

# master plan

preliminary draft

## GRAND CANYON COMPLEX



NATIONAL PARK • ARIZONA

This planning publication has neither been approved nor disapproved. Its purpose is to provide planning information and alternatives for further consideration and discussion, and it may undergo considerable revision.



GRAND  
CANYON  
national park  
master plan

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## INTRODUCTION AND SUMMARY

During a visit to the Grand Canyon, President Theodore Roosevelt said:

In the Grand Canyon, Arizona has a natural wonder which, as far as I know, is in kind absolutely unparalleled throughout the rest of the world. I want to ask you to do one thing in connection with it in your own interest and in the interest of the rest of the country – to keep this great wonder of nature as it now is . . . . Leave it as it is. You can not improve on it. The ages have been at work on it, and man can only mar it. What you can do is keep it for your children, your children's children, and for all who come after you, as the great sight which every American . . . should see.

Today the Grand Canyon faces many of the same human and environmental problems as the Nation – not as severe, but sufficient to cause undesirable alterations of the human experience and environmental degradations in the park, unless they are checked now.

Periods of high visitation on the South Rim sometimes create an atmosphere of congestion. Demand for lodging and camping space exceeds capacity during the summer. Increasing aircraft activity in and around the canyon results in high levels of noise that disturb overlook viewers, as well as hikers and river-runners deep within the inner canyon. Polluted water occurs in canyon streams. Thousands of visitors seek “white water” and desert backpacking experiences. It is becoming more and more difficult to find solitude in even the most remote parts of the inner canyon.

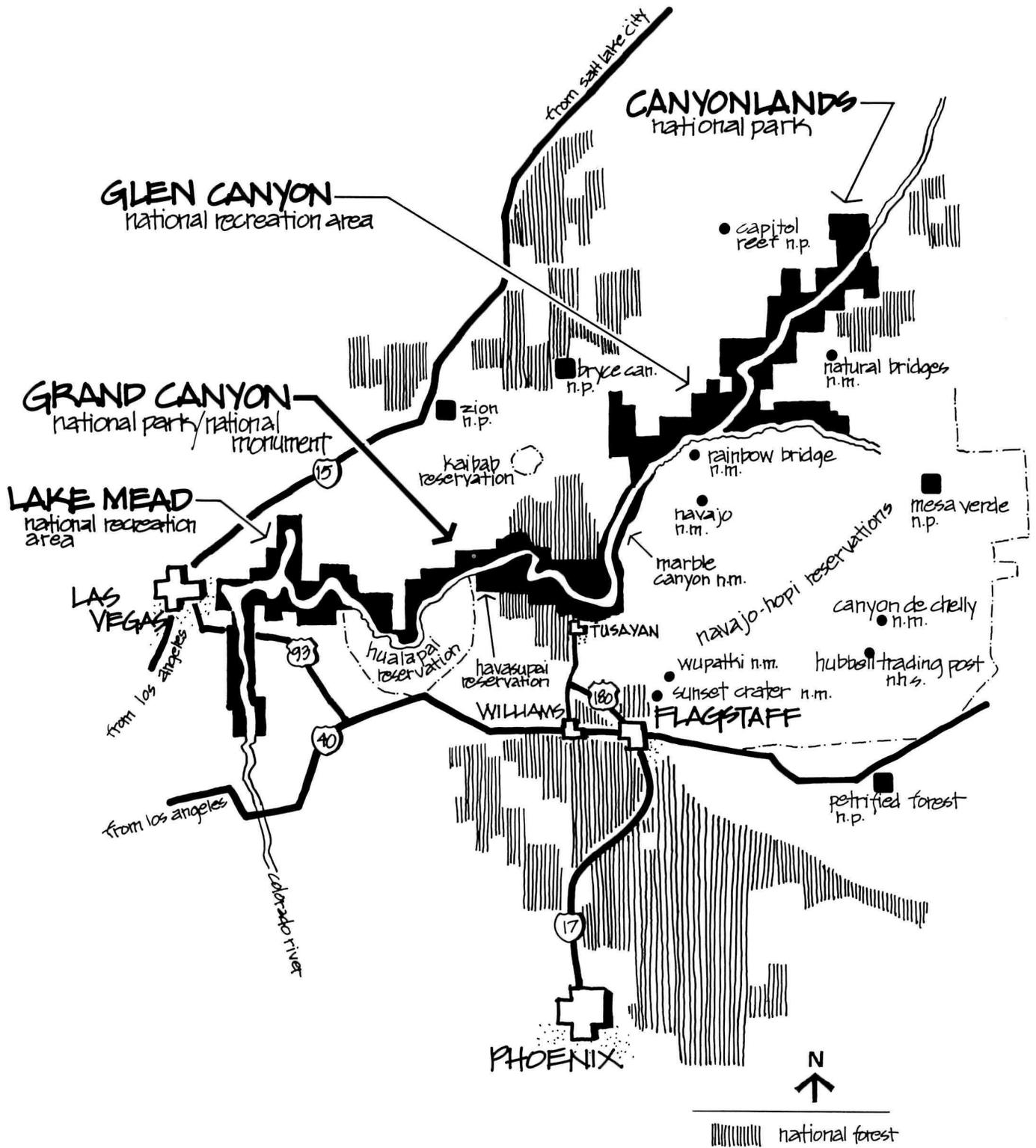
The major challenge facing National Park Service planners and managers today is to preserve the integrity of the Grand Canyon’s exceptional natural spectacle, while providing for the millions of people who are drawn to it each year. It is to further these ends that this master plan was conceived and developed. Its principal features include:

Seeking national park status for all of the Grand Canyon by combining the Grand Canyon National Park, and Grand Canyon and Marble Canyon National Monuments, and extending the park westward to Grand Wash Cliffs, including lands now part of Lake Mead National Recreation Area.

Managing the park to retain the primitive qualities of the canyon, and utilizing the South Rim developed area as the primary canyon-viewing zone.

Using environmental controls based on research to protect the park environment and to maintain the quality of the human experiences within the park.

In this master plan, three units of the National Park System – Grand Canyon National Park, and Grand Canyon and Marble Canyon National Monuments – are treated as a single park.



# the region

## THE REGION AND THE PARK

The Colorado Plateau, with Flagstaff at its southwestern edge, is the regional setting for the Grand Canyon. The plateau is a vast, semiarid land of raised plains and basins, typical of the Southwestern United States – except for the dramatic slash of the Grand Canyon across northwestern Arizona. To the south lies the Phoenix/Tucson metropolitan area. The higher elevations of the plateau are forested; the lower elevations are a series of desert basins. Six of the seven climatic zones described by C. Hart Merriam are found within the region – four of them within the Grand Canyon park. This is Indian country – home of the Havasupai, Hopi, Hualapai, Navajo, and Paiute. Its vast open spaces are only occasionally dotted with tiny settlements. This land is rich in scenic and recreational appeal.

On the Colorado Plateau approximately half of the land is federally owned, and is administered by the Bureau of Land Management, Forest Service, and National Park Service. The other lands are primarily Indian-owned.

Primary among regional resources is the Grand Canyon park, encompassing almost 900,000 acres. The park is bounded on the north by Kaibab National Forest and the Arizona Strip, on the east by the Navajo Reservation, on the south by Kaibab National Forest and the Hualapai Reservation, and on the west by the upper reaches of Lake Mead National Recreation Area.

Permeating the Grand Canyon's legislative history is an acute awareness of the need for its protection as one of the natural wonders of the world. Public interest in designating the Grand Canyon as a national park began in the late 1870's. It was successively a forest reserve, a national forest, and a national monument within the national forest, before it was brought under the provisions of the National Park Service Act of 1916.

Most people travel to and through this region by automobile on Interstates 40 and 17; U.S. 89, 89a, 160, and 180; and Arizona State Highways 64, 389, and 67. Increasing numbers of visitors arrive by aircraft at the Grand Canyon Airport. Major transcontinental buslines serve Flagstaff and Williams, with local service to Grand Canyon. Passenger rail service across northern Arizona has steadily declined, but could again become important.

The number of visitors in the region doubled during the 1960's and may double again during the 1970's. Grand Canyon park draws over 2 million visitors each year. The park is a major stop for summer travelers who are touring the Southwest and West. A large number of foreign visitors also make the Grand Canyon one of the principal stops on their tours of the United States.

Most visitors stay a few hours – just long enough to view the canyon from overlooks on the South Rim. During peak periods, day use predominates – partly by preference, and partly because of the limited overnight facilities available on the South Rim.

Existing tourist facilities of all kinds in the region cannot meet peak demands. The scarcity of investment capital, coupled with projected low annual returns on investments, has been a deterrent to development of accommodations. New facilities are beginning to appear, however.

Within the park, hotels, motels, campgrounds, and other facilities are available on both rims of the canyon. The facilities at Grand Canyon Village make this the most popular destination point in the park; occasionally, there is traffic congestion during peak-use periods. Demand for overnight parking sites is increasing, primarily because of the growing numbers of self-contained recreational vehicles; tent camping is decreasing proportionately. Hundreds of visitors simply park overnight along the roads leading to Grand Canyon when campgrounds are full. Opportunities are available for increasing tourist facilities outside the park.

The delivery of potable water is expensive in most places in the region. Increased use of reclaimed water will be necessary to meet future demands.

The Grand Canyon dominates the natural and economic picture of northern Arizona. It forms a major physical barrier to the movement of people and commerce north and south, but at the same time attracts millions of visitors to the Southwest each year.

The canyon is a geologic timepiece studied by scientists and laymen, and a world-renowned scenic spectacle. Its rocks reveal all of the eras and nearly all of the periods of geological time, and contain a fossil record of the evolution of life. The 277-mile-long canyon is 4 to 18 miles wide, up to 1 mile deep, and encompasses elevations ranging from 1,700 feet in the lower end of the canyon to over 9,000 feet on the

**Kaibab Plateau. This produces climatic variations ranging from those of the arid lower Sonoran deserts of southern Arizona to those typical of forested regions in Canada. Snow rarely falls in the inner canyon, and summers there are hot.**

**The North Rim is usually heavily mantled with snow from late November to mid-May; summers are cool. The South Rim frequently has snow from late October or early November to late April, but it rarely lasts long, and summers are mild to warm.**

**The forest of the Kaibab Plateau is composed of pine, fir, spruce, and quaking aspen, and comprises a major natural and recreational resource. Fifty years of fire suppression have caused an unnatural buildup of dead and downed trees and an increased understory.**

**The entire rim is a platform from which to view the canyon. Many scenic overlooks are accessible by good park roads; several are reached by primitive roads; and the remainder of the rim is accessible by foot or horseback.**

**Over 1,200 Indian ruins in the park represent several prehistoric occupations of the canyon and rims; the Cohonina, Virgin, and Kayenta cultural groups came together here and left evidence of their boundaries and relationships. The Havasupai Indians have occupied the bottomlands of Havasu Canyon in the southwestern corner of the park since just prior to historic times.**

**The water of the Colorado River and its tributaries has been carving the Grand Canyon for millions of years. This water is a vital factor in the future of Grand Canyon as a natural feature, as well as an essential commodity for the well-being of over 10 million people in the Phoenix/Tucson and Southern California areas. It is used and re-used to generate power and irrigate agricultural land, for domestic use, and for water-oriented recreation. There remains an intense and continuing interest by some developers to dam the Colorado River between Lake Mead and the present park boundary. The Bureau of Reclamation controls the waterflow through Glen Canyon Dam. This has altered the hydrologic regimen of the river and the riparian environment along the river's edge. The end results cannot readily be foreseen.**

**Park visitors can still run the river without motors, as the earlier explorers did, but others travel through the canyon on a wide variety of motorized watercraft.**

## OBJECTIVES

To preserve this superlative natural park, and to provide for the growing numbers of visitors, the objectives for management are:

### GENERAL

Manage Grand Canyon as a natural area of the National Park System.

Retain park headquarters at Grand Canyon Village.

Retain Grand Canyon Village as the major visitor service complex and park support community; determine the maximum capacity; do not expand beyond it; coordinate improvement, replacement, or elimination of facilities with regional development of visitor-use facilities outside park boundaries and in full view of the needs of historic preservation within the village itself.

Include Marble Canyon and Grand Canyon National Monuments and other necessary lands within an enlarged Grand Canyon National Park.

Delete lands not considered necessary to protect the integrity of the Grand Canyon.

Gather ecological, historical, archeological, and sociological data on which to base management decisions.

Encourage and support independent research.

Include eligible lands in the National Wilderness Preservation System.

## **PUBLIC-USE MANAGEMENT**

**Provide facilities and services for increasing numbers of day-use visitors on the South Rim between Hermits Rest and Desert View.**

**Provide services and facilities year-round at Grand Canyon Village and Phantom Ranch.**

**Establish optimum recreational-use capacities for all sites and zones in the park.**

**Interpret the natural and historic significance of Grand Canyon.**

**Interpret the relevance of man's place on earth and his ability to cause changes in the landscape and environment.**

**Retain primitive access and uncrowded canyon-viewing opportunities at Toroweap and other selected points.**

**Remove from the rim of the canyon all non-historic and non-interpretive facilities.**

**Maintain the Bright Angel/Kaibab Trail corridor for heavy visitor use.**

**Maintain a wilderness trail system.**

**Provide hiking, horseback-riding, bicycle, and primitive motor trails on the rims.**

**Encourage a slower pace at the North Rim and a more intimate involvement with the rim's environment.**

**Provide a public transportation system on the South Rim.**

**Limit mechanized access below the rims to emergency and management use.**

**Permit access to all portions of Grand Canyon National Park, within established recreational-use limits.**

**Provide a reservation and/or registration system for campsites in Grand Canyon.**

## **NATURAL AND HISTORICAL RESOURCES MANAGEMENT**

**Manage natural ecosystems in accordance with ecological principles.**

**Utilize reclaimed water to supplement fresh-water supplies.**

**Determine the significance and use of historical and archeological sites and structures.**

**Mitigate the ecological changes along the Colorado River caused by control of waterflow.**

**Protect the river and its environs from human overuse.**

**Avoid additional developments on the canyon rims that would detract from the primitive character of the river and canyon experiences.**

## **REGIONAL PLANNING AND COOPERATION**

**Cooperate with adjacent Federal, State, and local agencies to provide more effective service to the public.**

**Assist the local Indian tribes in the planning, development, and management of the recreational use of tribal lands.**

**Jointly provide public information services at major highway junctions.**

**Encourage the tasteful and orderly development of visitor-use facilities outside park boundaries.**

**Carry the National Park Service concern for the environment beyond the boundaries of Grand Canyon.**

**Meet a portion of the demand in the region for lodge, cabin, recreational-vehicle, and campground facilities.**

## THE PROPOSALS

### AN ENLARGED GRAND CANYON NATIONAL PARK

Bringing national park status to all of Grand Canyon has long been a goal of many people. Over the years, various sections have been designated as units of the National Park System. First, the eastern portion was established as Grand Canyon National Park. Then additional sections were designated as Grand Canyon and Marble Canyon National Monuments, and the western portion included in Lake Mead National Recreation Area. One section is part of Kaibab National Forest. Several portions of the canyon lie within the boundaries of the Navajo, Hualapai, and Havasupai Indian Reservations.

The boundaries outlined in the boundary proposal map are recommended to achieve an enlarged Grand Canyon National Park, and to provide sufficient rim areas for buffer and visitor development. Almost the entire canyon would be brought within the enlarged park, including rim areas that will serve as buffers for the canyon proper.

The northeast boundary of the park will begin at the Navajo Bridge on the Colorado River. From this point, the boundary will extend along the rims of Marble Canyon and juncture with the present boundaries of the park.

The east rim of Marble Canyon will be included, with the concurrence of the Navajo Nation. Land back from the rims will remain under existing jurisdictions – the Navajo Nation on the east and the Bureau of Land Management or the Forest Service on the west. State lands will be acquired under appropriate exchange agreements. A buffer, scenic easement, or similar safeguard will be provided to ensure that there will be no developments that would be visible from the Colorado River.



The National Park Service recognizes traditional Indian religious uses and will honor their continuation. Protection will be given to all shrines and sacred areas on existing park lands and on lands that may be added to the park.

The Coconino Plateau addition adds land now managed by the Forest Service and would provide a buffer against outside influences. The park road comes as close as ¼ mile to the present boundary here.

The Lower Kanab Canyon addition, which lies north of the Colorado River between Grand Canyon National Park and Grand Canyon National Monument, corrects a serious omission of a significant sector of the Grand Canyon. This area, now within Kaibab National Forest, will include a significant portion of the North Rim and a portion of Jumpup Canyon, a principal side-canyon. This addition will promote more complete interpretation and protection of the resource.

The Colorado Riverbed addition will include the Colorado Riverbed to the south-shore high-water level between the western boundary of the South Unit of Grand Canyon National Monument and the present eastern boundary of Lake Mead National Recreation Area. This will facilitate management of river-running in this portion of the canyon.

The Lower Grand Canyon addition includes lands within the presently authorized boundaries of Lake Mead National Recreation Area containing outstanding scenic and geologic features, including the Lower Granite Gorge. This addition will establish the western boundary of the park at Grand Wash Cliffs near River Mile 277. The northern boundary will follow the inner canyon rim and include Andrus Canyon; from the west side of Andrus Canyon the boundary will follow the upper rim of the canyon to Snap Point; and then it will follow the center line of Pierce Canyon to a northerly projection of River Mile 277. South of the river, a western boundary, approximately 4 miles west of the Hualapai Indian Reservation boundary, will include a portion of the southern extension of the Grand Wash Cliffs. The potential impoundment level of Lake Mead to 300 feet above high-water level, terminating at River Mile 238.5, would remain in Lake Mead National Recreation Area. National park status for these lands lying north of the Colorado River would help ensure preservation of the canyon's and river's character, as well as facilitate control of river-running boat parties under one jurisdiction to just above Bridge Canyon. The National Park Service will cooperate with the Hualapai Tribe on the south side of the river to preclude undesirable development.

Lands back from the rim in the Marble Canyon area, totaling 3,550 acres, and not required for protection of the canyon resources, will be deleted and transferred to the appropriate Federal land-management agencies.

The Havasupai Indian Reservation lies within Havasu Canyon, and is surrounded by park lands. Tourism is the most promising economic asset of the Havasupai, who reside in a picturesque setting at the bottom of the canyon. The main access route into the village is via Hualapai Hilltop. Visitors ride horses or mules or hike to the canyon bottom from the end of a graded road. Limited overnight accommodations are available in the village. Camping at the Park Service's Havasu campground below Supai Village is limited to an established carrying capacity.

Lands surrounding and adjacent to the Havasupai Reservation will be studied for possible transfer to the Havasupai Nation.

## **THE CANYON, THE RIMS, AND THE RIVER**

The canyon, the rims, and the river will be managed to preserve their significant resource values and to enable visitors to see and experience the Grand Canyon wilderness. Uses and developments are outlined within the framework of broad zones, as depicted on the resource and use map.

### **The Canyon**

The canyon is the feature that attracts millions of visitors each year. To protect its integrity, the canyon will continue to be managed as primitive backcountry with visitor access confined to foot, muleback, and boat. Facility developments will adhere to strict ecological and esthetic standards.

A descent into the Grand Canyon is one of the greatest outdoor experiences in the National Park System. The Kaibab and Bright Angel Trails are maintained for hikers and mule-riders. A wilderness trail system (the present "abandoned" trails) is maintained to provide minimum standards of safety for hikers.

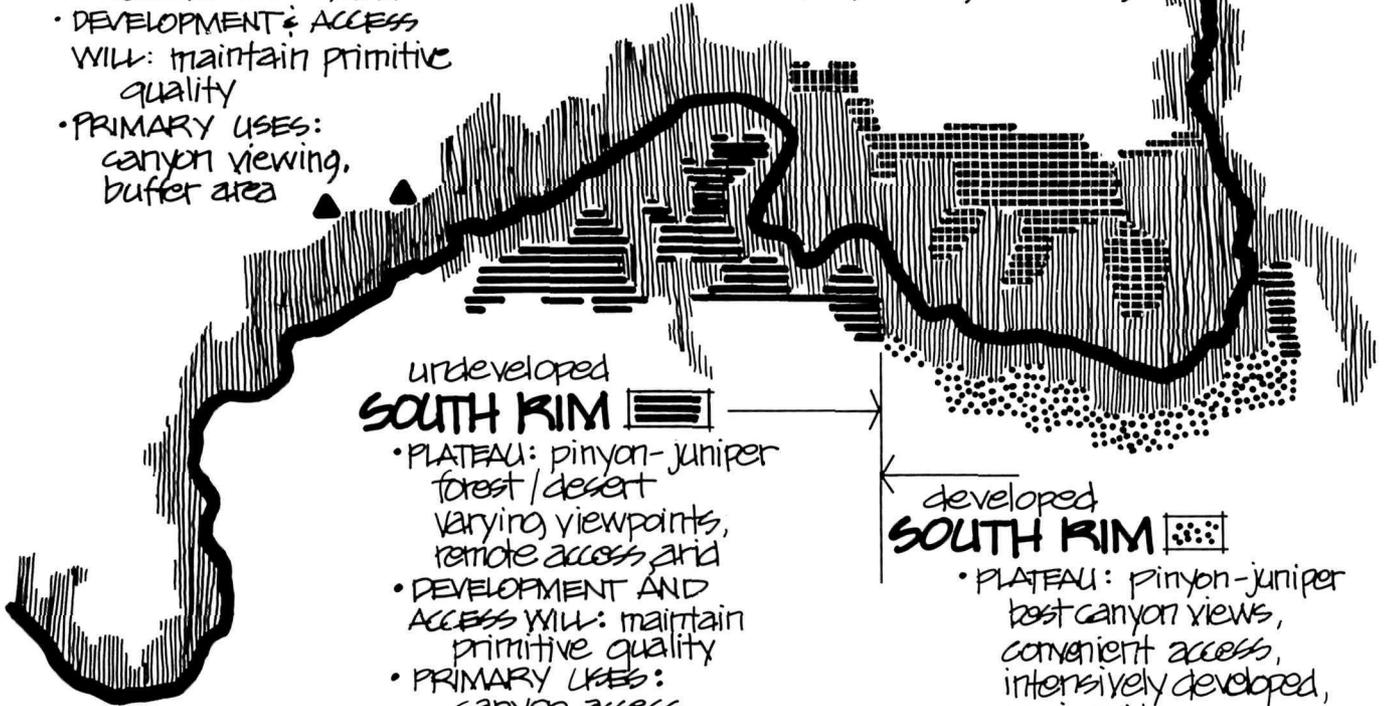
Subject to the will of Congress, roadless areas will be included in the National Wilderness Preservation System. A wilderness recommendation has been submitted to Congress.

## NORTH RIM

- PLATEAU: spruce, fir, ponderosa forest  
diverse and unusual, cool & moist, indirect access
- DEVELOPMENT & ACCESS WILL: encourage slower pace, longer visit, & a constant involvement with the environment - be limited by a strict esthetic philosophy to maintain its scenic integrity
- PRIMARY USES: canyon viewing, nature study, scenic drives, camping, hiking and riding

## TOROWEAP

- PLATEAU: desert  
unique viewpoint,  
remote access, arid
- DEVELOPMENT & ACCESS WILL: maintain primitive quality
- PRIMARY USES: canyon viewing, buffer area



## undeveloped SOUTH RIM

- PLATEAU: pinyon-juniper forest / desert  
varying viewpoints,  
remote access, arid
- DEVELOPMENT AND ACCESS WILL: maintain primitive quality
- PRIMARY USES: canyon access, canyon viewing, buffer area

## developed SOUTH RIM

- PLATEAU: pinyon-juniper  
best canyon views,  
convenient access,  
intensively developed,  
semi-arid,  
uniform vegetation
- DEVELOPMENT AND ACCESS WILL: accommodate a high volume of visitation, be highly efficient, be limited by ecological and operational standards
- PRIMARY USES: canyon viewing, canyon access, visitor service

## GRAND CANYON

- CANYON: desert  
unique, diverse, difficult access
- DEVELOPMENT & ACCESS WILL: be limited by strict ecological and esthetic standards to maintain a wilderness quality
- PRIMARY USES: hiking and riding, scientific study, boating



# the resource and its use

**Cross-Canyon Corridor •** This corridor between Grand Canyon Village and Bright Angel Point provides a wilderness-threshold experience for thousands of visitors yearly. It contains the Bright Angel and Kaibab Trails, campgrounds, Phantom Ranch, ranger stations, and the transcanyon waterline.

Phantom Ranch accommodates visitors who seek an overnight trip in the canyon that is slightly less demanding than a wilderness trip. This facility will be retained.

Overnight use at campgrounds in the corridor will continue within established recreational-use capacities. The number of mules is limited; that of day-hikers is not.

#### **The Rims**

The most memorable experience for a visitor to the Grand Canyon is the impact of the first view from the rims. Most people know something about the canyon before they arrive, but few are prepared to cope with its immensity and scale. Every effort will be made to support and sustain this experience

Beauty, of and for itself, needs no interpretation. Later questions will come. "What great natural forces lie behind all this?" Then the interpreter's moment has arrived . . . and surely to stand at the rim of Grand Canyon is to experience a spiritual elevation that could come from no human experience of the colossal chasm . . . .

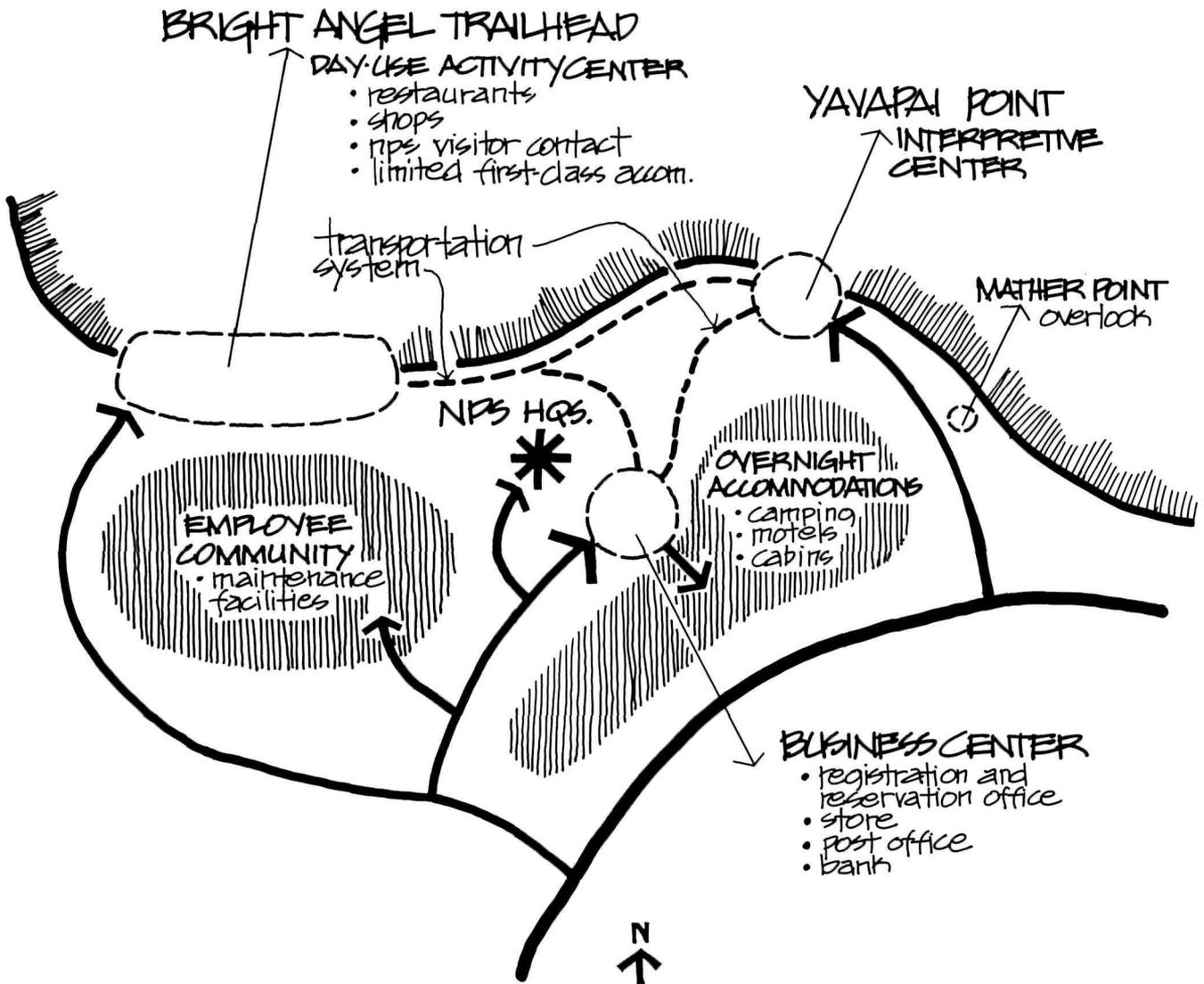
(From "Interpreting Our Heritage," by Freeman Tilden)

The resource stimulates and motivates a desire for understanding without external help. The moment for interpretation arrives only after the visitor has had an opportunity to experience his first look into the canyon.

The total experience of most visitors takes place on the rims, which receive the major impact of human use of the park.

**The South Rim, Developed •** The South Rim is the canyon-viewing platform for 90 percent of the park's visitors. Here are excellent points from which to see and comprehend the vastness of the canyon.





# grand canyon village

an approach to its restructuring

Most visitors enter Grand Canyon National Park at the South Entrance on Arizona Highway 64. Although Grand Canyon Village is the almost-unavoidable focus of travel to the South Rim, it cannot totally satisfy the needs of all visitors trying to view the canyon. Therefore, the South Rim from Hermits Rest to Desert View will be considered a broad viewing-platform. This concept is reflected in existing circulation patterns.

**Grand Canyon Village •** The destination point of nearly every visitor to the South Rim has long been Grand Canyon Village. Early visitors, arriving by train, were accommodated in first-rate hostelries, some of which still operate. Through the years, the Village was a nucleus from which most of man's efforts to "improve" the canyon have emanated – roads, trails, motels, cabins, campgrounds, restaurants, stores, and a resident community. It evolved into a "town," with 1,200 permanent residents, peaking to over 7,000 during the travel season. Imposition of the automobile age upon facilities structured to accommodate trainborne visitors has resulted in confusion and congestion and has destroyed the historic flavor of the Village.

The Village will continue to serve as a bedroom, dining table, and marketplace for the visitor. It will also be a major overlook and interpretive focus, as well as the base of park operations. To serve these purposes most effectively, however, all of its facilities must relate smoothly to each other. Essential to this is the need to recognize that each visitor who enters the Village has individual interests and needs. His options must be easily identified. Visitors seeking an explanation for the Grand Canyon's existence should not become entangled with others who are in search of a meal; nor should those simply wishing to briefly view the canyon be thrust into an interpretive facility. Ideally, related facilities should be organized into clearly defined, tightly knit zones accessible by routes serving those facilities alone, and connected by common feeders. The Grand Canyon Village diagram illustrates one possible approach.

A multimedia interpretive center to tell the story of Grand Canyon will be constructed at Yavapai Point. This center will have sufficient capacity to accommodate numbers of visitors too great for the existing Yavapai museum.

For the foreseeable future, all Village facility developments will be within the general area bounded by Rowe Well Road, the rim, South Entrance Road, and the south park boundary-line. However, the total acreage will not vary significantly from that presently utilized.

**The West Rim Drive •** The drive, originating at the Village, is a short, low-speed spur that follows the edge of the rim and terminates at Hermits Rest, which offers modest concession facilities. The West Rim Drive's continuous relationship to the canyon and isolation from through-traffic offer an intimate viewing experience for the visitor. But the qualities that differentiate it from the East Rim Drive seriously limit its automobile capacity, which is exceeded during peak periods. A public transportation system will be provided on this road and all private vehicles will be excluded during the heavy visitor-use season; this will improve viewing experiences and facilitate interpretation.

**Desert View •** The campground, store, and trading post of this small complex at the east end of the East Rim Drive mirror the Village facilities at the other end of the drive. Desert View plays an important role in the functioning of the South Rim viewing-platform. As a two-way system serving both east-bound and west-bound visitors, East Rim Drive logically requires a visitor contact point at both ends to provide services. The campground and support facilities will be expanded.

**Tusayan Ruins •** Tusayan Ruins and museum, 3 miles west of Desert View, are the site of one of man's prehistoric settlements on the canyon rim. It gives human dimension to the Grand Canyon panorama, and provides an enriching variation to the canyon-viewing experiences. Only minor facility improvements will be needed.

**The South Rim, Undeveloped •** The primitive South Rim backcountry west of Hermits Rest extends some 45 miles to National Canyon. The pinyon/juniper forest and desert plateau lands above the canyon rim will be managed as a primitive environment. The existing road routes will be retained to provide for jeep-touring trips to canyon viewpoints and to Havasu Canyon overlook points and accesses.

Overnight camps will be designated at selected sites. These camps will have minimal facilities, such as at the present Bass Camp, which has tables and a pit toilet.

**The North Rim •** Here, vegetation in a variety of forms and distributions creates an environment of outstanding scenic appeal. Its rich mosaic of life-forms invites the visitor to slow down and absorb its beauty.

to salt lake city,  
los angeles

to glen canyon and  
south rim

### JACOB LAKE

- information / orientation
- accommodations

64

#### NOTE:

all roads to be  
considered scenic  
drives, encouraging  
slow speeds; additional  
pull-offs to be  
developed

### PT. IMPERIAL

- overlook

### VISTA ENCANTADA

- overlook

### BRIGHT ANGEL PT.

- overnight accommodations
- campgrounds
- food service
- interpretation
- canyon access
- support facilities

### CAPE ROYAL

- overlook
- amphitheater

Grand

canyon

# north rim



A relaxed pace is essential to a continuing awareness of these natural surroundings. Facility developments will not only be subservient to the natural surroundings – they will constantly involve the visitor with his environment. To help maintain this goal, recreational-use capacities will be placed on visitation.

**Bright Angel Point** • Except for an entrance station, roads, and overlooks, development on the North Rim is confined to Bright Angel Point – a narrow peninsula 1½ miles long and ¼ mile wide. The wood-and-stone lodge crowning the point and the rustic cabins set among the pines offer a “traditional” national park lodging and dining experience.

Less than a mile to the north, a cafeteria, cabins, and a campground complete the available accommodations. Bright Angel campground will be expanded by not more than 100 sites.

Development will only improve the efficiency of existing facilities. Any expansion of the number of lodging units will be done through a more efficient utilization of land already affected by developments, with no significant loss of natural or traditional values.

**Orientation Services** • The proposed public information center at the North Entrance, Jacob Lake, plus improved signing, will assist the visitor in reaching his primary goal – either viewing the canyon or finding accommodations and visitor services. Orientation facilities will be provided near points where the canyon is first visible.

**The North Rim Primitive Areas** • All lands outside the 200-foot right-of-way along the paved roads will be managed as primitive backcountry. The network of fire roads on the North Rim will be phased out, following restoration of the natural ecological process in the forest. The Point Sublime Road will be retained as a motor trail. Other existing roads will be studied for use as motor trails.

**Toroweap** • Toroweap is a remote viewpoint in the lower canyon. Its development and access will be handled in such a way as to maintain the remote quality of the road trip through Toroweap Valley, as well as the viewing experience at Toroweap.

Lands in the Toroweap area are subject to long-existing grazing rights that will continue for several more years. As these rights expire, some of the primitive roads will be phased out; a few will be retained as motor trails.

## THE RIVER

The goals for management of the Colorado River in Grand Canyon will be to perpetuate the wilderness river-running experience, and to attempt to mitigate the influences of man's manipulation of the river.

The accelerating interest in river-running and the controlled flow through Glen Canyon Dam have impacted the natural and human environments on the river. The extent of this impact is not fully recorded or understood. Enough is known, however, to begin more intensive management of recreational use and the natural ecosystems.

Based on the best available data, the National Park Service will continue to manage public use of the river under the guidelines of a river-management plan. This operations plan will specify recreational-use capacities, boat-launching schedules, party size, safety, boatman training, sanitation, camping, food handling, rate of travel, and other subjects as necessary. The plan will be assessed yearly and be available for public review.

An ecological research program, including sociological studies, will be conducted to furnish more data on which to base management decisions.

## ECOSYSTEM MANAGEMENT

The preservation of the Grand Canyon natural environment is the fundamental requirement for its continued use and enjoyment as an unimpaired natural area. Park management therefore looks first to the preservation and management of the natural resources of the park. The management concept is the preservation of total environments, as contrasted with the protection of only a single feature or species.

However, all areas within the park will not be managed as natural ecosystems; some must be managed for intensive visitor use. Management will decide how unnatural a particular tract will be allowed to become, in the interest of providing for the visitor services outlined in the preceding portions of the plan. Based on research, predictions can be made as to what a given area will become, with varying degrees of departure from the natural condition. Each case is decided upon its individual merits. The following discussion covers only the broad aspects of ecosystem management in Grand Canyon.

## Forests

The forests of Grand Canyon National Park are fragile, easily damaged, and difficult to repair. Development within them will be limited to that which is necessary for visitor use, protection, understanding, and enjoyment. It will be confined to those present sites of alteration that are unlikely to heal in the foreseeable future without intensive restorative measures. The pinyon/juniper forest offers better sites for construction and development than does the ponderosa forest. The pinyon/juniper forest is also easier to restore to a natural condition.

High priority will be given to the restoration of the forests to the conditions that probably would have prevailed had man not interfered with their normal processes, by controlling predators and excluding fire, and by use of traditional forestry practices. Adverse management programs will be phased out and replaced by ecological maintenance.

The effects of more than half a century of fire exclusion will be reversed by carefully planned research and resource-management programs. Research will take into account the preservation of rare, endangered, and/or endemic species. Eventually, fire will be suppressed only in areas designated for intensive visitor use, to prevent the spread of wildfire to adjacent non-park lands, or wherever traditional scenic values are to be preserved. Such areas will be considered as special management units rather than natural ecosystems.

Existing management roads, dumps, and borrow-pits not necessary for future use will be returned to a natural state, and no new ones established.

## Brushlands

Brushlands are dry, especially near canyon rims. The lack of water causes slow and sparse growth. Development will be carefully planned in brushlands, because trails, roads, and buildings leave long-enduring scars.

Control of the long-established burro population in the brushlands will be continued. Because traditional methods of control are uncertain and costly, research looking toward biological and chemical control will be undertaken to supplement hunting and trapping.

Brushlands animal species are the principal food source for the now-rare peregrine falcon and golden eagle. Stringent controls will be exercised in the use of pesticides, because birds of prey are particularly subject to "biological pesticide magnification."

As soon as fire behavior in Grand Canyon brushlands has been determined and suitable management practices initiated, wildfire will be allowed to run its course. Fires will be suppressed when they threaten human life, property, and lands exterior to Grand Canyon National Park.

#### **Aquatic and Streamside Resources**

Water is a focal point for biota in the Grand Canyon environment. The biota near permanent water sources is much richer in species than elsewhere, and there is a high degree of endemism in the aquatic organisms. Impairment in water quality or availability will have far-reaching effects on the entire spectrum of Grand Canyon ecosystems.

Every effort will be made to keep the water resources in the park free from pollution, contamination, and impoundment. Naturally occurring water resources will be maintained in a wild and unaltered condition. Special management consideration will be given to all rare and endangered forms of aquatic life. These include the Colorado River squawfish, the humpback chub, and Clear Creek gambusia.

#### **Grasslands**

Grasslands within the park are irregular and sparse, and are locally important. Some grassland areas have been damaged. Special management care will be exercised for esthetic as well as ecological reasons.

Wet grasslands – that is, meadows – on the North Rim are fragile, and their soils are easily eroded and trampled. Significant development in wet, grassy areas accelerates the draining and drying of the soil. Many of the meadows on the North Rim have fire-control roads. The goal is to obliterate these roads and restore the meadows.

### **RESEARCH**

Natural-resources research is a prerequisite to all phases of planning and resource management. Four kinds of knowledge are needed: the current condition of the park's natural resources; the primeval condition of these resources; the most feasible methods of restoring the resources and associated environmental influences to the natural ecological state required for their continuing natural evolution; and the future ecological fate of the park. Early trends in resource-deterioration must be identified to prevent serious ecological alteration.

The major thrust of National Park Service research at Grand Canyon will be management-oriented; the greater portion of research funds allotted to the park will be directed to such studies. The scientific community, which is primarily interested in basic research, will be assisted in its research efforts and allotted a portion of Service funds on management-oriented research projects.

Research already underway in the park covers a variety of investigations into the ecology and life-histories of mammals, fishes, and plant communities. These studies include river ecology, visitor-use impact on the park biota, meadow ecology, limnological study of the Colorado River, feral-burro control, and various pollution studies.

To aid management-oriented and basic research, research facilities at park headquarters have been expanded. A cooperative approach to research will be undertaken through an arrangement with various universities, the Museum of Northern Arizona, the Arizona Academy of Science, and other institutions. The Grand Canyon Natural History Association assists in research activities.

## **SPECIAL ENVIRONMENTAL AREAS**

Research natural areas and environmental study areas (ESA's) have been designated for the primary purposes of research and education, in areas where natural processes are allowed to predominate.

### **Research Natural Areas**

These areas include typical or unusual biotic phenomena and characteristics, or outstanding geologic, pedologic, or aquatic features and processes. They exhibit examples of significant natural ecosystems, for comparison with those influenced by man. They provide research areas where scientists can study the ecology of the natural environment, and they serve as gene pools and preserves for rare and endangered plant and animal species. They are surrounded by park lands. Research conducted within them is non-destructive and reasonably consistent with the purpose and character of the surrounding park lands.

Six areas totaling 8,845 acres have been designated by the Federal Committee on Research Natural Areas to preserve fine, representative examples of aspen, ponderosa, and pinyon/juniper forest types. These have been designated at Neal Springs, Mount Emma, Powell Plateau, Swamp Point, Great Thumb, and Wayside. Several of these are utilized in continuing research projects.

Potential for additional natural areas exists in the inner canyon, the river environment, and the brushlands – all important to the preservation of rare and endangered animals. Their designation will be sought.

#### **Environmental Study Areas**

As part of the National Park Service's environmental-awareness program, two environmental study areas have been designated on the South Rim. The Hermit Basin ESA along the Hermit Trail is centered around a geological theme, to show man's relationship to biological evolution, time, and space. The Grandview ESA on the rim in the Grandview area illustrates the theme of man's relationship to the biological world. The areas require special management and are not to be altered by development or management.

The resources of these study areas have been carefully cataloged. They are available to school groups and give teachers the necessary physical tools to help their pupils relate to man's place in his modern environment.

Additional environmental-study-area potential exists on the North Rim and Colorado River.

#### **HISTORICAL AND ARCHEOLOGICAL PRESERVATION**

Certain historic structures at Grand Canyon National Park are to be preserved. Such structures, which should be studied, include – but are not limited to – the Santa Fe Railroad Station, the Bucky O'Neal Cabin, the old Cameron Hotel (or Red Lake Stage Station), the Salt Cabin at Greenland Lake, El Tovar, and Kolb Studio.

There are a number of prehistoric Indian ruins within the park. Many of them are not easily accessible to the public, and do not require any special treatment other than normal protection. Significant ruins near points of heavy public use will be excavated, stabilized, and interpreted. Excavations should be carried out as funds are available. Such projects are not of high priority unless the sites are threatened by destruction. The interpretation of these ruins will focus upon the Indian within the context of his relationships to the natural environment and other cultural groups.

## **ENVIRONMENTAL CONTROLS**

### **Aircraft Control**

The National Park Service has negotiated with the United States Air Force, Federal Aviation Administration, and aircraft operators to zone flights away from the main viewing-areas and portions of the inner canyon where noise pollution presents the greatest problem.

If this zoning approach proves inadequate, the National Park Service will seek legislation to limit aircraft activity below the rims.

## **REGIONAL COOPERATION**

Regional cooperation among Federal and State land-management agencies, Indian groups, and northern Arizona communities is essential.

### **Regional Information Centers**

Information centers are proposed for four key points in the region – Flagstaff, Williams, Cameron, and Jacob Lake – to assist tourists in park and regional trip planning. The centers will be set up and operated jointly with other Federal agencies, Indian tribal councils, and community chambers of commerce. The centers will serve as regional reservation desks for campgrounds and lodging, for booking recreational activities, and for dispensing information regarding the park, recreation areas, and Indian activities.

### **Assistance to Indian Tribes**

The National Park Service will offer planning and technical assistance to the Havasupai, Hopi, Hualapai, Navajo, and Paiute Tribes on the recreational use of Indian lands, and in joint planning efforts involving national park and Indian canyon-rim lands and river input and takeout points.

The National Park Service will seek cooperative agreements and authorization from Congress to use funds for this type of regional planning and development.

### **Regional Planning**

The National Park Service will participate in and encourage cooperative planning efforts with all groups and agencies concerned with outdoor recreation activities within the Grand Canyon region.

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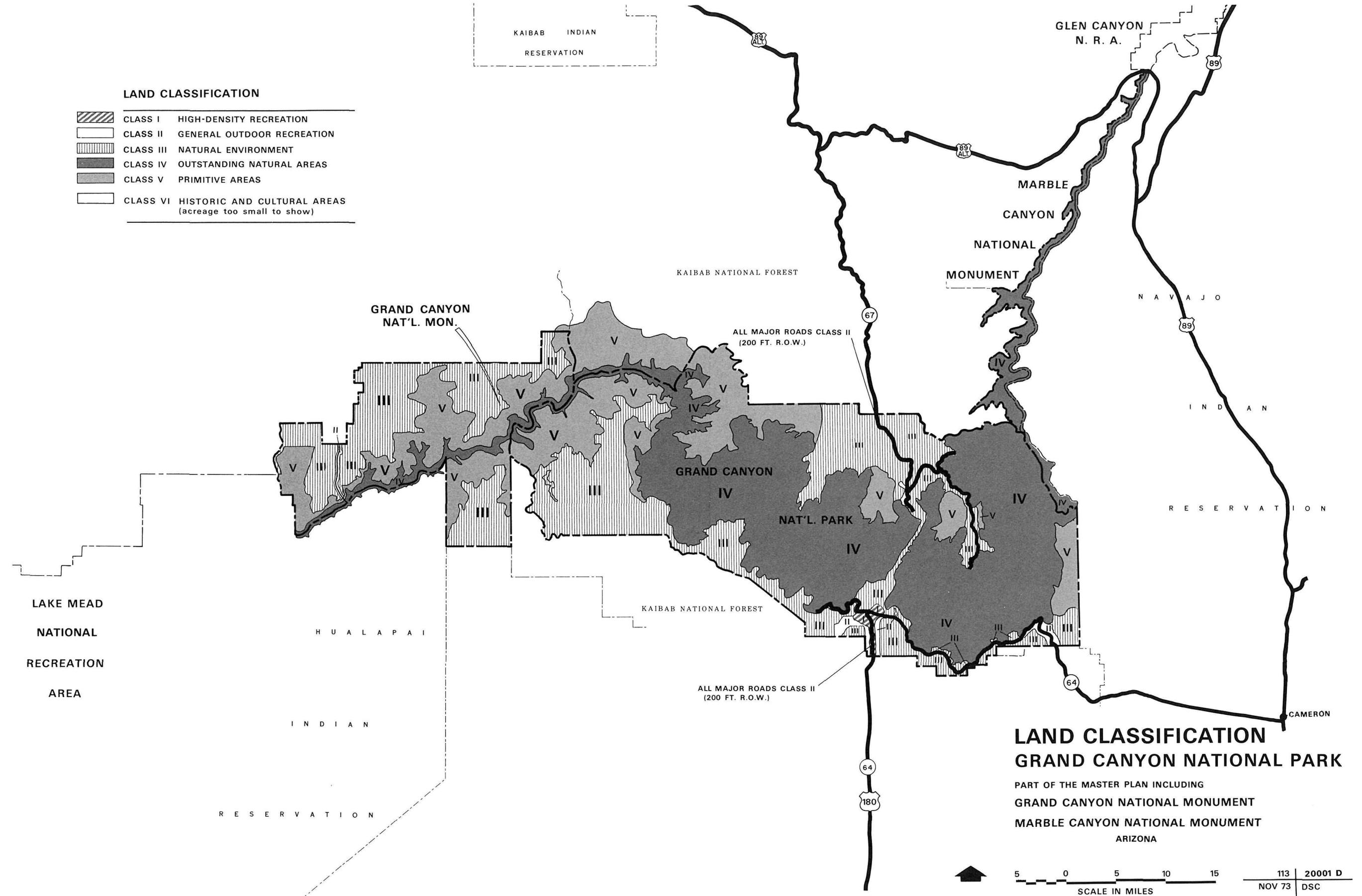
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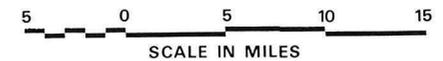
**LAND CLASSIFICATION**

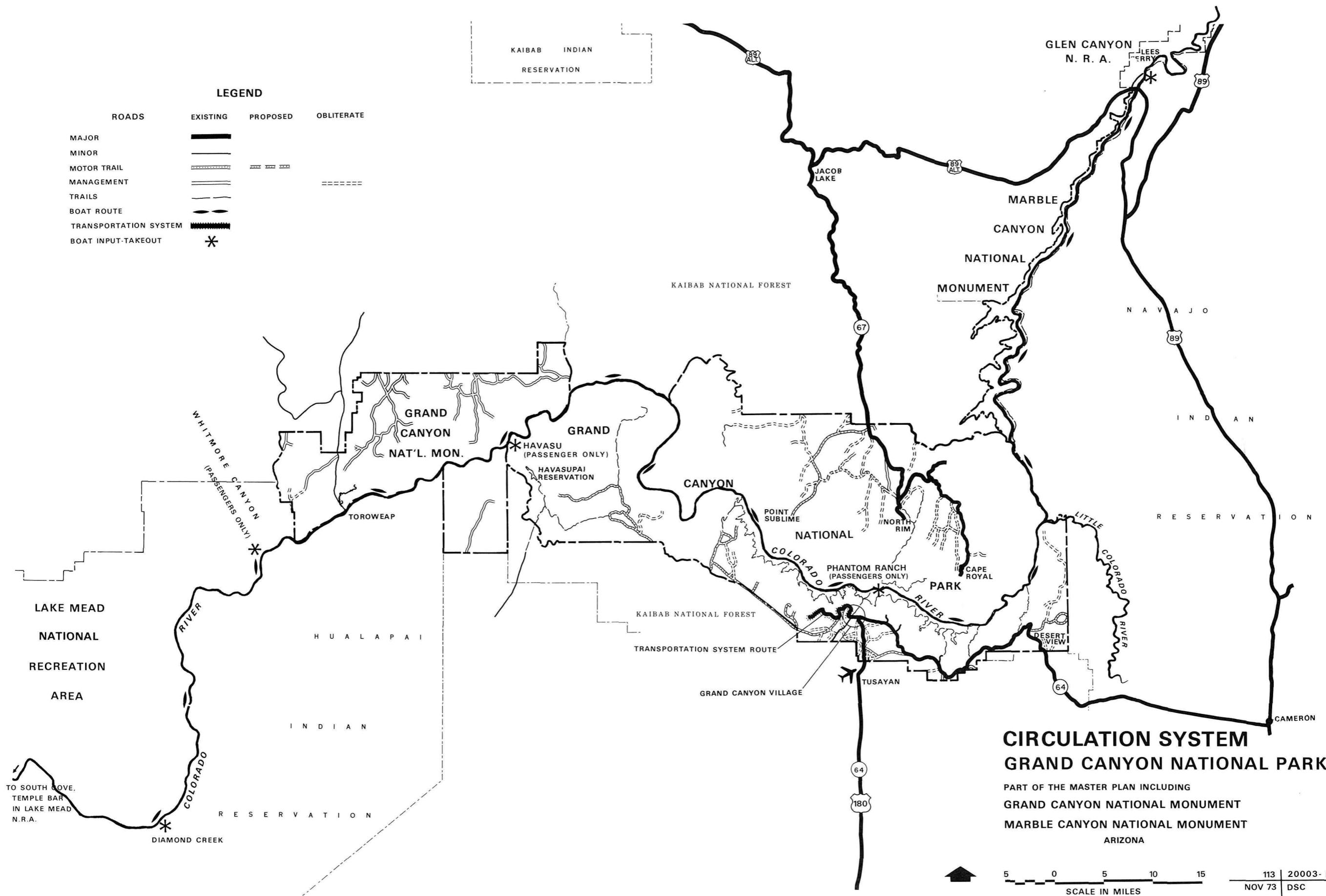
	CLASS I	HIGH-DENSITY RECREATION
	CLASS II	GENERAL OUTDOOR RECREATION
	CLASS III	NATURAL ENVIRONMENT
	CLASS IV	OUTSTANDING NATURAL AREAS
	CLASS V	PRIMITIVE AREAS
	CLASS VI	HISTORIC AND CULTURAL AREAS (acreage too small to show)



**LAND CLASSIFICATION  
GRAND CANYON NATIONAL PARK**

PART OF THE MASTER PLAN INCLUDING  
GRAND CANYON NATIONAL MONUMENT  
MARBLE CANYON NATIONAL MONUMENT  
ARIZONA





**LEGEND**

ROADS	EXISTING	PROPOSED	OBLITERATE
MAJOR			
MINOR			
MOTOR TRAIL			
MANAGEMENT			
TRAILS			
BOAT ROUTE			
TRANSPORTATION SYSTEM			
BOAT INPUT-TAKEOUT			

**CIRCULATION SYSTEM  
GRAND CANYON NATIONAL PARK**

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