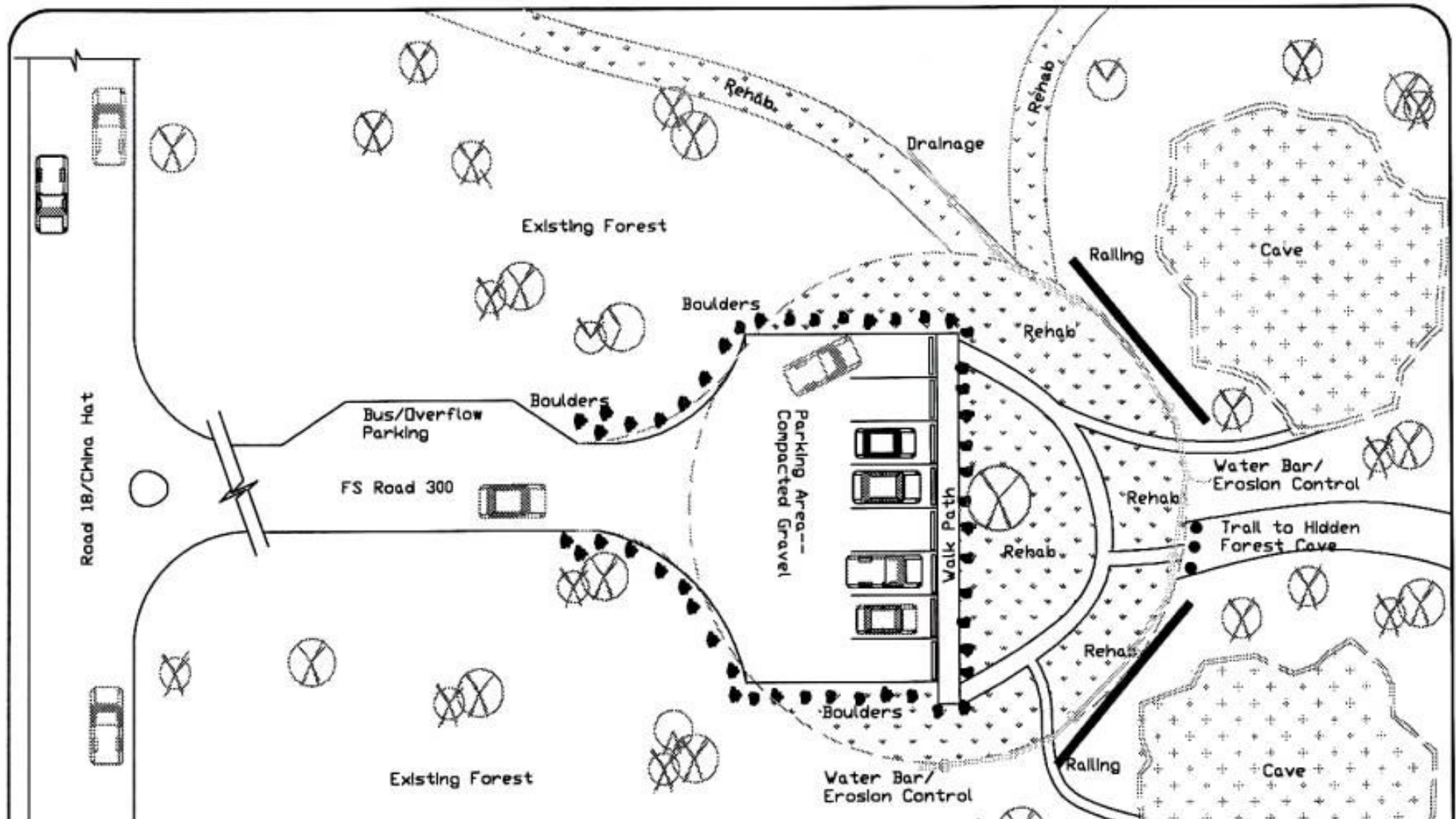
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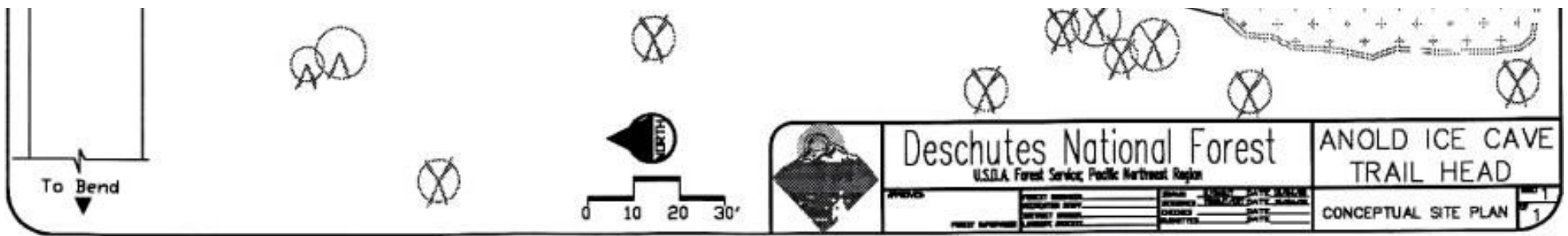
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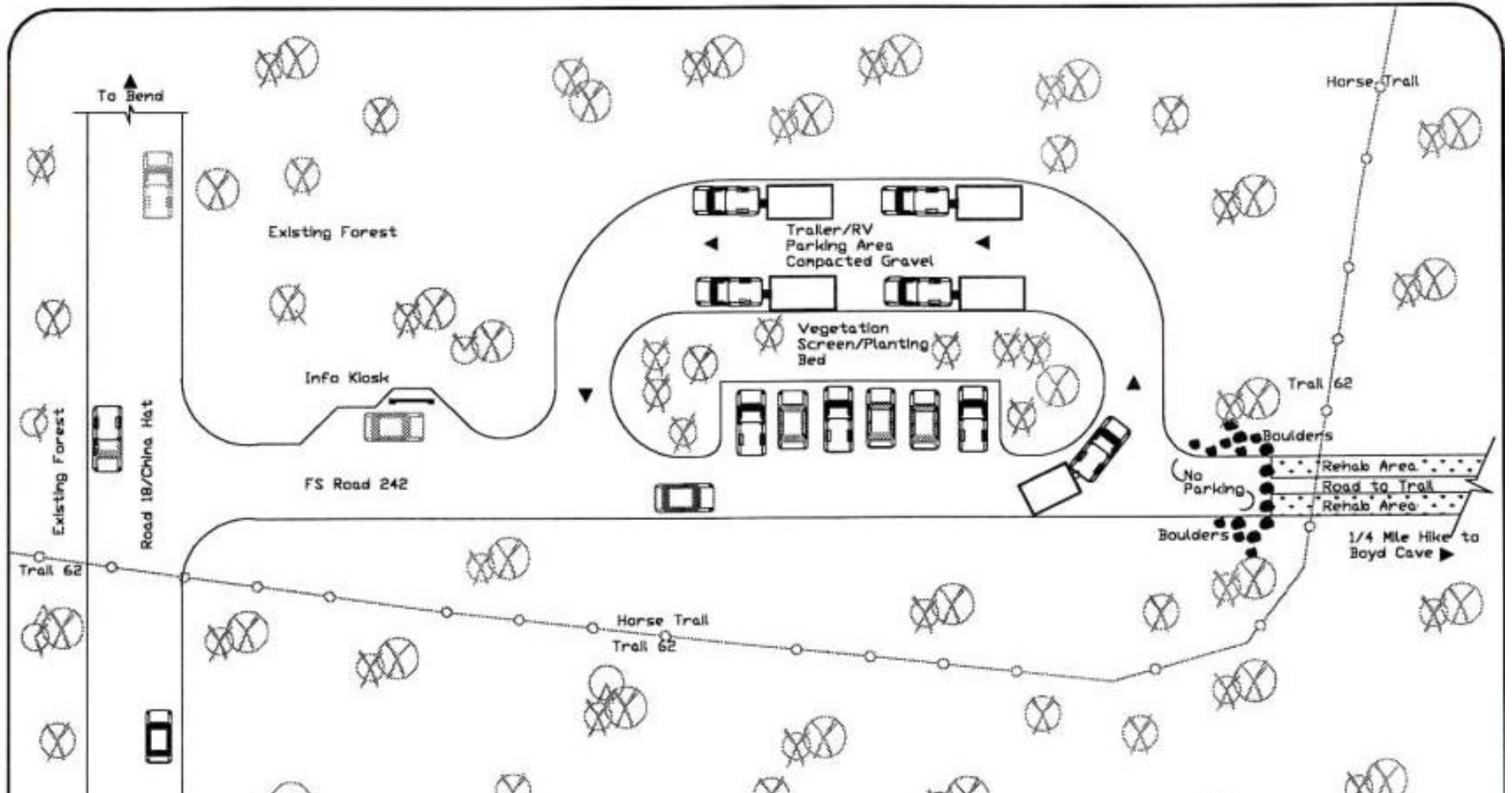
APPENDIX C

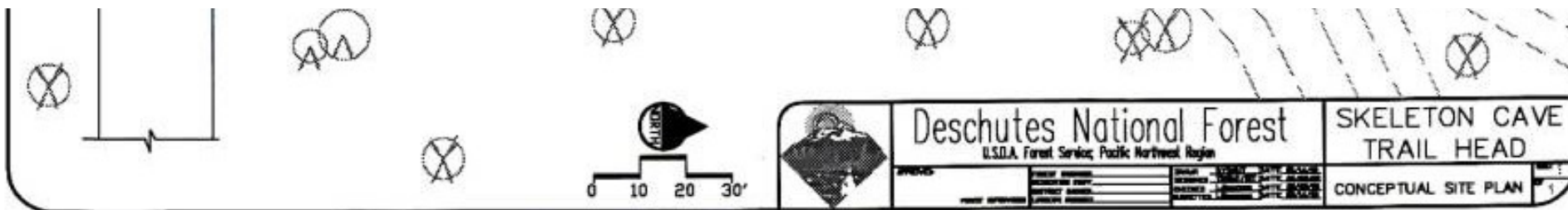
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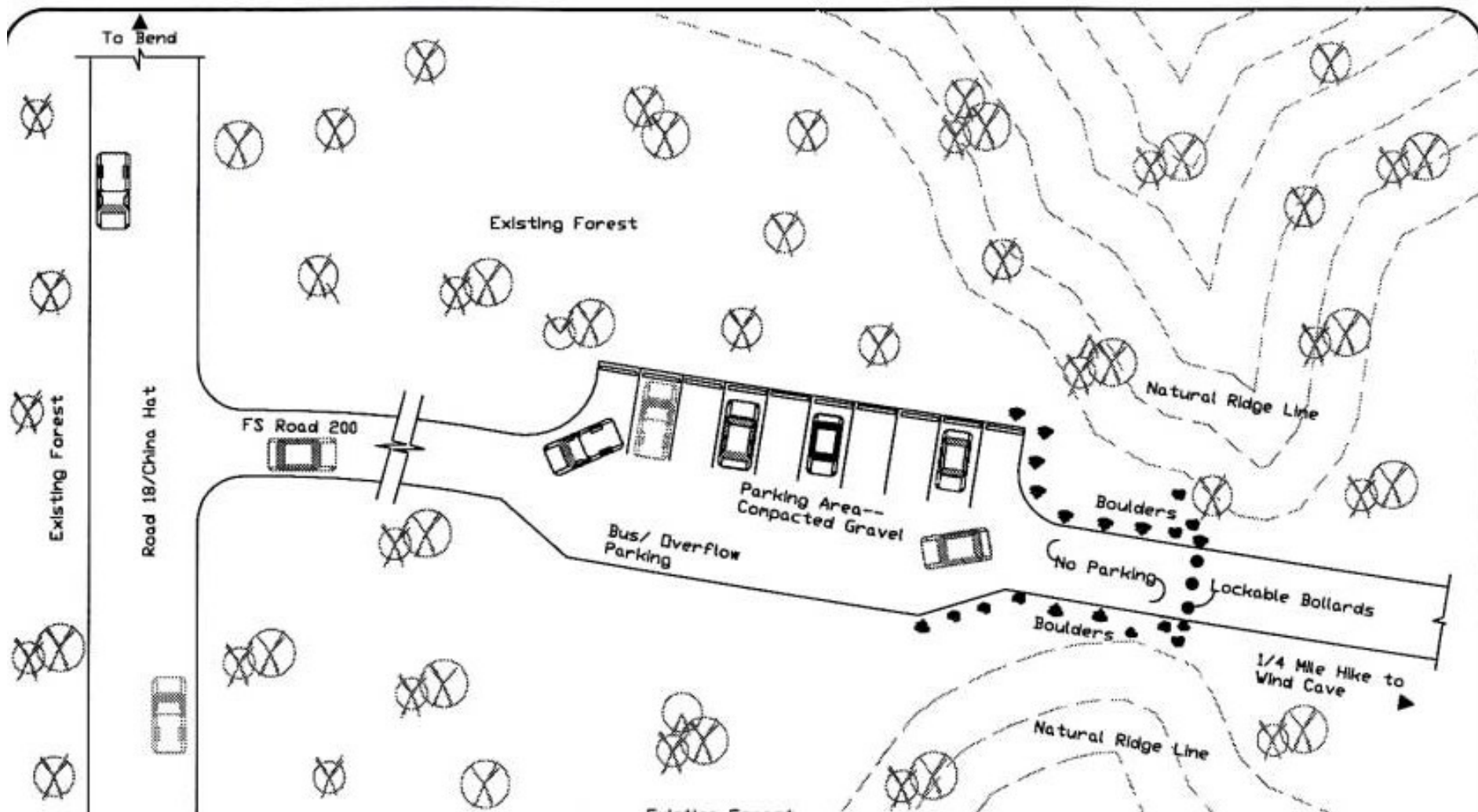


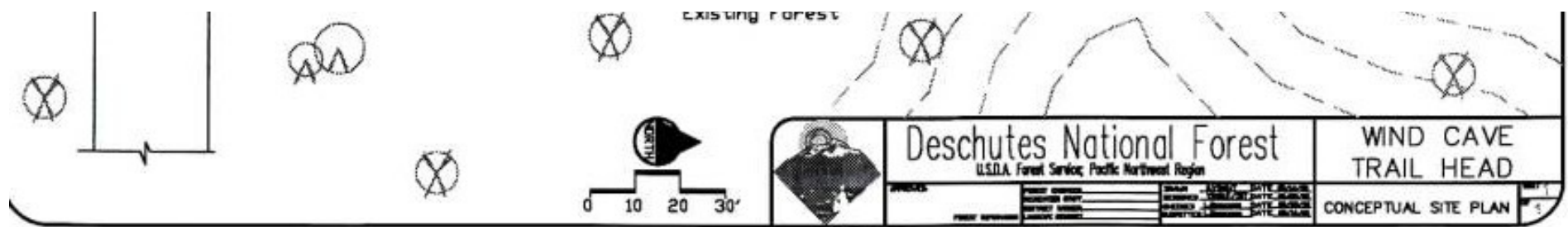
Arnold Ice Cave Trail Head





Skeleton Cave Trail Head





Wind Cave Trail Head

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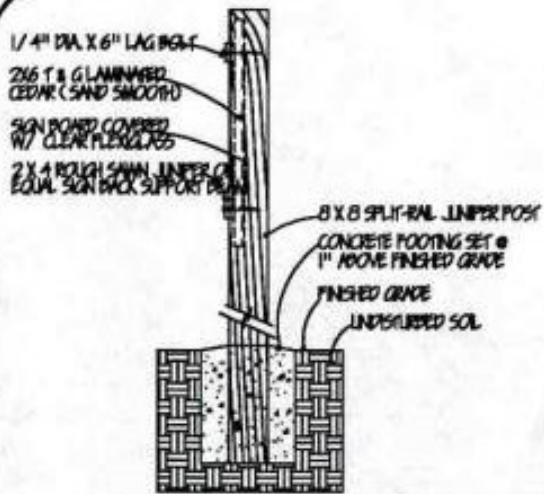
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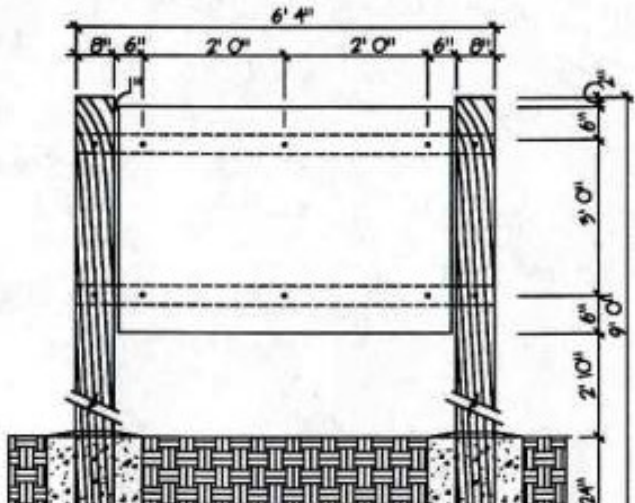
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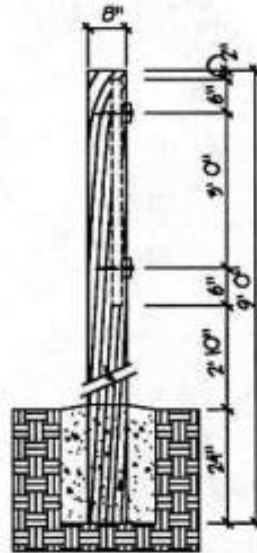
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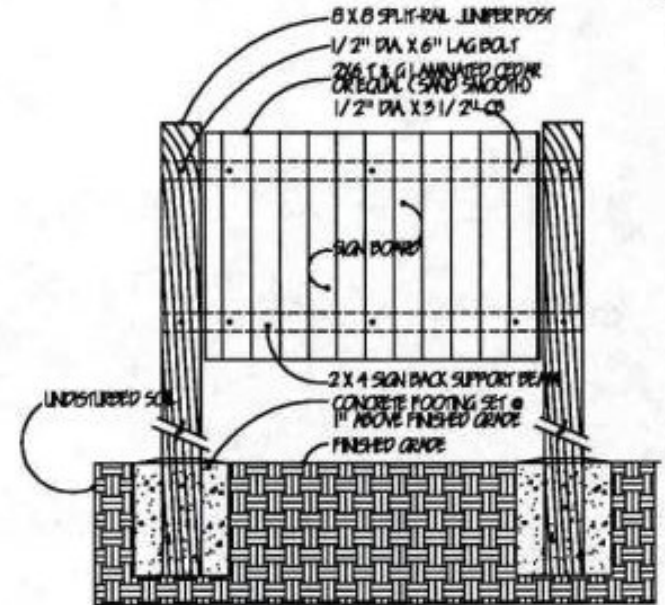
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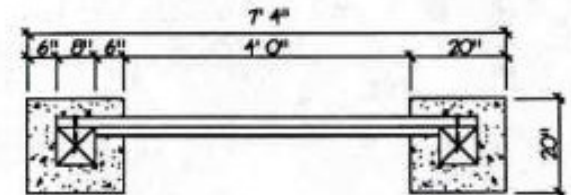
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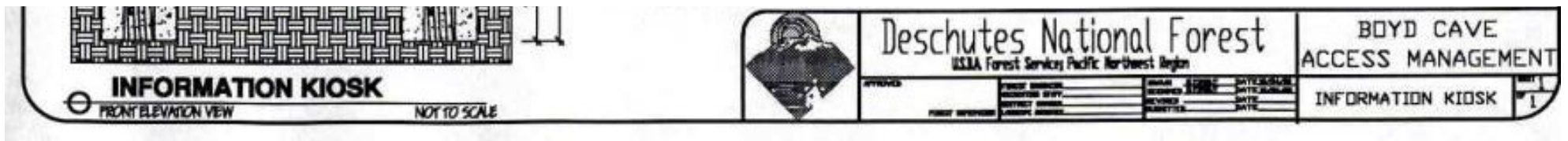
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 FRONT ELEVATION VIEW NOT TO SCALE



INFORMATION KIOSK
 PLAN VIEW NOT TO SCALE



Information Kiosk Plans

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United States
Department of
Agriculture

Forest
Service

Deschutes
National
Forest

Bend-Ft. Rock Ranger District
1230 NE 3rd, Suite A-262
Bend , OR 97701

Date: 8/23/01

File Code: 1950/36 CFR 215.6 (d,e)

Subject: Road 18 Caves Project Environmental Assessment (EA) Response To Comments

The following table displays the categories of public comments received on the Road 18 Cave EA, and the Forest Service response to those comments.

For additional information, contact Leslie Moscoso, Bend-Fort Rock Ranger District, 1230 NE Third, Ste. A-262, Bend Oregon, 97701, (phone 541-383-4712, email lmoscoso@fs.fed.us, or fax 541-383-4700).

Table 1: Summary of Written Comments to the Road 18 Cave Environmental Assessment.

CATEGORY	PUBLIC COMMENT	FOREST SERVICE RESPONSE
In Support of Alt. B	1. Alt. C does not "preserve and protect cave resources" as per the EA objective or cave management directives and actions. (Public Comment # 2, 8, 22, 23, 26, 27, 32, 36, 43)	A modified Alternative B was selected.
	2. The EA does not state how Alt. C is superior to other alternatives in furthering policies of the Forest Service Manual and in enforcing the FCRPA. (Public Comment #43)	See previous response.
In Support of Alt C	3. Fits the publics' desire to visit the caves while protecting the resources at a reasonable cost. (Public Comment #7)	The Confederated Tribe of the Warm Springs Reservation holds Hidden Forest Cave in high regard as a spiritual site. A modified Alternative B was selected to comply with Executive Order 13007 for Indian Sacred Sites and the National Historic Preservation Act of 1966.
Rock Art	4. Damage has occurred to rock art and is illegal as per FCRPA. Climbers are unable to police themselves. Damage will continue to occur on pictographs. (Public Comment #1, 4, 5, 13, 15, 32, 44)	Please reference Response to #1. No authorized climbing with devices would be allowed in any of the caves within the project area and restrictions on hand-drying agents would become permanent.
	5. Preservation of historic resources should take precedence. (Public Comment #13)	See Response to #1.

	6. Rock art is noted as having special meaning to Native Americans, but there are no comments from them. They should be included in any decision that affects the caves. (Public Comment #4, 27)	The tribes of central and southern Oregon were kept apprised of this project, and are on the project mailing list. They received the project scoping letter, and all subsequent mailings (including the EA). The District Ranger and project team visited each tribe to present the project, as well as listen to their concerns. See Response to #1.
	7. Alt. C fails to meet regulations (36 CFR 261 or 290) by permitting defacement of rock art. (Public Comment #10)	See Response to #1.
	8. Allowing bolted routes will only have more impacts to rock art, either by intentional non-compliance or unintentional cumulative impact. Allowing climbing to continue will only invite more destruction and degradation of cave resources. (Public Comment #4, 16, 27, 32, 43)	See Response to #1.
	9. Allowing individuals to climb on or near rock art is offensive to the Warm Springs Tribe. Is in violation of 36CFR800, National Historic Preservation Act of 1966. (Public Comment #12, 27, 36)	See Response to #1.
	10. Rock art does not occur on cave ceilings where climbing occurs. (Public Comment #18)	This statement is true, however unauthorized climbing occurs on the rock art panels.
	11. Analysis is in error w/regard to mitigation to cultural resource impacts. Simply posting a sign will not eliminate this use, as evidenced by use study and photos. (Public Comment #27)	As stated previously, damage has occurred in the past, even w/no climbing or chalk use signs posted. Violators, when caught, will be cited for these offenses.
Cave Resources Protection Act	12. Installation of bolts has caused damage and is a violation of the FCRPA. Climbing on rock art is also a violation of FCRPA (Public Comment #4, 11, 24, 25, 27, 32, 33, 40, 41)	See Response to #1. Where there was initial damage from the installation of bolts, the damage was determined to be negligible to cave resources, but will be removed.
	13. FCRPA is misinterpreted. Need to be used in conjunction w/36 CFR 290 and 261. Together they provide the basis for managing significant caves in accordance w/the act. (Public Comment #10)	See Response to #1. Laws and CFRs were taken into account. Measures proposed allow for use of the caves that protect cave resources.
	14. Alt. B is the only alternative that supports the law (FCRPA). Climbing devices that leave a presence are not appropriate in a Significant cave. (Public Comment #20, 34, 35)	See Response to #1. A modified Alternative B was selected.

	<p>15. Incorrect interpretation on p. 19 A. 2 that FCRPA requires that recreation opportunities need to be provided to the extent practical. "Practical" provides flexibility to the land manager, not license to pick and choose which regulations to follow, or permit obvious damage to continue unabated. Does not assure recreation access to caves, but permits if doesn't destroy cave resources. (Public Comment #10)</p>	<p>Though various impacts occur at all of the caves in this EA, it does not warrant the complete closure of them to the public. In context of the statement in reference, of restricting cave use to all users, there is no discrimination on access. Measures proposed for Alternatives B & C were developed to deter or prevent impacts from occurring at the caves (relocating parking areas, ban on hand-drying agents, etc.). Other measures were developed to reduce or eliminate impacts to cave resources.</p>
	<p>16. A description of the cultural resources is not provided. (Public Comment #43)</p>	<p>A cultural resources inventory was completed in 2000. A thorough description of the resources is not provided to retain privacy of their locations.</p>
	<p>17. "Landscaping" of areas beneath climbs for safety seems in direct conflict w/FCRPA. (Public Comment #32)</p>	<p>Movement and location of rocks to access caves, or reduce safety concerns for bouldering use, provides for consistent management of the resource. The Forest Service would authorize the management of the area in question.</p>
Climbing Activities, Chalking and Bolting	<p>18. Authorizing bolted routes would have wild implications. Could be used to justify bolting routes in other caves/increase use/become an attraction/info published in books and magazines. (Public Comment # 2, 4, 27, 32)</p>	<p>Management decisions are made on a case-by-case basis. The situation that leads to a decision on the Deschutes National Forest does not justify a similar or same decision on a forest in another part of the state or country. See the Response to #1.</p>
	<p>19. Why should these caves be any different than other caves in the country that don't allow climbing? (Public Comment # 2)</p>	<p>Other caves around the country do not have this type of activity occurring in them. As such, it was determined that an Environmental Assessment would be developed to address this and other uses/concerns.</p>
	<p>20. The size of Hidden Forest Cave is limited. Bolted routes and subsequent advertising through books, magazines, etc. will increase use beyond its capacity. (Public Comment #4)</p>	<p>See Response to #1. Climbing with devices in all caves within the project area will not be authorized.</p>
	<p>21. Intensive bolting/climbing is privatizing the use of the resource and is turning the public resource into the private domain of a small number of particularly vocal & politically influential recreationists. (Public Comment #8)</p>	<p>See Response to #1</p>

22. Doesn't think climbers will respect hand-drying agent restriction since it's needed for the type of climbing and bouldering that would be allowed. (Public Comment # 2, 34, 43)	See Response to #1. Violations are always a possibility and violators will be cited if caught using hand-drying agents.
23. Authorization of bolted routes is not supported by the issues identified in the EA or the long-term goals to "prevent damage to cave resources", or "Where provided, recreation management and facilities should reduce or eliminate impacts caused by visitation and the use of chalk and bolts in caves." (Comment #4)	See Response #1. Hand-drying agents are restricted and cannot be used.
24. How can the (climbing) damage be ignored at Hidden Forest Cave? (Public Comment #1, 5)	The level of damage from various recreational activities in all the caves was analyzed. See Response to #1.
25. Rock climbing should be allowed at Hidden Forest, Skeleton and Charcoal #1 caves. Hand-drying agents should also be allowed. (Public comment #17)	See Response to #1.
26. The seizure of hand-drying agents by FS LE is discriminatory. Nowhere does the EA talk about searching for charcoal lighter fluid, matches, etc. (Public Comment #18)	Forest Service Law Enforcement is not seizing or searching for hand-drying agents. Chalk is readily visible, such as in a chalk bag or on the hands of a climber. The possession of it would result in the issuance of a citation. Possessors of other materials (listed) are also cited when found.
27. Removing the bolted routes would have no adverse affect on sport climbing opportunities in central Oregon. New crags are being developed along Tumalo Creek and the Deschutes River. EA states that less then two-dozen people in the local area are able to make use of the routes. (Public Comment #27, 43)	There would be some affect on sport climbing opportunities if bolted routes were removed in that there are no other locations where one can find the same type of experience that caves provide to this sport. As pointed out, the amount of people affected by the removal of bolts is small.
28. Chalk looks very similar to natural calcite deposits. How can you argue that it is unsightly? Visually, colored chalk would eliminate any impact (Public Comment #42)	The build up of chalk overtime can be unsightly and appear unnatural in the cave environment. Visually colored chalk would reduce this, but the effect of the chemical makeup of this substance on cave biota is unclear.
29. The words "in possession of " (chalk) should not be added, as this would infringe on the basic rights of individuals. Prohibiting the use of hand-drying agents is sufficient. Is inconsistent w/the goal of maintaining cooperative relations w/the public and may be unconstitutional. (Public Comment #42, 45, 47)	Records show that the existing prohibition of chalk has not eliminated its use by some climbers. The phrase "in possession of" is used in various Forest Orders to reduce or eliminate impacts of various kinds (ex. it is illegal to possess a wheeled vehicle in the Wilderness).

	30. The moving of rocks under bouldering walls for safety is necessary. (Public Comment #42)	See Response to #1. This measure is allowed in the decision with approval and coordination between the Forest Service and local climbers.
	31. No evidence in the EA that chalk damages cave resources, nor whether potential effects would result in deterioration of cave resource values. Little to no evaluation on the fundamental necessity of the use of chalk for climbing, or the effects on climbing if chalk were prohibited. It's therefore premature to ban its use. (Public Comment #45)	As discussed on p. 13 of the EA, chalk does damage the quality of pictographs for dating purposes. On pgs. 4, 18 & 27 of the EA address the effects of the hand-drying agent restriction. As stated in the EA, the effects to cave biota from the chemical agents in hand-drying agents are unknown. Therefore, to eliminate any potential adverse effects hand-drying agents are restricted.
	32. Without chalk, climbing is eliminated. (Public Comment #38, 45)	See previous response.
	33. Recommend chalk be restricted to certain areas within the two caves where climbing would be continued, and its use be made contingent on a formal agreement w/local climbers organizations. (Public Comment #45)	See Response #31.
	34. For safety reasons, bolts in Hidden Forest Cave will need to be replaced occasionally. Need verbiage to clarify this point. (Public Comment #42, 45)	See Response #1. No authorized climbing with devices would be allowed in any of the caves within the project area and bolts would be removed.
Bats & Wildlife Habitat	35. Alt. B fails to protect dwindling bat populations. (Public Comment #19)	Alternative B was modified to address this concern by authorizing the installation of 2 additional bat gates.
	36. Alt. C offers the best chance to protect the remaining populations of Western big-eared bats. (Public Comment #3)	See previous comment.
	37. Increased visitation could impact the microclimate and the community that depends on it. (Public Comment #22)	This is a concern. Use has increased dramatically over the years and will likely do so as the population in central Oregon continues to rise. However, measures proposed (i.e., installation of gates, seasonal closures) will help offset use impacts during key periods of time for bats.
	38. Alt. C is a good plan to protect bat species. Suggest a combination of Alts. B & C to allow for parking lot relocations, bolt removal and installation of all gates. (Public Comment #19)	See Response #1 and #35.

	39. No biological inventory was conducted. (Public Comment #43)	A Forest Service biologist prepared a biological evaluation for the project. The report is available upon request.
	40. The biologic determination of detrimental effects of hand-drying agents is subjective. Need a repeatable study to determine if there is desiccation of crustose lichens. (Public Comment #38)	See Response #31. The restriction on hand-drying agents is for the protection of wildlife, especially bats (pgs. 19 & 34). As discussed in the EA, not knowing or likely ever learning what the composition of these agents, the restriction would alleviate any potential adverse effects to biota.
Parking	41. New parking areas and info signs will provide structure and is a benefit. There is some concern that location could leave vehicles vulnerable to break-ins. (Public Comment #46)	The relocation of parking lots does provide an opportunity for break-ins to occur. However, this could occur at any of the existing locations as well.
	42. It will be difficult to prevent people from driving around the barriers. Will law enforcement be committed to the area? (Comment #46)	This is true even with the existing barriers. Law enforcement and other Forest Service personnel make passes through the area during their rounds. There is no call for additional enforcement or patrols at this time.
	43. Build the info kiosk near the jct. of Road 18 and the Boyd Cave road, not in the parking area. It may be vandalized if it is in the parking area. (Comment #46)	The info kiosk is proposed to be constructed near the junctions with Road 18 in both Alternative B & C.
	44. Will Forest Service employees continue to monitor the caves when they too are required to walk in to the caves? (Public Comment #46)	Yes. See Response to #42.
Misc.	45. Roads should be pulled back from the caves as per Alt. B, but should retain sport climbing and bouldering as per Alt. C. (Public Comment #18)	See Response to #1. A modified Alternative B was selected.
	46. Would like to see more emphasis on education and less on cave closures. (Public Comment #21)	Cave information and etiquette will be available at the info kiosk to inform the public about caves resources. The bat gates are to augment existing seasonal closures.
	47. The organized caving community does not consider setting bolt anchors in caves unethical. Sport caves do it all the time (references several items from NSS and the Willamette Valley Grotto that discuss how cavers use/place bolts). (Public Comment #21)	There appears to be a difference of opinion amongst some in the caving community. Alternative C allows the existing bolted routes to remain in Hidden Forest Cave, but a modified Alternative B was selected.

48. Recruit a cave host to camp at Skeleton Cave to assist in protecting the resources and informing the public. (Public Comment #46)	The Forest Service has cave steward volunteers who routinely visit the caves to perform maintenance duties and inform visitors about cave resources. A host specific for Skeleton Cave is a good suggestion that will be considered by the Forest Service.
49. There are unresolved legal ownership issues regarding "authorized" bolted routes. Who owns the bolts? Private or FS? Who accepts liability issues? (Public Comment #27)	See Response to #1. In Alternative C, the Forest Service would become the owners of the authorized bolts. There is inherent risk in sport climbing and bouldering activities. As per the Oregon Recreation Statute, there is no liability inherited by the Forest Service unless a fee was charged for the activity.
50. Organized caving communities consider the installation of bolts unethical. (Public Comment #27)	See the response to #47
51. It appears you've selected Alt. C as a compromise between the climbers and cavers. This will not work in the long run. (Public Comment #34)	See the Response to #1. A modified Alternative B was selected.
52. INCLIMB offered to facilitate a climbing permit and orientation for access to the caves for climbing. There is no mention of this in the EA. (Public Comment #42)	There is no mention of this in the EA because an EA is not necessary to approve such a partnership.
53. Visually, colored chalk would eliminate any impact (Public Comment #38)	Colored chalk would reduce the visual impact but would do nothing to reduce potential effects to cave biota. The chemical makeup of colored chalk or other drying agents could be detrimental to species that depend on caves for survival.
54. Urge the multi-use of caves. Climbers and cavers can co-exist. Most of the damage that's been done has been caused by partiers and those starting fires. (Public Comment #49)	See Response #1. A modified Alternative B was selected. Multi-use of the caves will continue, although climbing with devices will not be authorized. Bouldering will continue to be allowed in those areas not posted as closed. Some of the damage to the caves has resulted from "partiers" and those starting fires.

55. All signage should be removed from within 50 yards of cave openings. All signage should list all cave regulations/ethics, including climbing ethics. (Public Comment #42)	Sign locations were selected to be most effective for public use. Generally, this is near the cave openings. A strategy is to post cave regulations at the more popular caves, while not drawing attention to the more sensitive caves.
56. Horses are a huge impact to trails and should not be allowed on foot trails to caves or within 100 yards of entrances. (Public Comment #42)	Adverse impacts from horse use at this time do not warrant this suggestion. If appropriate, this measure can be implemented at a later date without the need of an EA.
57. In addition to glass ban the possession of paint in the caves. (Public Comment #46)	In response to public comment, this was included in the selected alternative.
58. EA does not address illegal collection of cultural resources or the depreciative behavior that occurs at "keggers". (Public Comment #46)	Page 3 of the EA describes some of the impacts pointed out in this comment. The Forest Service concurs that illegal collection of cultural resources is a problem and concern at these caves and other areas.
59. Some of the bolts in the sinkhole on the opposite side of Hidden Forest Cave were pulled after the "no-action in the caves" moratorium. If the Forest Service pulled these bolts, where is the study of the effects of epoxy glue for this action?	The Forest Service had no part in the removal or restoration efforts at this sinkhole.

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/responsetocomments.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/responsetocomments.html>

Last Update: 9/6/01

R.A. Jensen

**Decision Notice
And
Finding of No Significant Impact
For
Road 18 Caves Project Environmental Assessment
Deschutes National Forest
Bend-Fort Rock Ranger District
Deschutes County, Oregon**

Location

The Road 18 Caves Project area is located approximately eight miles southeast of Bend, Oregon, in the northeastern portion of the Bend/Ft. Rock Ranger District of the Deschutes National Forest. The project lies within portions of T19S, R13E; Sections 4, 8, 14, and 27 Willamette Meridian. The area is located east of the Northwest Forest Plan boundary line, and lies outside the range of the northern spotted owl. It is located in the Kelsey Butte/Arnold Subwatershed.

Decision

I have decided to authorize implementation of Alternative B with modifications for the [Road 18 Caves Project Environmental Assessment \(EA\)](#). Although Alternative C was the preferred alternative identified in the 30-day public review and comment period notice, published June 6, 2001 in The Bulletin, I have decided to implement a modified Alternative B because it best responds to concerns identified by the Confederated Tribes of the Warm Springs during the comment period as well as best meeting the purpose and need identified during the scoping process.

Specifically, the Tribe holds Hidden Forest Cave in high regard as a spiritual site. As such, as well as per the National Historic Preservation Act of 1966 {36 CFR 800.49(a)(4)} and Executive Order 13007 for Indian Sacred Sites, I have decided to eliminate climbing and bolted routes as described in Alternative B.

In response to public comment regarding a ban on the possession of paint within the caves, I have included this measure. No adverse effects to the public have been identified.

Alternative B will implement the following:

The existing bolted routes in all caves discussed in this EA would not be authorized and bolts would be removed. Climbing without devices, or "bouldering" would be allowed in areas not posted as closed. It

would also authorize a restriction on the use of hand-drying agents to eliminate any adverse impacts to scenic resources and the potential effect to dependent wildlife.

An information kiosk would be installed at the Boyd Cave parking area/trailhead near Road 18. The kiosk would direct visitors to the caves. It would provide useful cave information such as existing closures and "leave no trace" ethics. The kiosk would inform visitors of cave etiquette and restrictions and provide information to promote a better understanding and appreciation for caves and caves resources. Self-issued permits for Boyd, Skeleton, Wind and Arnold Ice caves would be available at the Kiosk. (See Appendix D)

Boyd Cave: The existing parking area will be improved with rock barriers to eliminate motor vehicles driving near the cave entrance and over vegetation. The parking lot would be better defined to accommodate large RVs and vehicles towing horse trailers. A trail would be improved to provide a defined footpath to the cave entrance. The area would remain open for equestrians using this site to ride shorter loop trails rather than those using the Horse Butte Trailhead. Also, an information kiosk would be installed near Road 18. The kiosk would direct visitors to the caves. It would provide useful cave information such as existing closures and "leave no trace" ethics.

Skeleton Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. The alteration of rocks on the floor of Skeleton Cave would be designed to provide for public/climber safety, but in a manner that would be more natural appearing (to be determined by the Forest Service, spelunkers, and the local climbing community). There would be a seasonal closure during the bat winter hibernation period (October 15 - May 1). This was analyzed under Alternative C.

Wind Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. Two bat gates would be installed (one at the main entrance to the cave and one at the skylight area) to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1). This was analyzed under Alternative C.

Hidden Forest Cave: Existing bolted routes in caves would not be authorized and bolts would be removed. It would also authorize a restriction on the use of hand-drying agents. New climbing routes would not be authorized in this or any other cave in the project area.

Bat Cave: Two bat gates would be installed (one at the main entrance to the cave and one at the skylight area) to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1). This was analyzed under Alternative C.

Charlie-the-Cave: A bat gate would be installed to protect and maintain bat habitat.

Charcoal Cave #1: A year around closure order would remain in place until further analysis is completed.

Deg Cave: closed year-round to protect and maintain bat habitat.

The following would also occur:

- For caves with parking facilities, institute a self-issuing permit program to collect information on the visitor's name, purpose, number in party, comments and use patterns. There would be cave information and proposed cave etiquette on the permits or information board.
- Should the need arise; allow additional Special Use tours under authorized permit. Permittees should display a public need with an approved operating plan. Limit existing and future group size to 6-8 people at one time and no more than three tours per cave per day. Appropriate caves for this activity include Boyd, Skeleton, and Wind. Permittees would be responsible to include cave sensitivity/conservation etiquette for each group. Other special uses, such as movie making, would be authorized on a case-by-case basis.
- Restrict access to foot traffic only to promote public safety and to protect cave resources. Do not allow mountain bikes, horses, or motorized vehicles in caves. Continue to evaluate new recreational attractions and make recommendations based on impacts to cave resources and visitor safety.
- Prohibit use of internal combustion engines (such as generators) in caves.
- Prohibit the use of glass containers within caves to reduce litter and provide a safer environment to visitors.
- Maintain current populations of unique plant species in and near cave entrances by encouraging foot traffic in designated areas only.
- Add the wording ". . .and possession of" to the ban on use of hand drying agents {36 CFR 261.9 (a)(j)}. Possession of paint will also be added to the wording.
- Prohibit possession and use of alcoholic beverages as defined by state law in all caves. Current restrictions are from sunset to sunrise.
- To provide multi-agency consistency with seasonal closure periods, hibernacula closure dates would be October 15 to May 1. Maternity closure dates would be April 15 to September 30.

Additional Alternatives Considered in Detail

In addition to Alternative B, two other alternatives were developed and analyzed for the Road 18 Caves Project Environmental Assessment but not selected.

Alternative A is the No Action Alternative. Under the No Action alternative no change to facilities would be implemented and no changes in current management practices would take place. No improvements, except those required to protect public health and safety and provide immediate emergency resource protection, would occur.

I did not select this alternative because it would not meet the purpose and need for the project. Under this alternative cave resources and vegetation would continue to be impacted and trampled as a result of unrestricted vehicle traffic and the lack of vehicular controls. Use would continue to increase concurrent with the population growth of Bend and central Oregon as a whole. Impacted areas at the parking areas would expand with an increase in use and lack of management controls.

Alternative C was developed to address concerns identified during the scoping process about the lack of bolted climbing opportunities in the caves. It attempted to balance the need for reducing impacts to cave resources while maintaining a quality recreation experience. Along with "Actions Common to All", Alternative C proposed the following:

Boyd Cave: The existing parking area will be improved with rock barriers to eliminate motor vehicles driving near the cave entrance and over vegetation. The parking lot would be better defined to accommodate large RVs and vehicles towing horse trailers. A trail would be improved to provide a defined footpath to the cave entrance. The area would remain open for equestrians using this site to ride shorter loop trails rather than those using the Horse Butte Trailhead. Also, an information kiosk would be installed near Road 18. The kiosk would direct visitors to the caves. It would provide useful cave information such as existing closures and "leave no trace" ethics.

Skeleton Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. The alteration of rocks on the floor of Skeleton Cave would be designed to provide for public/climber safety, but in a manner that would be more natural appearing (to be determined by the Forest Service, spelunkers, and the local climbing community). There would be a seasonal closure during the bat winter hibernation period (October 15 - May 1).

Wind Cave: Relocate the parking area away from the cave entrance to minimize impacts to vegetation and cave resources. Two bat gates would be installed (one at the main entrance to the cave and one at the skylight area) to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).

Hidden Forest Cave: Completed existing bolted routes would be authorized for climbing. Incomplete routes would be removed. New climbing routes would not be authorized in this or any other cave in the project area.

Bat Cave: Two bat gates would be installed (one at the main entrance to the cave and one at the skylight area) to improve habitat conditions for the western big-eared bat. The gate at the main entrance would be locked during the bat winter hibernation period (October 15 - May 1).

Charlie-the-Cave: A bat gate would be installed to improve bat habitat.

Charcoal Cave #1: A year around closure order would remain in place until further analysis is completed.

I did not select this alternative because of tribal concerns and to be compliant with Executive Order 13007 for Indian Sacred Sites and the National Historic Preservation Act.

Public Participation

This project evolved from discussions between the Forest Service, Bureau of Land Management (BLM), members of both the caving and climbing communities, and other interested parties in 1994. At two meetings between these parties, the Federal agencies agreed to work towards common management of the caves in the Road 18 area. A "Cave Strategy" was developed by the Forest Service and BLM, from which the proposed action for this project was developed. Additionally, a summary of the proposed action was included in the Spring 2000 through Spring 2001 Schedule of Projects (SOP).

A notification of completion of the EA and a thirty-day comment period letter was mailed to the project mailing list (approximately 150 households). The thirty-day notice and comment period for the Environmental Assessment and Preferred Alternative ended July 5, 2001. A request for public comment was published in The Bulletin on June 6, 2001.

Finding of No Significant Impact

Based on the site-specific analysis documented in the EA, I have determined that this decision does not constitute a major Federal action, individually or cumulatively, that will significantly affect the quality of the human environment; therefore, an Environmental Impact Statement will not be necessary.

Beneficial and adverse direct, indirect, and cumulative environmental impacts discussed in the Environmental Assessment have been disclosed within the appropriate context. No significant effects to the human environment have been identified. This determination is based on the mitigation measures designed into the selected alternative and the following factors:

- (1) Based on the analysis, I expect only slightly adverse, short duration impacts from implementation of this alternative. These have been disclosed in the analysis. This and other impacts are limited in scope and intensity and can be considered negligible (EA pages 35-41).
- (2) No adverse effects to public health or safety have been identified. This finding is based on past similar projects and no effects to public health or safety have been identified (EA p. 41).
- (3) There will be no significant adverse impacts to unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.
- (4) The effects of implementation of this decision are not likely to rise to the level of scientific controversy as defined by the Council of Environmental Quality.

- (5) Based on previous similar actions in the area the probable effects of this decision on the human environment, as described in the Environmental Assessment, are well known and do not involve unique or unknown risks.
- (6) This action does not establish a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.
- (7) This decision is made with consideration of past, present, and reasonably foreseeable future actions on National Forest land and other ownerships within potentially affected areas that could have a cumulatively significant effect on the quality of the human environment. I find there to be no such cumulative significance.
- (8) The Forest Archeologist applied criteria of effect and adverse effect as found in 36 CFR 800.9, and determined that implementation of this decision will have no adverse effect to sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historic resources (EA, page 42).
- (9) The Biological Evaluation for the area indicates that the proposed project will have no significant adverse impacts on any Proposed, Endangered, Sensitive or Threatened plant or animal species or its habitat that has been determined to be critical under the Endangered Species Act of 1973 (see Biological Evaluation and EA).
- (10) This decision is in compliance with relevant Federal, State, and local laws, regulations, and requirements designed for the protection of the environment. Effects from this action will meet or exceed state water quality standards.

Other Findings

This action is consistent with the goals, objectives, and direction contained in the Record of Decision (ROD) for the Deschutes LRMP and accompanying Final Environmental Impact Statement dated August 27, 1990. It also is consistent with the preferred alternative of the Final Environmental Impact Statement for Forest Service Roadless Area Conservation (published November 2000), the Federal Caves Resource Protection Act of 1988, the Executive Order 13007 for Indian Sacred Sites, and the National Historic Resources Protection Act of 1966.

This decision is subject to appeal pursuant to 36 CFR 215.7. Any written appeal must be fully consistent with 36 CFR 215.4 (Content of an Appeal). Two copies of a written notice of appeal must postmarked and submitted to the Regional Forester, Pacific Northwest Region, P.O. Box 3623, Portland, Oregon, 97208-3623 within 45 days of the date the legal notice of this decision appears in The Bulletin. For additional information, contact Leslie Moscoso, Bend-Fort Rock Ranger District, 1230 NE Third, Ste. A-262, Bend Oregon, 97701, (phone 541-383-4712, email lmoscoso@fs.fed.us, or fax 541-383-4700).

/s/Walt Schloer
WALTER C. SCHLOER, JR
District Ranger

August 30, 2001
Date

[Deschutes and Ochoco National Forests Website](http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/decisionnotice.html)

<http://www.fs.fed.us/centraloregon/manageinfo/nepa/documents/bendfort/caves/decisionnotice.html>

Last Update: 9/6/01

R.A. Jensen