
ENVIRONMENTAL
ASSESSMENT OF
ALTERNATIVES
FOR
BACKCOUNTRY
MANAGEMENT

GRAND CANYON NATIONAL PARK
SEPTEMBER 1982



NATIONAL PARK SERVICE/DEPARTMENT
OF THE INTERIOR

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	<u>PAGE</u>
I. <u>STATEMENT OF PURPOSE AND NEED</u>	1
II. <u>CONSTRAINTS ON BACKCOUNTRY PLANNING</u>	2
A. Legislation, Policies, and Guidelines Affecting Backcountry Management.	2
B. Current and Anticipated Trends in Backcountry Visitation.	3
C. Physical and Biological Elements Which Influence Backcountry Use and Management.	5
D. Present NPS Development.	6
E. Staffing.	8
III. <u>ALTERNATIVES AND ASSOCIATED IMPACTS</u>	8
A. Proposed Action; 1982 Grand Canyon National Park Backcountry Management Plan.	8
B. Continue Present Management; 1974 Backcountry Management Guidelines.	21
C. Allow Unrestricted Use in the Backcountry.	24
IV. <u>OTHER OPTIONS NOT CONSIDERED AS PART OF THE PROPOSED ACTION</u> . .	25
A. Prepare a Cross-canyon Corridor (CC) Use Plan.	25
B. Options for Commercial Guided Hikes in the Backcountry.	25
C. Modify Backcountry Reservations Procedures.	28
D. Allow Campfires in Certain Rim Areas.	29
E. Require Human Waste Carry-out in Some Backcountry Areas.	29
VI. <u>PERSONS CONSULTED</u>	31
VII. <u>REFERENCES</u>	32

I. STATEMENT OF PURPOSE AND NEED.

This environmental assessment discusses National Park Service alternatives and their environmental impacts for the management of backcountry areas of Grand Canyon National Park (GCNP). This assessment will provide a vehicle for public involvement in the decision-making process and will lead to a determination of whether implementation of the proposed action (GCNP Backcountry Management Plan, 1982) is a major Federal action significantly affecting the quality of the human environment, in accordance with provisions of the National Environmental Policy Act (1973). The Grand Canyon National Park "backcountry" includes over 1,179,700 acres of undeveloped land and water areas accessible by foot, boat, stock, paved roads, or primitive unmaintained dirt roads. This includes all land below the canyon rims (913,000 acres) and undeveloped areas on the North and South Rims. The North Rim developed area is managed as backcountry during the winter when park access roads are closed.

The long-range goals of backcountry management at Grand Canyon National Park are (1) to maintain, perpetuate, and where necessary reintroduce the natural ecosystem processes in the park's backcountry; (2) to protect and preserve important historic and prehistoric cultural resources, and; (3) to provide for a variety of backcountry recreational opportunities for the greatest number of visitors compatible with resources protection and visitor safety.

The park's present system of backcountry management is inadequate in achieving the goals and objectives set forth by legislation and park policy for the park's backcountry. Under the present system use distribution is at times haphazard with no assurance for the visitor that the experience sought after in terms of human contact, esthetics, etc., will be realized. Data and observation show that an accumulation of persons occurs in some backcountry areas while at the same time use on other trails and in other canyon areas is virtually zero. During most of the year backcountry use is poorly distributed in terms of both time and space. Demand is great, particularly for hiking in the Cross-canyon Corridor area and for access to the trails which descend from the South Rim between Hermits Rest and Desert View. Data show that current use limits are not reached during most of the year, yet a large number of persons (as many as 13,000 requests per year) are unable to obtain reservations for inner canyon hiking during certain times of the year.

Esthetic impacts such as trampled vegetation, denuded campsites, and trash, are widespread. Observation indicates that some backcountry areas are receiving severe impacts to soils, vegetation, small mammal populations, and water quality. Under current management no system of monitoring exists which will provide the feedback managers must have to measure conditions in the backcountry and to measure the success of specific management actions.

As a result of the need to update current backcountry management practices, the National Park Service proposes to administer a new system of backcountry management. The proposed action described in this assessment will ensure that present use levels are not adversely affected, improve management's ability to accommodate demand, provide a greater certainty for a variety of high quality backcountry recreational opportunities for the visitor, and provide managers with greater control over and information regarding the magnitude and importance of impacts to the visitor and the backcountry resource.

II. CONSTRAINTS ON BACKCOUNTRY PLANNING.

Backcountry management at Grand Canyon is constrained by laws and policies which set forth long-range goals and objectives to guide park managers in backcountry planning and management activities. The proposed action described in this document will provide for use of the backcountry. Management may set carrying capacities designed for the protection and perpetuation of natural ecosystem processes (36 CFR Ch. 1, 2, 6 Closure of Areas). A Backcountry Plan should provide for managers to measure the magnitude and importance of environmental, sociological, and esthetic impacts. It should also be flexible enough to incorporate the results of backcountry research and monitoring.

- A. Legislation, Policies and Guidelines Affecting Backcountry Management. The Organic Act of 1916 directs the National Park Service to regulate park use and promote enjoyment of park lands in a manner consistent with the conservation of park scenery, natural and historic objects, and wildlife. In order to fulfill these mandates, all resource planning activities must insure that public use facilities do not disrupt or damage resources to a degree whereby their ability to serve future visitors is reduced, that appropriate non-destructive public use and enjoyment of resources is made possible, and that conscious care and protection is provided to conserve natural and cultural park resources for the benefit and enjoyment of present and future generations. Thus, a program of backcountry management at Grand Canyon National Park must effectively protect and preserve park resources in the long term; including preservation of the primeval character of the park backcountry.

The Grand Canyon National Park Enlargement Act, January 3, 1975 (P.L. 93-620) provided for "...the further protection of the Grand Canyon in keeping with its true significance..." and established the current park boundary. This law incorporated Marble Canyon National Monument, Grand Canyon National Monument, portions of Lake Mead National Recreation Area and the Kaibab National Forest, as well as some Bureau of Land Management lands and other lands, into today's enlarged 1,226,656 acre national park.

Additional legislation and executive orders which influence backcountry management in the park include the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978, the National Historic Preservation Act of 1966 as amended in 1980, Executive Order 11593, Executive Order 11987, the Wilderness Act of 1964, the Federal Water Pollution Control Act Amendments of 1972, the Endangered Species Act of 1973, Public Law 94-429, the Clean Air Act Amendments of 1977 and Public Law 95-344, National Park Service Administration Act of 1978.

The Wilderness Act of 1964 requires all Federal land-managing agencies to re-examine their resources for possible wilderness classification. In 1976 five units totalling 992,096 acres within Grand Canyon National Park (82 percent of the total park acreage of 1,226,656 acres) were proposed for inclusion in the National Wilderness Preservation System. Little policy or operational change will occur as a result of action on the wilderness proposal. Motorized equipment and vehicles are presently allowed only in emergency, safety, research, and maintenance situations. In all cases, the minimum tool is used to accomplish management objectives.

The Grand Canyon National Park Master Plan (1976) was conceived to preserve the integrity of the Grand Canyon while providing for the millions of people who visit it each year. The principal features of the Master Plan include, "managing the park to retain the primitive qualities of the canyon" and "using environmental controls based on research to protect the park environment and to maintain the quality of the human experiences within the park". The Grand Canyon National Park Master Plan thus establishes the basic criteria to direct management of the park's backcountry for the preservation of its primitive quality and for the firm basis of that management upon scientific research.

- B. Current and Anticipated Trends in Backcountry Visitation. In addition to policy and legislative guidelines, backcountry management is influenced by environmental factors. These include availability and ease of access to the backcountry, sensitivity of the environment to impact, sanitation and health constraints, and sociological factors such as the user's level of backcountry hiking knowledge, the spectrum of backcountry experiences desired by visitors, and historical use trends in the backcountry. Statistical records for backcountry use at Grand Canyon indicate increasing use for the last five years.

Overnight use in the Cross-canyon Corridor (Bright Angel, Indian Gardens, and Cottonwood Campgrounds) has increased 4.5 percent per year since 1978 (see Fig. 1,a) and now approaches the annual camping capacity of 57,000 hiker-nights (one hiker night equals one person camped for one night). Use levels in the corridor fluctuate seasonally (see Fig. 1,b) with a low in February (1,000 to 2,000

hiker nights) and peak use occurring between May and September (3,800-4,300 hiker-nights per month). Demand for camping in the Cross-canyon Corridor exceeds capacity during this peak use period by as much as 75 percent.

Records for backcountry use outside the Cross-canyon Corridor indicate increased use in more remote areas of the backcountry. A rapid rate of increase in use of these areas was recorded from 1977 to 1979, followed by a 3 percent decrease in 1980 and a slight increase in 1981. The number of hiker-nights received by backcountry areas outside the corridor averaged 32,814 hiker-nights for the last 5 years. Use in these backcountry areas is seasonal; however, unlike the Cross-canyon Corridor, use in most other portions of the backcountry peaks in April and again in October.

During the months of March and April, demand for camping sometimes greatly exceeds established limits. While use declines during the hot summer months of July and August, all other seasons provide excellent conditions for inner canyon hiking. Two reasons are suggested for this discrepancy between available use and actual use during the balance of the year. First, space may be booked in advance with a high number of last minute cancellations resulting in less actual use than potential. Second, times of peak use and demand coincide with school vacations and holidays. It is anticipated that these seasonal fluctuations will not change significantly in the future.

Recreational boat use of the Colorado River through Grand Canyon National Park must be considered in the establishment of backcountry management policies and use levels. Boat trips on the Colorado River frequently involve visits to attraction sites and off-river backcountry camping. Approximately 15,000 persons per year travel through the park by boat. Between 80 and 90 percent of these river runners visit popular and well known attraction sites including the confluence of the Little Colorado River and the Colorado River, Deer Creek Falls, and Thunder River Falls. Between 30 and 40 percent of these river runners visit less popular attraction sites such as Clear Creek, Shinumo Creek, Stone Creek, and Matkatameba Creek. With the exception of Redwall Cavern all of these sites can be reached by hiking from the rim. Boaters also participate in overnight hikes away from the river. Some of the more popular off-river overnight hikes include: Shinumo Creek up to Bass Camp; Lava Canyon - Chuar Canyon loop; Royal Arch Creek; and the Tapeats Creek - Deer Creek loop. Ninety-two percent of boat use on the river occurs between May and September which is also the heavy use season for hikers in the Thunder River, Deer Creek, and Havasu areas. Therefore, competition for space between backpackers and river parties may be great at this time of year in these areas. Competition for space is also anticipated in Cross-canyon Corridor campgrounds between backpackers and persons entering or exiting for river trips. In other areas of the backcountry, the seasonal

low in hiker use occurs coincidentally with the seasonal increase in boat traffic, thus reducing conflict in these areas. Although most river oriented activities are governed by the River Management Plan (1981), any off-river overnight hikes taken by river parties are regulated through the Backcountry Management Plan.

- C. Physical and Biological Elements Which Influence Backcountry Use and Management. Physical aspects of the backcountry influence its use and management. These include general accessibility of backcountry trailheads, extent and difficulty of canyon trails and routes, climate, water availability and distribution, and number and durability of suitable campsites.

Except when limited seasonally due to road conditions, rimland backcountry and trailheads are accessible to visitors. Heavy rains and winter snows frequently make dirt roads impassable. The entire North Rim is accessible only by ski and snowshoes during winter months.

Access to the Inner Canyon is difficult, restricted by topography, and seasonally limited. The maintained trails of the Cross-canyon Corridor (North and South Kaibab, Bright Angel) are steep, but wide and obstruction free. A person of average health can safely use these trails. More than 10 unmaintained trails and many routes provide access varying in difficulty from steep, rocky foot paths to unmarked climbing routes. Greater strength, stamina, and backcountry knowledge are required of hikers using these trails and routes. During the winter, upper sections of canyon trails may be covered with ice and snow. In the spring and summer, floods may damage or destroy trail sections, further limiting Inner Canyon access.

Over 75 percent of canyon backcountry visitation outside the Cross-canyon Corridor occurs during the spring and fall when temperatures are not extreme and water is generally available (see Fig I,c). Campsites are almost exclusively located in the riparian areas near springs and creeks, or on Colorado River beaches. Very little camping occurs on the rocky, dry plateau areas.

Visitor use is influenced by the physical limits of side canyons and river beaches. Side canyons may be narrow and rocky, with steep slopes unsuitable for campsites. In most areas suitable campsites are limited in number and consequently heavily and frequently used.

Backcountry use patterns are directly influenced by the existing trail system, which is considered adequate. Virtually all backcountry visitors use established trails or well worn routes as access to the Inner Canyon. Virtually every trail, except a few lateral connector trails (Tonto Plateau Trail, Beamer Trail, etc), provides access from the rim to a side canyon or a river

beach. The majority of canyon hikers stay on or near these established routes and trails. Thus, it is easy to predict that people are found in the canyon almost exclusively on trails or camped by a water source where a trail intersects or terminates.

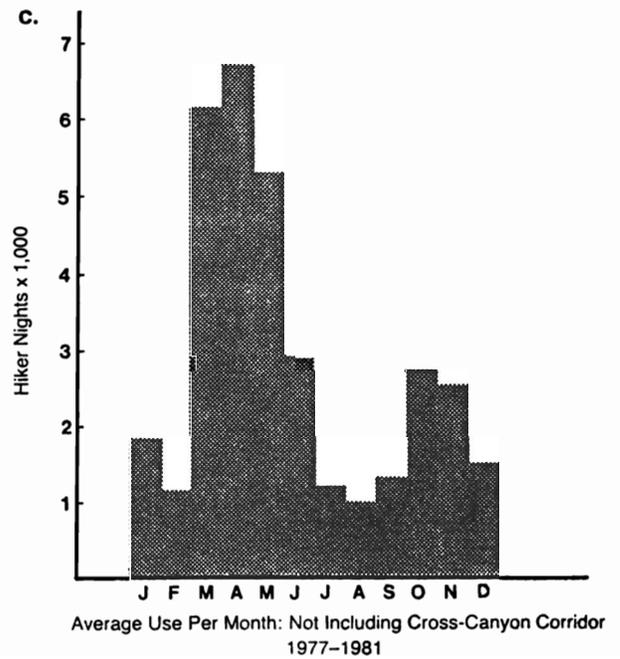
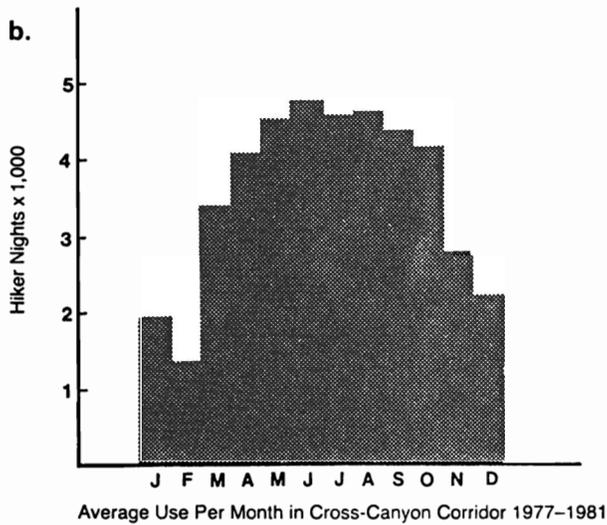
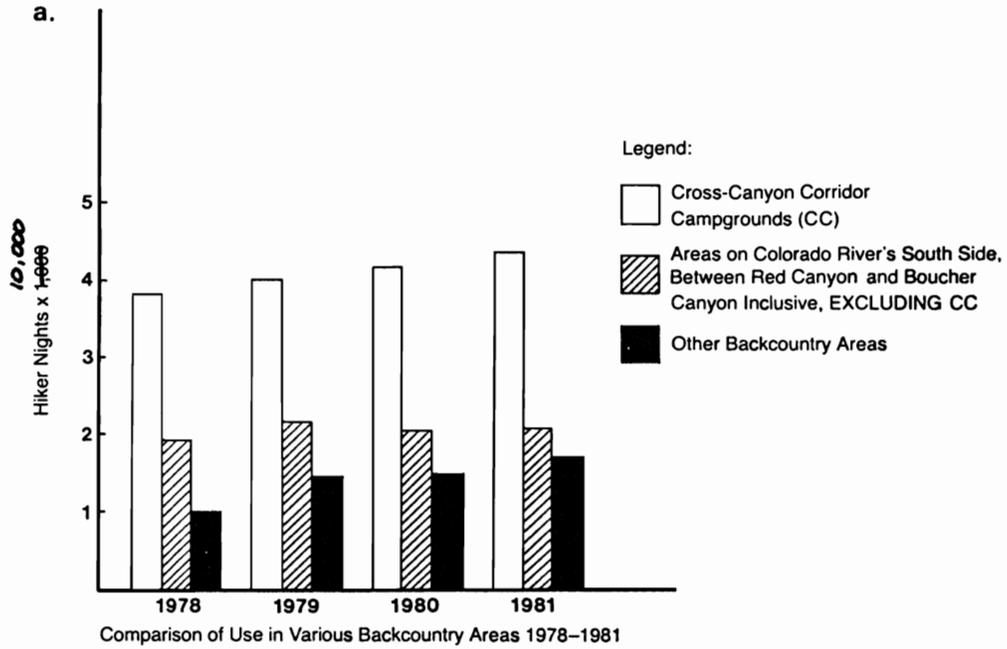
Biological characteristics of Grand Canyon's ecosystem influence backcountry management. The Inner Canyon is composed of a series of sidestreams, with attendant riparian ecosystems separated from each other by dry, rocky, relatively barren plateaus, escarpments, and buttes. Typically, the riparian ecosystems are narrow biological strips of high species diversity relative to the large amount of acreage occupied by desert habitat of far lesser species variety. Areas of the backcountry on the rims are also of minimal species diversity compared to creek, spring and riverside habitat found within the canyon. Riparian areas are receiving the greatest amount of impact from recreational use. It is significant that these areas are of high biological diversity and important habitat for much of the canyon's wildlife. Because of the large species variety and the potential for rapid vegetation growth in these areas relative to other Grand Canyon ecosystems, they are able to absorb to a greater degree the impacts of recreational use and recover most quickly from them. However, the rate of recovery of various Grand Canyon ecosystems under projected use levels and activity types remains unknown and needs to be determined through research and monitoring.

Because of their special attractiveness to the visitor and the irreplaceable and fragile nature of some areas, special consideration in backcountry management must be given to areas with unique resource features, such as geologic formations (e.g.: Ribbon Falls, cave resources), other attraction sites (e.g.: Elves Chasm, Havasu Creek), and cultural resources (e.g.: Horseshoe Mesa, Nankoweap).

- D. Present NPS Development. Administrative developments in the backcountry, such as buildings, toilets, water faucets, and flood control projects are limited to the Cross-canyon Corridor area and a few additional areas of heavy use. The Cross-canyon Corridor is highly developed with ranger stations, sewage treatment facilities, emergency telephones, helipads, creek riprapping, etc. In the rest of the Inner Canyon backcountry only Hermit Camp and Upper Tapeats Creek camp area have been developed, with a ranger station and toilet at Hermit and a dehydrating toilet at the Upper Tapeats camp area. Developments in the South Rim backcountry areas include the Pasture Wash Ranger Station and the Deer Cabin near Grandview Point. Developments in the North Rim backcountry include a primitive cabin at Muav Saddle, the entrance station fire tower and cabin, and the Kanabownits fire tower and cabin.

FIGURE I

Backcountry Use: Grand Canyon National Park



- E. Staffing. The River Ranger Station, Phantom Ranger Station, and Indian Gardens Ranger Station are staffed year-round. The Cottonwood and Hermit Ranger Stations are staffed intermittently, and the Pasture Wash Ranger Station has not been staffed since 1978. Ranger patrols in the Cross-canyon Corridor are on a daily basis. Moderately heavy use areas in the Inner Canyon are patrolled on a biweekly basis, and heavy use areas (Hermit-Bright Angel loop, Tapeats, Thunder River area) are patrolled on a weekly basis during peak use seasons.

III. ALTERNATIVES AND ASSOCIATED IMPACTS.

Many alternatives and options exist for management of the backcountry in the Grand Canyon, including the elimination of all use restrictions and the continuation of present management practices. Three alternatives are presented below. Descriptions of these alternatives highlight the differences between them, and in the case of the proposed action explains only those changes which are different from status quo. Other backcountry management practices not covered in the alternatives and options below will remain unchanged.

- A. Proposed Action; 1982 Grand Canyon National Park Backcountry Management Plan (BCMP). The proposed action is the alternative preferred by the National Park Service for management of Grand Canyon's backcountry areas. The major changes from current management under the proposed action include the zoning of backcountry lands, changes in visitor use patterns and limits, the initiation of monitoring and research actions and changes in the extent and magnitude of sociological and environmental impacts. The proposed action is intended to accomplish the following objectives: stabilize use at recent historic levels in the backcountry and provide the backcountry hiker with an opportunity for a wide variety of backcountry recreation opportunities, and with greater assurance that once in the backcountry the experience chosen will be realized. The proposed action will also improve the ability of management to accommodate the large demand for hiking in Grand Canyon's backcountry by increasing the opportunity for overnight use within the Cross-canyon Corridor campgrounds and encouraging a more even distribution of use throughout the backcountry and throughout the year. An information feedback and monitoring program will be established to assess changes in backcountry conditions and use characteristics. Future use modifications, mitigation, and management actions will be based on the information provided by this program. Options will also be identified for mitigation, possibly including site rehabilitation, restoration or closure, educational programs, orientation, and interpretation.

Specific actions to achieve the above objectives include the following: the division of the backcountry into use-areas;

zoning of all backcountry use-areas as either developed, threshold, primitive, or undeveloped; establishment of use limits for each area (based upon number of individual parties and groups per night); implementation of a research and monitoring program; and mitigation of some impacts through a site restoration and rehabilitation program.

1. Use-areas and Use Limits. Under this proposal the backcountry is divided into 72 use-areas delineated by easily identifiable topographic features (refer to map.) Each area has an overnight camping capacity based upon the size of the area, the number of suitable and available camping sites within the area, the ecological fragility of the area, its management zoning, and its use history (refer to Figure II, page 12). Use-area size ranges from several hundred acres to several thousand acres. The size, number, and boundaries of the use-areas are based upon established patterns of backcountry use and are intended to be practical for management.

Use limits in all areas will be maintained through permitting at the Backcountry Reservations Office (BRO). Use levels will be established for at-large camping (defined as camping in non-designated sites) in some areas and by designated site camping in others. In use-areas with at-large camping, hikers will not be required to give a night-by-night campsite itinerary but will be required to identify the use-area in which they will camp each night. Hikers in these at-large camping areas will be free to choose a campsite consistent with low impact camping guidelines issued through the BRO. In use-areas where camping is only at designated sites, hikers will be required to camp in designated campsites. Campers will be required to follow the itinerary stated on their camping permit in all use-areas.

Use levels will be based not on the total number of persons within the use-area or at a designated campsite but instead on the number of individual parties (defined as one through eight persons traveling together) and the number of groups (defined as from nine to sixteen persons traveling together) allowed to camp in a use-area per night. For example, up to three individual parties and one group may camp within the Tanner Use-area on any night. This means that the use limit could be reached by as few as 12 persons (three parties of one individual each, one group of nine persons) or as many as 40 persons (three parties of eight each and one group of sixteen). In setting the use limits listed in Figure III an analysis was made of the park's backcountry use for the past five years. Other considerations included the physical and sociological limitations and presence or absence of sensitive resources. It was also determined that the average hiker group size at Grand Canyon is 13 persons and the average party size is 3 persons. From this information use levels for the different backcountry areas of the park were determined which in most cases do not increase or decrease use from recent use levels.

The use levels proposed in Figure III are based upon the maximum number of persons possible. For example, in the Tanner Use-area a maximum of 40 persons could be camped per night. This will seldom occur however, because the average party size is 3 (not 8) persons, and average group size is 13, (not 16) persons. Therefore, on most nights 22 or fewer persons will be camped in the Tanner Use-area.

In some use-areas (e.g., Hermit, Monument, Cremation, Grapevine, Cottonwood, and Horseshoe Mesa) the use allowed for on a monthly basis under the proposal is higher than monthly use occurring under present management. However, the peak amount of use allowed under the proposal will seldom be reached because average party and group sizes are expected to remain the same as they have for the past 5 years (as discussed above). Because under the current system limits are based upon trailhead quotas, an area such as Horseshoe Mesa may presently have 60 persons camped there one night followed by 4 persons the next night. Such radical fluctuations in amount of camping use per area occur under present management. The proposal, by setting nightly area quotas, will eliminate the large fluctuations, distribute use more evenly and prevent large accumulations of people from occurring at well known campsites.

2. Use Limit Explanation for Selected Use-areas. Refer to Figure III, Page 13.

Corridor Campgrounds: Cross-canyon Corridor campground use limits have been established based upon recent historical use levels. Sites are well defined. Use in these campgrounds will be booked through the BRO on a party/group system, similar to the rest of the backcountry. Use limits are based upon the number of available sites within each campground.

Clear Creek Use-area: This area includes the Clear Creek drainage and the area on the Tonto Plateau in the vicinity of Sumner Wash. Camping will be at-large in this area. In the Clear Creek drainage, camping is restricted to areas north of the first major side canyon entering from the east, up from the river. Camping on the Colorado River beach just to the east of the confluence of Clear Creek and the Colorado River is also allowed.

Transept, Manzanita, Uncle Jim Point Use-areas: Camping is not allowed in these areas due to available camping in the Corridor campgrounds, the ecological fragility of these areas, and their low physical carrying capacities.

Hermit/Monument Use-area: Because of its accessibility, a high demand exists for use in these areas. This high level of use will be maintained. Sociological impacts will be mitigated through the designation of campsites located at Hermit Creek,

Hermit Rapids, Monument Creek, Granite Rapids, Cedar Springs, Salt Creek and Horn Creek. Camping in the Hermit/Monument Use-areas will be restricted to these designated campsites. Some conflict over camp space may occur between hikers and boaters at beach sites. This will be mitigated by the seasonal reduction in hiker use in these areas during the summer, which coincides with a seasonal increase in river use.

Horseshoe Mesa Use-area: This area also has relatively easy access, has high use historically, and with the exception of impacts to cultural resources in the vicinity, can withstand continued high use levels. Limiting factors in this area will be adequate human waste disposal and protection of cultural resources.

The Basin Use-area: This is an ecologically fragile North Rim area restricted to day use only.

Tapeats Use-area: Although this area is remote and access from the rim is difficult, it is visited frequently by river parties during the summer season. Camping use is restricted to two sites, Upper and Lower Tapeats campsites. Use limits are low in accordance with the canyon's low physical carrying capacity and in order to reduce conflict at Lower Tapeats between river parties and hikers.

3. Zoning of Use-areas. To better guide management actions in the backcountry, and to provide an opportunity for a wide variety of backcountry experiences, each use-area is zoned as developed, threshold, primitive, or undeveloped. Zoning is based upon (1) the potential for contact with others within the use-area; (2) the amount and type of administrative development within the area; (3) the ease of access to the area; (4) types of visitor use allowed within the area; and (5) the amount of visitor and administrative impact to be expected within the area. As an example, Tanner Canyon is zoned as primitive. The area has no facilities and camping is at-large. On the other hand, Hermit Canyon, with a ranger station and toilet facilities, is zoned as a threshold use-area. Refer to Figure II for zone descriptions. All undeveloped use-areas have a use limit of one party per night. In primitive and threshold areas the use limit varies from one to four parties per night and from one to two groups per night, depending on the area. For specific use limits and zoning refer to Figure III, Page 13.

FIGURE II - BACKCOUNTRY ZONING

All use areas are zoned as developed, threshold, primitive, or undeveloped and have specific use limits (see Figure III), page 13). Zone standards are described in this matrix; refer to page 11 for a description of zone management and page 18 for a description of the impacts of zone management.

USE ELEMENT: ZONING	AMOUNT OF PARTY/ PARTY CONTACT	AMOUNT AND TYPE OF NPS DEVELOPMENT	PUBLIC ACCESSIBILITY	CAMPING RESTRICTIONS
DEVELOPED	Potential for continuous contact. High density use.	Permanent structures for visitor safety and sanitation, administration, interpretation, and protection of resources; utilities and signs; bridges and trails.	Paved roads to trailheads; maintained foot and stock trails.	Designated campgrounds; required use of sanitary facilities.
THRESHOLD	Potential for frequent contact. Medium density use.	Nonpermanent structures for visitor safety, sanitation, and protection of resources; signs; dirt roads and trails.	Paved and dirt roads to trailheads; unmaintained foot trails and routes.	Designated sites in some areas; at-large camping in some areas; required use of available sanitary facilities.
PRIMITIVE	Infrequent contact. Low density use.	Directional signs, dirt roads and trails, fire lookouts and ranger cabins on rims.	Dirt roads to some trailheads; unmaintained foot trails and routes.	At-large camping.
UNDEVELOPED	Potential for no contact.	No development except prehistoric structures and abandoned historic structures.	Unmaintained foot trails and routes.	At-large camping. One party of 8 persons or less only per night.

Figure III

Area Use Limits and Zoning

Map Number	Use-area	Mgmt. Zone*	Party Limit	Group Limit	Max. No. Campers Per Night	Type Camping**
1	Badger	Prim.	1	1	24	A/L
2	Rider	Prim.	1	1	24	A/L
3	South Canyon	Prim.	1	1	24	A/L
4	Saddle Canyon	Prim.	1	1	24	A/L
5	Nankoweap	Prim.	2	1	32	A/L
6	Chuar	Undev.	1	0	8	A/L
7	Unkar	Undev.	1	0	8	A/L
8	Vishnu	Undev.	1	0	8	A/L
9	Cheyava	Undev.	1	0	8	A/L
10	Clear Creek	Thresh.	3	1	40	A/L
11	Manzanita	Thresh.		Day Use Only		
12	Greenland Spring	Undev.	1	0	8	A/L
13	Uncle Jim Point	Thresh.		Day Use Only		
14	Transept	Thresh.		Day Use Only		
15	Phantom Creek	Undev.	1	0	8	A/L
16	Trinity	Undev.	1	0	8	A/L
17	Scorpion Ridge	Undev.	1	0	8	A/L
18	North Bass	Prim.	1	1	24	A/L
19	Powell Plateau	Prim.	2	1	32	A/L
20	Blacktail	Undev.	1	0	8	A/L
21	Tapeats Amphitheatre	Undev.	1	0	8	A/L
22	Tapeats	Thresh.				
	-Upper		1	1	24	D/S
	-Lower		1	1	24	D/S
23	Surprise Valley	Prim.	1	1	24	A/L
24	Deer Creek	Prim.	1	1	24	A/L
25	Esplanade	Prim.	1	1	24	A/L
26	Fishtail	Undev.	1	0	8	A/L
27	Kanab Creek	Prim.	2	1	32	A/L
28	Boysag	Undev.	1	0	8	A/L
29	The Dome	Undev.	1	0	8	A/L
30	Whitmore	Thresh.	1	1	24	A/L
31	Parashant	Undev.	1	0	8	A/L
32	Trail Canyon	Undev.	1	0	8	A/L
33	Diamond Creek	Undev.	1	0	8	A/L
34	Separation	Undev.	1	0	8	A/L
35	Surprise	Undev.	1	0	8	A/L
36	Burnt Point	Undev.	1	0	8	A/L
37	Snap Point	Undev.	1	0	8	A/L
38	Grand Wash Cliffs	Undev.	1	0	8	A/L
39	Palisades	Prim.	2	1	32	A/L
40	Tanner	Prim.	3	1	40	A/L
41	Cardenas	Prim.	2	1	32	A/L
42	Red Canyon	Prim.	2	1	32	A/L

Map Number	Use-area	Mgmt. Zone*	Party Limit	Group Limit	Max. No. Campers Per Night	Type Camping**
43	Hance Creek	Prim.	2	1	32	A/L
44	Horseshoe Mesa	Thresh.	3	2	56	D/S
45	Cottonwood Creek	Prim.	2	1	32	A/L
46	Grapevine	Prim.	2	1	32	A/L
47	Cremation	Prim.	2	1	32	A/L
48	Corridor	Dev.				
	-Indian Gardens		13	1	120	D/S
	-Bright Angel		29	2	264	D/S
	-Cottonwood		10	1	96	D/S
49	Monument	Thresh.				
	-Monument Creek		3	1	40	D/S
	-Granite Rapids		2	1	32	D/S
	-Cedar Spring		1	0	8	D/S
	-Salt		1	0	8	D/S
	-Horn		1	0	8	D/S
50	Hermit	Thresh.				
	-Hermit Creek		2	1	32	D/S
	-Hermit Rapids		1	1	24	D/S
51	Boucher	Prim.	3	1	40	A/L
52	Turquoise	Prim.	3	1	40	A/L
53	South Bass	Prim.	1	1	24	A/L
54	Garnet	Prim.	2	1	32	A/L
55	Apache	Undev.	1	0	8	A/L
56	National	Undev.	1	0	8	A/L
57	Walhalla Plateau	Prim.	4	2	64	A/L
58	Thompson Canyon	Prim.	4	1	48	A/L
59	Robbers Roost	Prim.	3	1	40	A/L
60	The Basin	Thresh.		Day Use Only		
61	Widforss	Thresh.	2	1	32	A/L
62	Outlet	Prim.	2	1	32	A/L
63	Point Sublime	Thresh.	2	2	48	A/L
64	Swamp Ridge	Prim.	4	2	64	A/L
65	Kanab Point	Prim.	3	1	40	A/L
66	Tuckup Point	Prim.	3	1	40	A/L
67	Toroweap Valley	Thresh.	2	1	32	A/L
68	Cape Solitude	Prim.	2	1	32	A/L
69	Cedar Mountain	Thresh.	2	2	48	A/L
70	Tusayan	Thresh.		Day Use Only		
71	Long Jim	Thresh.		Day Use Only		
72	Pasture Wash	Thresh.	3	2	56	A/L

*Dev. = Developed Zone
 Thresh. = Threshold Zone
 Prim. = Primitive Zone
 Undev. = Undeveloped Zone

**A/L = At-Large Camping
 D/S = Designated Site

4. Length of Stay. Except by special permission camping is limited to 7 nights per use-area per trip. The overall trip length (both in number of days and miles) is not limited. No camping location may be occupied for more than two nights per trip.
5. Area Closures. The following areas are closed to all camping, but are open to day use:
- Redwall Cavern - High day use area. No feasible areas for human waste disposal.
 - Saddle Canyon below Redwall Formation - High day use area. Riparian zone with no campsites available away from fragile vegetation.
 - Little Colorado/Colorado River Confluence - No camping within one mile of the confluence. High day use area. Documented habitat of humpback chub, an endangered fish species.
 - Phantom Creek and Haunted Canyon below the Tapeats Formation - Narrow canyons with fragile riparian vegetation. No campsites available more than 50 feet from water and no suitable waste disposal sites.
 - Elves Chasm - High day use area. Limited and fragile riparian vegetation and travertine formations. No suitable waste disposal sites.
 - Thunder River Drainage from Surprise Valley to confluence with Tapeats Creek - High day use area. Steep slope and absence of campsites more than 50 feet from water. Lack of suitable waste disposal sites.
 - Havasu Creek within Grand Canyon National Park - High day use area.
 - Matkatamiba Canyon below Redwall Formation - High day use area.
 - Grandview Historic Mining District - Cultural resource area.
 - Dripping Springs - Fragile local vegetation. Day use area with suitable camping nearby on the rim and near Hermit Creek.
 - Clear Creek drainage from the Colorado River north to the first major side canyon entering from the east - Absence of campsites more than 50 feet from water. No suitable waste disposal sites.
 - Miner's Spring - Fragile local vegetation with suitable camping on Horseshoe Mesa and near Hance Creek.
 - Deer Creek, from Colorado River to upper end of narrows - Lack of suitable campsites, heavy day use.
 - The Hopi Salt Mines along the Colorado River are closed to all visitation (except by permission from the Hopi Tribe). This closure extends 1/2 mile both up-river and down-river. This is a Hopi cultural site and a fragile resource.
6. Monitoring and Research. The 1916 National Park Service Organic Act mandates that the Service manage the parks to provide for visitor use while protecting park resources. The NPS Administration Act of 1978 (P.L. 95-344) mandates that the Service establish carrying capacities for each area, and maintain use levels within these limits. Under this alternative a backcountry

research and monitoring program will be instituted. The objective of this program will be to measure the Plan's success in reaching its stated goal of resource protection and visitor utilization. The monitoring and research results will form the basis for modification and fine tuning of the plan and serve in the identification of management actions. Such actions may include installation of sanitary facilities, stabilization of trails, improved visitor education and information, and use limit modifications, all of which will be used to mitigate resource impacts. The program will also address visitor health and safety issues such as water treatment and hiker orientation. Species diversity and composition will be identified and monitored at use-areas. The susceptibility to impacts of significant species of wildlife and vegetation, and their recovery potential and impact tolerance limits will be identified. Species which act as indicators of impacts to less obvious ecosystem elements will be identified. The program will also address the impacts of NPS management actions and sociological aspects of backcountry use.

The Resource Monitoring Program will be as simple, efficient, and cost effective as possible. Specifically, the program will: (1) develop a data base characterizing the existing sociological, ecological, and esthetic conditions in the backcountry; (2) establish a continuing monitoring program to detect the magnitude and cause of changes in these conditions; (3) through research, identify specific parameters to act as indicators of change to the backcountry system; (4) establish a procedure to evaluate the effectiveness, accuracy, and appropriateness of the backcountry monitoring program; and (5) determine the correlation between impacts and their causes (i.e., separate human from nonhuman impact and distinguish the impact caused by different user groups).

The Plan calls for the rehabilitation and restoration of badly impacted sites. Depending on acceptable levels of impact set by management and the results of monitoring, individual site restoration plans will be written and implemented for excessively damaged sites.

7. Backcountry Reservations System. Backcountry management depends upon up-to-date and complete backcountry visitor use statistics. Because of the increased complexity of backcountry management under this Plan, it is proposed that in the near future the operations of the Backcountry Reservations Office (BRO) be computerized. Through automatic data processing the BRO will be able to track the various backcountry uses and maintain up-to-date information on backcountry vacancies and in this way provide a more positive response to demand. The BRO presently operates on a system using computer coded backcountry use permits. The most useful information which will be made available through automatic data processing is as follows: (1) user nights per use-area per month, (2) user nights per campsite per month, (3) average party size, (4) average group size, and (5) entry and exit points.

These statistics will provide field personnel with information on the intensities and patterns of visitor use, enable better utilization of limited visitor protection personnel, and will provide a base reference for resource impact studies. Additional statistics such as specific site use in "at-large" camping areas; number of non-permitted overnight hikers, by use-area; number of hikers off itinerary; party/party contact frequency; water-borne disease contamination; wildlife/human interaction; etc., will be collected through sampling under the backcountry research and monitoring program.

Under the proposed action reservations for backcountry hikes (for both groups and parties) may be made in advance, in person or by mail. Phone-in reservations will no longer be accepted. Mail-in reservations may be made for camping anytime in the following calendar year, but these advance mail-in reservations will only be accepted between October 1 of the preceeding year and March 31 of the calendar year. For example, if a hiker wishes to make reservations for backcountry camping beginning June 1 of 1984, he/she can apply through the mail or in person anytime between October 1, 1983, and March 31, 1984. Or he/she can apply at the BRO in person and attempt to get a walk-in permit up to one day in advance of the trip. ,

Other BRO adjustments may be necessary to effectively manage the backcountry under the proposal. It is essential that the Backcountry Reservations Office educate and orient potential hikers to elements of the Grand Canyon backcountry, including the following: ease of access in the zone and area to be visited by the hiker, potential for party/party contact, and type of facilities in the area.

8. Private Stock Use. The proposed action will limit commercial and private stock use to the maintained trails within the Cross-canyon Corridor, to the Whitmore Wash Trail, the stock trail from Moqui Lodge to Duck-on-a-Rock overlook, the connector trail between the South Kaibab and Bright Angel Trailheads and on the North Rim, the trail from the North Kaibab Trailhead to Uncle Jim Point. One private party with stock (no more than 10 animals) will be allowed per night, per Corridor campground. Private stock may also be used in rim backcountry areas zoned as threshold or primitive. All feed must be carried in. Permits, orientation, and registration will continue to be required.
9. Plan Review and Update. Informal Plan review will occur on an annual basis. Crucial elements for review of the Plan include: zone classification standards as compared with actual field conditions; the necessity of site rehabilitation or closure; appropriate adjustments in area use levels; the accomplishment of identified responsibilities; the success of park division interface and communication; the effectiveness of on-going research and monitoring; public reaction and comment; the effectiveness of visitor education and information programs; and the adequacy of current levels of backcountry staffing and patrols.

Impacts Associated With the Proposed Action:

1. Impacts to Soils, Vegetation, and Wildlife: The proposed action will not increase the extent of impacts already existing to natural soils, vegetation, and wildlife, since up to 90 percent of these impacts in an area occur with the first 30 percent of use. Extensive impacts have already occurred to the Grand Canyon backcountry including establishment of campsites, soil compaction, loss of vegetation, and establishment of nuisance animal communities (ants, squirrels, skunks). Because the proposed action will stabilize use levels and provide a better distribution of use in the backcountry, impacts to soils and natural biological communities will also be stabilized at present levels. A small amount of recovery of plant and animal communities will occur in some riparian areas because of the productivity and rate of vegetation growth in these areas. Existing impacts in blackbrush, rim woodlands, and desert areas will remain. As identified in the park's Resources Management Plan (1982), several research projects, if funded, will identify areas of potential or existing conflict between backcountry use and sensitive or rare forms of vegetation and wildlife. This information can be used to manage for the protection of wildlife species and to the advantage of Grand Canyon's natural biological communities

Under the proposed action the party/group system will reduce the extent of environmental impacts in some camp areas, since people in a party camp as a unit, cook together, etc., while the same number of persons camped as individuals in the area will attempt to maximize distance between their camp spaces, thus extending the camp area perimeter.

2. Impacts to Visitors: The proposed action will benefit the backcountry visitor at Grand Canyon National Park in a number of ways. Proposed use limits will not reduce use in any areas but will stabilize use in most areas of the backcountry. Use levels proposed for areas outside the Cross-canyon Corridor will encourage a more equal distribution of use throughout the year and throughout each use-area. This will prevent the visitor congestion presently occurring in some popular camp and attraction sites. Esthetic impacts such as trampled and damaged vegetation, litter, and denuded soil and sociological impacts such as competition for space and loss of solitude will be lessened as a result of this improved use distribution.

The backcountry has been zoned to guide management actions within each use-area. This will provide increased resource protection and consequently an improved quality of experience for the backcountry visitor. It will define and ensure a wide variety of backcountry opportunities for the visitor. Under the proposed alternative the visitor can be assured that if he/she plans a hike in an area zoned as undeveloped, it is likely that no one else will be encountered during that hike, that visible resource impacts will be at the lowest possible level, and

trails will be rough or nonexistent. The ability to choose more specifically the desired experience characteristics and to anticipate these elements of the wilderness experience will add greatly to the backcountry visitor's satisfaction.

The proposed reservations system will provide a more equitable response to visitors seeking backcountry use permits and will allow personnel at the BRO to provide improved services of information and orientation to visitors who come to the office in person. This improved orientation for the backcountry hiker may serve to reduce the incidence of emergency medical assistance, search and rescue, and general discomfort to the hiker which can result from lack of information. Walk-in permits can be processed more quickly as BRO personnel are freed from responding to telephone reservations and mail during the busy season. By eliminating telephone reservations the advantage that persons calling in have over those writing in will be eliminated. Under present management BRO accepts phone and mail requests which are received in the office on the first day of each month. However, if the first day of the month falls on a Saturday or Sunday, when the mail is not delivered, the BRO does not honor any mail requests until Monday morning. Since phone requests are accepted on Saturday and Sunday, many of the campsites are already full by the time mail requests arrive on Monday morning. This occurred during 4 months in 1981, and is expected to occur 2 months in 1982. By using only mail-in reservations, the BRO can better operate a first-come, first-served reservation system.

The proposal will negatively affect persons who decide after March 31 that they wish to make reservations for hiking in the Grand Canyon. These persons will then have to apply in person at the BRO on a first-come, first-served basis to acquire backcountry use permits, for a hike to begin the following day. In the busy season it is often difficult to obtain permits for the hike of one's choice, on a walk-in basis. Most backcountry use is currently booked in advance through the existing reservations system, indicating that persons are aware of and use this system. It is anticipated that after a transition period during which the NPS makes the public aware of the new system, the public will use to their advantage the October-March reservations period.

Under this alternative, modifications to use limits within the Cross-canyon Corridor Developed Zone will occur. Camp space will be booked through the BRO on a party/group system. This system will better utilize the spatial characteristics existing at each campground and help to eliminate competition for campsites in these campgrounds.

The proposed party/group use-area limits will affect visitor satisfaction. Persons who do not agree with visitor use limits will be negatively affected. Positive effects include fewer party/party contacts in backcountry areas exclusive of the developed zone.

In areas governed by trailhead quotas under the present system, hikers are not required to remain on a fixed itinerary once in the backcountry. Management under the proposed action will remove some freedom from the user because of the requirement that an itinerary be followed, detailing where, when, and how long each use-area would be used. Under the proposal hikers would be required (except in emergency situations) to remain on their planned itinerary.

3. Impacts to Cultural Resources: Under the proposal designated camp areas may be established for the protection of cultural resources in a use-area. Because of this, protection of cultural resources will be more certain than under current management, which has no specific restraints on dispersal into or inadvertent destruction of cultural resources. Additional actions to mitigate adverse impacts occurring to park cultural resources are identified in the Resources Management Plan, GRCA, 1982. These actions are compatible with backcountry management under the preferred alternative.
4. Impacts to Management: Implementation of the proposed action will facilitate management of the backcountry by separating it into small management areas, each with its particular use levels based upon zoning, potential for resource impacts, topography, physical and sociological constraints, water sources, and historic use.

Zoning of backcountry areas into four categories (developed, threshold, primitive, and undeveloped) will facilitate management by identifying the conditions to be maintained in that area. The type of backcountry experience which management is committed to providing for the hiker within a zone will determine the resource and sociological elements which guide management actions. For example, management actions in an undeveloped zone will be guided by esthetic and social considerations and for the maintenance of an untarnished biological reserve. Consequently, levels of use in undeveloped zones will be low enough to maintain a landscape which appears primeval and to virtually eliminate party/party contacts. On the other hand, in developed zones, such as the Cross-canyon Corridor where visitation is intended to be high, the physical carrying capacity and health and safety considerations are the primary elements which motivate management actions.

By limiting the mail-in reservations period to between October 1 and March 31 and eliminating phone-in reservations, the staff available at the BRO will be able to process mail-in applications during the time of the year when the number of visitors walking in for permits or checking in for a hike is at its lowest. This distribution of workload (emphasis on mail-in application processing, October-March; emphasis on walk-in/window visitation, April-September) not only responds to known patterns of visitation but will most efficiently distribute the workload of the BRO.

The requirement that backcountry hikers provide and remain on an itinerary will allow management to more accurately measure use levels and patterns in the backcountry. This information is essential if problems with the backcountry management system such as resource impacts, increased search and rescue functions, visitor crowding, conflict between backpackers and day users, are to be identified and solved with appropriate management action.

B. Continue Present Management; 1974 Backcountry Management Guidelines.

Under this alternative, policies under which the backcountry is currently managed (1974 Backcountry Management Guidelines) would continue. All backcountry lands managed under this alternative are classified as either natural, development, special use, or historic zones. With the exception of the Cross-canyon Corridor, which is a developed zone; the Havasupai Traditional Use Lands, which are classified as a special use zone; and a portion of the Horseshoe Mesa, which is a historic zone; all other backcountry lands are presently classified as a natural zone.

Under current management no written statement exists to guide and direct research, monitoring, and site rehabilitation and restoration. The current minimal level of backcountry monitoring would continue. This is limited to some backcountry patrol collection of sociological data, water quality monitoring of backcountry sources, intermittent aircraft monitoring, and inconsistent and infrequent documentation of backcountry site damage. No backcountry ecological or sociological research is presently on-going, and none is proposed under this alternative.

The 1974 Backcountry Management Guidelines define a group as from 10 to 16 persons. All trails accessing the Inner Canyon from both rims are limited by trailhead quotas to 16 overnight hikers entering on each trail per day. The exceptions to this limit include the Cross-canyon Corridor trails, the Hermit Trail, and the Tapeats/Thunder River area. Use capacity in the Cross-canyon Corridor campgrounds would continue unchanged with a nightly limit at the Bright Angel Campground of 75 persons; Indian Gardens Campground, 45 persons; and 40 persons at Cottonwood Campground. Use limits would continue on an individual/group basis, not by a party/group system. Use of the backcountry area between the Hermit trail and the Bright Angel Trail (known as the Hermit Loop) would continue to be by designated campsites. Camping in the Thunder River/Tapeats Creek area would also be restricted on a designated site basis. Backcountry campers are currently required to obtain a backcountry use permit prior to entry into the backcountry, but they are not required to remain on a planned itinerary except in the Hermit Loop, Tapeats Creek, and Cross-canyon Corridor areas.

Under current management, advance reservations for backcountry camping for both groups and individuals may be made no earlier

than 3 months in advance of the month for which camping space is requested. Reservations may be made by mail, in person, or by telephone. Phone requests may be made 7 days a week between 1 and 5 p.m. Mountain Standard Time. For example, if a person wishes to obtain a hiking permit for June 15, the earliest time which he/she could apply is March 1.

Impacts Associated With Present Management. There are three major effects to backcountry resources and the quality of the visitor experience as a result of management under this alternative. Of primary concern is the lack of an adequate system of information feedback to managers to provide qualitative and quantitative data on conditions existing in the backcountry. Changes to environmental, cultural, and sociological backcountry elements are presently inadequately documented or totally unknown. Some campsites and attraction sites have been and continue to be abused, resulting in large areas of denuded and compacted soil at many campsites (Hermit Camp, Cottonwood Creek, Hance Canyon, Boucher Canyon, etc.) and damage to many cultural resources (Horseshoe Mesa, South Canyon, Beamer's Cabin, Whitmore Wash, Deer Creek). Lack of trail definition in many areas has led to the proliferation of multiple trailing, erosion, and esthetic impacts. The extent and intensity of vegetation loss, soil deflation, changes in small mammal and invertebrate species diversity and numbers, impacts to sensitive wildlife species such as bighorn sheep and peregrine falcons, and invasion of exotic species is unknown.

Sociological impacts such as crowding at campsites, competition for space, party/party contact frequency, and general satisfaction with the backcountry experience are also unknown. Without adequate backcountry resource monitoring and research data park managers will continue to be in a position of gambling park personnel and monies on possibly ineffectual management decisions. The success of campsite or trail rehabilitation efforts will be unknown. The necessity and usefulness of sanitary facilities will be unknown. Justification for management actions such as an increase or decrease in use levels, expansion of interpretive and educational programs, etc., will be unavailable. Basic objectives for backcountry management, including resource protection and visitor satisfaction, will not be accomplished.

A second significant impact of current management concerns the distribution of overnight use in areas with trailhead limits. Because trailhead limits proved to be ineffective in preventing crowding along the Hermit-Tonto-Bright Angel Loop, designated campsites were established. Trailhead limits are now proving ineffective along many other backcountry trails. Visitors congregate at a relatively few, usually riparian, sites accessible from several trailheads. Water sources are limited so that some locations draw hikers from several different access trails. In these areas during the heavy use seasons of spring and fall, an

accumulation of large numbers of campers occurs at some of the more popular camp areas (i.e., Tanner Beach, Hance Beach, Cottonwood Creek, Horseshoe Mesa, Grapevine Creek, Lonetree Canyon, Clear Creek, and Boucher Canyon), while at the same time other sites are underutilized. This haphazard distribution of campers occurs because, although a trailhead limit exists, there is no coordination of this limit with length of stay or day by day trip itineraries. For example, if 16 persons enter the Tanner Trail on one day and camp at Tanner Beach for 4 nights, and the same amount of people come down the trail each day for the next four days, by the fourth night 64 persons will be camped within the area. It is the effect which this uneven use distribution has on esthetic, sociological, and ecological resource elements which is of concern to management. This uneven use distribution and campsite congestion is accelerating localized resource damage including multiple trailing, accelerated erosion, soil compaction, water contamination, loss of vegetative cover, and changes in small mammal population and distribution. Direct observation of site crowding is well documented by ranger patrols, particularly during traditional holidays such as Labor Day, Memorial Day, and Easter.

A sociological impact of the administration of trailhead quotas concerns the opportunity for solitude within the backcountry. The present management system fails to provide adequate control over elements such as party/party contact, ease of access, and presence of facilities. Consequently the system fails to provide the wide range of recreational opportunities possible for the hiker to choose from, particularly in terms of party/party contact levels. Because most of the backcountry is managed under trailhead quotas, the distribution of persons at any one time within the backcountry is difficult to predict. For those hikers seeking a more social backcountry experience popular camp areas can be chosen, but for hikers seeking greater solitude there is no assurance under the present system that the area chosen to hike in will indeed provide a minimal number of party/party contacts. As use of the backcountry increases, the opportunities for solitude are expected to diminish under this alternative.

The backcountry reservations system operated under current management is inequitable (see discussion, page 21) and difficult to manage. With the present and anticipated funding and staffing limitations of the BRO, the number of phone-in reservations creates a time demand which greatly exceeds the ability of the staff to respond. At times up to 70 calls are received per day in the BRO, each requiring 4 to 5 minutes of staff time. Callers often request information which could more efficiently be answered by mail-out information brochures. The quality of the orientation and information received by the visitor at the BRO is presently compromised as a result of the nearly constant demands of the phone system. Persons who arrive to check in at the BRO for

backcountry hikes often require orientation and information from BRO personnel. Because of the constant attention required by the phone, this information exchange is often abbreviated to the detriment of the hiker and in some instances indirectly causing discomfort to the hiker once in the backcountry as a result of inappropriate equipment or lack of information. The poorly informed hiker may also damage park resources and in some cases make search and rescue or emergency medical response necessary.

Mitigation of Impacts Associated With Present Management.

Methods of mitigation under this alternative include the installation of sanitary facilities where it is suspected that human waste is causing health or esthetic problems, and area closures or rehabilitation where it becomes evident that severe impacts to natural or cultural resources are occurring. Under this alternative there is no assurance that these actions will be appropriate solutions to backcountry resource problems. Until a systematic approach is taken toward the identification of impacts and their cause and extent, effective mitigation is not possible. In addition, under this alternative, no monitoring is identified to measure the success of mitigation. Thus, information would not be available to improve management's ability to mitigate adverse impacts to backcountry resources.

- C. Allow Unrestricted Use in the Backcountry. Under this alternative, use would be unrestricted in some or all park backcountry areas. Backcountry use permits would be required, but no limit would be placed on the number of permits issued.

The effects of unrestricted use in the backcountry of Grand Canyon are well documented. Prior to the implementation of the permit system at Grand Canyon National Park, crowding and congestion (during Easter of 1970 over 800 persons were camped in the vicinity of Bright Angel Campground) occurred frequently within the Inner Canyon. The ability of NPS personnel (including the ability of the BRO to issue permits) and facilities to respond to the health, sanitation and safety needs of the great number of persons anticipated under this alternative would be greatly exceeded. Environmental damage including loss of vegetation, disturbance to wildlife, soil compaction, and increased erosion would far exceed present levels. Esthetic impacts would increase in many areas as trash accumulates, area of bare soil increases, and vegetation is damaged. Water quality would be negatively affected as a result of inadequate sanitation in many areas. Heavy use of some Inner Canyon trails may cause deterioration beyond the ability of maintenance to repair. Sociological impacts would be tremendous as people experience more crowding at camp and attraction sites. The opportunity for solitude would be lost in many backcountry areas. The advantage to unrestricted use is that anyone at any time would be able to gain access to the Grand Canyon backcountry without a reservation.

IV. OTHER OPTIONS NOT CONSIDERED AS PART OF THE PROPOSED ACTION.

Several other options are described below for the purpose of generating public response regarding the feasibility and desirability of implementing them as part of the proposed action or in lieu of portions of the proposed action.

- A. Prepare a Cross-canyon Corridor (CC) Use Plan: Currently, no comprehensive plan exists which exclusively addresses the long-term use and management of the CC. Corridor use is now managed under the park's Backcountry Management Plan. National Park Service management and visitor use of the CC present issues and problems unique to the area. These concerns may be better addressed through a comprehensive plan which considers options such as the expansion of campgrounds and facilities, provisions for use by special populations, and the sharing of trail maintenance costs with the mule ride concessioners. These options are elaborated on below.

Reservation requests for camping in the CC indicate a demand that averages 75 percent in excess of the existing supply of campsites in the Cottonwood, Bright Angel, and Indian Gardens Campgrounds. The expansion of existing campgrounds or the development of additional campgrounds with adequate facilities and staffing would provide more opportunity for hikers seeking overnight accommodations in the CC. However, further development within the Corridor would require additional NPS funding and staffing and would increase use in an area already perceived by some visitors as being excessively crowded.

Based upon a comparison of maintenance costs between trails used by mules and those receiving only foot traffic, approximately 75 percent of the maintenance on the North and South Kaibab and Bright Angel Trails is required because of impacts from mule use. At this time all trail maintenance costs are paid by the NPS. Each year more than \$250,000 is spent in maintaining these trails. Concession mule traffic is heavy, ranging from an average of 25 animals per day in the winter months to over 100 animals per day during the summer for both packing and sight-seeing purposes from both rims. The NPS averages 10 animals per week to pack supplies into the CC. To help the NPS cover the costs of trail maintenance a surcharge could be charged to the mule trip concessioners.

- B. Options for Commercial Guided Hikes in the Backcountry: The proposed action does not identify a policy for commercial guided hikes. This policy will be developed following public comment on the six options for regulating commercial use discussed below. Commercial guided hikes are those which collect a fee over the actual cost of the trip from trip participants to pay a guide or leader to plan and/or guide the trip. The NPS concessions policy states that concessions should be allowed when services

are necessary and appropriate to the public use and enjoyment of an area.

1. Continue present management and allow commercial guided hikes in all backcountry areas of the park, including the Cross-canyon Corridor.

The corridor is currently available for use by commercial trips. Corridor trails and campgrounds provide many amenities for inexperienced hikers: facilities, trail maintenance, emergency phones, water and sewage systems, ranger patrols, etc. Thus, it is questionable whether or not commercial guided hikes in the corridor are necessary and appropriate to the public use and enjoyment of the area.

Commercial use in the Cross-canyon Corridor may create additional demand and pressure upon an area of the park already receiving use up to capacity. Thus, fewer campsites will be available for use by private parties or groups. In peak season demand for non-commercial overnight use of the corridor trails already exceeds supply by as much as 75 percent.

2. Continue to allow commercial guided hikes in all backcountry areas of the park except the Cross-canyon Corridor.

Commercial guided hiking has been allowed on unmaintained trails which are more rugged and less accessible than trails in the corridor. A necessary service is thus provided by experienced commercial trip leaders for hikers who may lack necessary equipment, knowledge, or experience. A guide service may also improve trip safety and ease accessibility for some persons into difficult-to-reach park areas.

The closure of Cross-canyon Corridor campgrounds to commercial guided hikes will not eliminate camping opportunities for commercial groups which cross the corridor. In situations where commercial hikes begin on one side of the corridor trail and cross to emerge from the canyon on the other side, campsites other than the corridor campgrounds are available. For example, a trip down the Grandview Trail and up the Hermit Trail can camp one night at Horn Creek or Cremation Canyon instead of at Indian Gardens. However, cross canyon hikes rim to rim will be precluded by this option.

- 3 Allow commercial guided hikes in the Cross-canyon Corridor for special populations only and in other areas of the backcountry for all users.

This alternative will provide the opportunity for persons who are physically or otherwise handicapped, to the extent that they desire the assistance of a guide, to experience the backcountry of Grand Canyon. Specifically, this alternative will allow them greater access to the Inner Canyon through the Cross-canyon Corridor where the facilities and NPS personnel exist to make their trip safer and more comfortable.

4. Allow commercial guided hikes in all backcountry areas, including the Corridor, with restrictions upon the annual number of trips permitted of any one operator.

Under this alternative a commercial operator will be allowed a certain number of trips each year. This restriction may distribute commercial use more equitably among a number of commercial operators and would be intended to limit the amount of commercial use in the backcountry, thus assuring that access to private groups and individuals is not restricted as a result of concessions use.

5. Allow commercial guided hikes in all backcountry areas including the Corridor, with restrictions upon the time of year that guided trips may be offered.

This alternative provides opportunity for commercial use of the backcountry but only during certain seasons. Limiting commercial use to the "off-season" when use by private groups and individuals is at its lowest will reduce competition for camp space between commercial and non-commercial interests. The low use period is in winter and summer in all backcountry areas except the Cross-canyon Corridor and the Tapeats/Thunder River area where it is winter only.

6. Modify the backcountry reservations systems for commercial operators by allocating a number of backcountry user days for use by commercial operators.

Currently, commercial operators must obtain their backcountry use permits by the same reservation policy in effect for all potential backcountry users (see page 16). Under this system a concessioner can book space in anticipation of filling a trip and then cancel at the last minute as a result of not finding enough clients. This prevents the reserved areas from being booked in advance by private groups and individuals. However, this has not yet been a problem with commercial users in the park's backcountry.

The allocation of a number of backcountry user days for use by commercial operators would provide a system similar to the one used for commercial outfitters on the Colorado River through the park. A potential effect of this system is that when these commercial user days are not booked,

they will be unavailable for advance reservations by private interests.

- C. Modify Backcountry Reservations Procedures. Changes in reservation procedures for backcountry camping and the charging of fees for backcountry use permits are discussed under this option. Refer to Figure IV.

Personnel, materials, and equipment are required for the processing of every permit issued through the BRO. It is estimated that the cost of each permit issued is \$10.00. Under this option a fee of no less than \$2.00 and no more than \$10.00 would be charged for reservations made for a backcountry trip. This would allow the NPS to cover the costs of providing information, reservations, and permits through the BRO.

Under current management advance reservations for backcountry camping may be made no earlier than 3 months in advance of the month for which the camping permit is requested. Reservations may be made by mail, in person, or by telephone. The proposed action (1982 Backcountry Management Plan) allows for reservations to be made by mail or in person but eliminates reservations by telephone. An additional alternative would allow mail-in reservation requests all year but would eliminate reservations by telephone. This alternative would be more convenient to the applicant than the proposed action yet would eliminate the option of phone-in reservations. The personnel of the BRO would be required to respond to mail-in reservations all year. The resources of the BRO would still be strained during busy seasons as personnel attempt to respond to office visitors and also respond to mail-in applications. However, the response of the BRO could be scheduled such that mail could be answered during the less busy portion of the day. The elimination of the phone system would allow more time to respond to reservations made in person and by mail.

-Figure IV-

<u>Comparison of Options for Backcountry Reservations Procedures</u>						
	Current System		Proposed System		Additional Option	
Reservations Accepted:	10/1-3/31	4/1-12/31	10/1-3/31	4/1-12/31	10/1-3/31	4/1-12/31
Method:	In Person. Mail-in. Phone.		In Person. Mail-in.	Reservations 24 hours in advance only.	In Person. Mail-in.	
	Reservations accepted 3 months in advance of month of trip		Reservations accepted for all dates in the calendar year			

D. Allow Campfires in Certain Rim Areas. The proposed action (1982 BCMP) does not identify a preferred campfire policy. A policy will be developed following consideration by the public of the following three alternatives.

1. Continue present management: the 1974 Backcountry Management Guidelines allow for campfires and the gathering of downed and dead wood in certain areas above the canyon rim. Recently (April 1982), the Superintendent approved a park memorandum prohibiting the gathering by the public of dead and downed wood in all park areas (exclusive of river trip procedures) but still allowing campfires in some rim areas. The general rim areas identified under the 1974 Plan where campfires are allowed are the following: Mt. Emma, the Esplanade, Desert View Unit, Palisades, Pasture Wash, Walhalla Plateau, Widforss Point, Kanabownits, Thompson Canyon, Powell Plateau, Nankoweap, Toroweap, and the Kanab Plateau.
2. Total elimination of campfires in the backcountry with the exception of campfires on Colorado River beaches under the operating procedures of the Colorado River Management Plan.
3. Allow campfires in areas on the rim with the following restrictions: All fuel must be brought to the site by the camper; no dead or downed wood may be collected from the area. All wood or charcoal fires must be contained in firepans which would be provided by campers. All charcoal and ashes must be removed from the site.

Impacts associated with this alternative include esthetic, sociological, and environmental effects. There will be a lessened occurrence of fire rings after existing fire rings are removed and fire pans begin to be used exclusively. The buildup of charcoal and ash will decrease, resulting in cleaner sites and a more pristine, undisturbed backcountry experience. Dead and downed wood, which is currently gathered by campers, will begin to accumulate to a level approaching natural conditions, allowing for a natural recycling of forest nutrients and providing wildlife habitat within the natural ecosystem.

Without adequate enforcement of this regulation its environmental and esthetic benefits may not be realized. The occurrence of illegal wood collecting and fire building will continue unless the park promotes a consistent campfire and wood gathering policy throughout the park and devotes adequate park resources to the communication of this policy to the public by backcountry rangers, the BRO, and the interpretive staff, and provides for adequate enforcement.

E. Require Human Waste Carry-Out in Some Backcountry Areas. Currently low impact camping guidelines require that human feces be buried

100 feet away from any trail or water source. The proposed action will meet the problem of excessive waste with the installation of sanitary facilities in developed and threshold zones and with reduction in use in primitive and undeveloped areas. As an alternative to sanitary facilities or use limitation, this alternative will require that human waste be carried out of threshold, primitive, and undeveloped zones when waste disposal becomes an esthetic or health problem.

In most areas affected by problems of human waste disposal, the amount of human waste has exceeded the rate of natural organic decomposition and thus these wastes are not decomposing as fast as they are being deposited. Water quality is a potential problem as runoff carries waste products into streams. There is frequently an impact upon cultural resources in areas close to campsites, as people use historic and prehistoric structures for sanitary purposes. The implementation of any successful waste disposal system will increase the probability of visitor enjoyment and the quality of the backcountry experience and will reduce the impact upon natural and cultural resources by reducing the incidence of improper disposal or excessive burial of wastes. Of the solutions the existence of a man-made intrusion such as a toilet may interfere with the pristine qualities of a backcountry area. A use reduction will limit an area's accessibility for some potential users. However, these options may be esthetically preferable to a waste pack-out policy.

LIST OF PERSONS CONSULTED

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The following Backcountry Reservation Permit Offices were consulted:

Boundary Waters Canoe Area, Superior National Forest

Sequoia-Kings Canyon National Park

Yosemite National Park

Great Smoky Mountains National Park

Grand Teton National Park

North Cascades National Park

Mt. Rainier National Park

Zion National Park

Desolation Wilderness - Eldorado National Forest

Adirondack State Park, New York

Olympic National Park

Trinity Alps Wilderness - Shasta - Trinity National Forest

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As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

MAP NO.	USE AREA NAME	MGMT ZONE	CAMPING TYPE
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- 1 BADGER PRIM. A/L
- 2 RIDER PRIM. A/L
- 3 SOUTH CANYON PRIM. A/L
- 4 SADDLE CANYON PRIM. A/L
- 5 NANKOWEAP PRIM. A/L
- 6 CHUAR UNDEV. A/L
- 7 UNKAR UNDEV. A/L
- 8 VISHNU UNDEV. A/L
- 9 CHEYAVA UNDEV. A/L
- 10 CLEAR CREEK UNDEV. A/L
- 11 MANZANITA THRESH. A/L
- 12 GREENLAND SPRING THRESH. A/L
- 13 UNCLE JIM POINT THRESH. A/L
- 14 TRANSEPT UNDEV. A/L
- 15 PHANTOM CREEK UNDEV. A/L
- 16 TRINITY UNDEV. A/L
- 17 SCORPION RIDGE UNDEV. A/L
- 18 NORTH BASS PRIM. A/L
- 19 POWELL PLATEAU PRIM. A/L
- 20 BLACKTAIL UNDEV. A/L
- 21 TAPEATS AMPHITHEATRE UNDEV. A/L
- 22 TAPEATS THRESH. A/L
- UPPER
- LOWER
- 23 SURPRISE VALLEY PRIM. A/L
- 24 DEER CREEK PRIM. A/L
- 25 ESPLANADE PRIM. A/L
- 26 FISHTAIL UNDEV. A/L
- 27 KANAB CREEK PRIM. A/L
- 28 BOYSAG UNDEV. A/L
- 29 THE DOME UNDEV. A/L
- 30 WHITMORE THRESH. A/L
- 31 PARASHANT UNDEV. A/L
- 32 TRAIL CANYON UNDEV. A/L
- 33 DIAMOND CREEK UNDEV. A/L
- 34 SEPARATION UNDEV. A/L
- 35 SURPRISE UNDEV. A/L
- 36 BURNT POINT UNDEV. A/L
- 37 SNAP POINT UNDEV. A/L
- 38 GRAND WASH CLIFFS UNDEV. A/L
- 39 PALISADES PRIM. A/L
- 40 TANNER PRIM. A/L
- 41 CARDENAS PRIM. A/L

* A/L - AT-LARGE CAMPING
D/S - DESIGNATED SITE

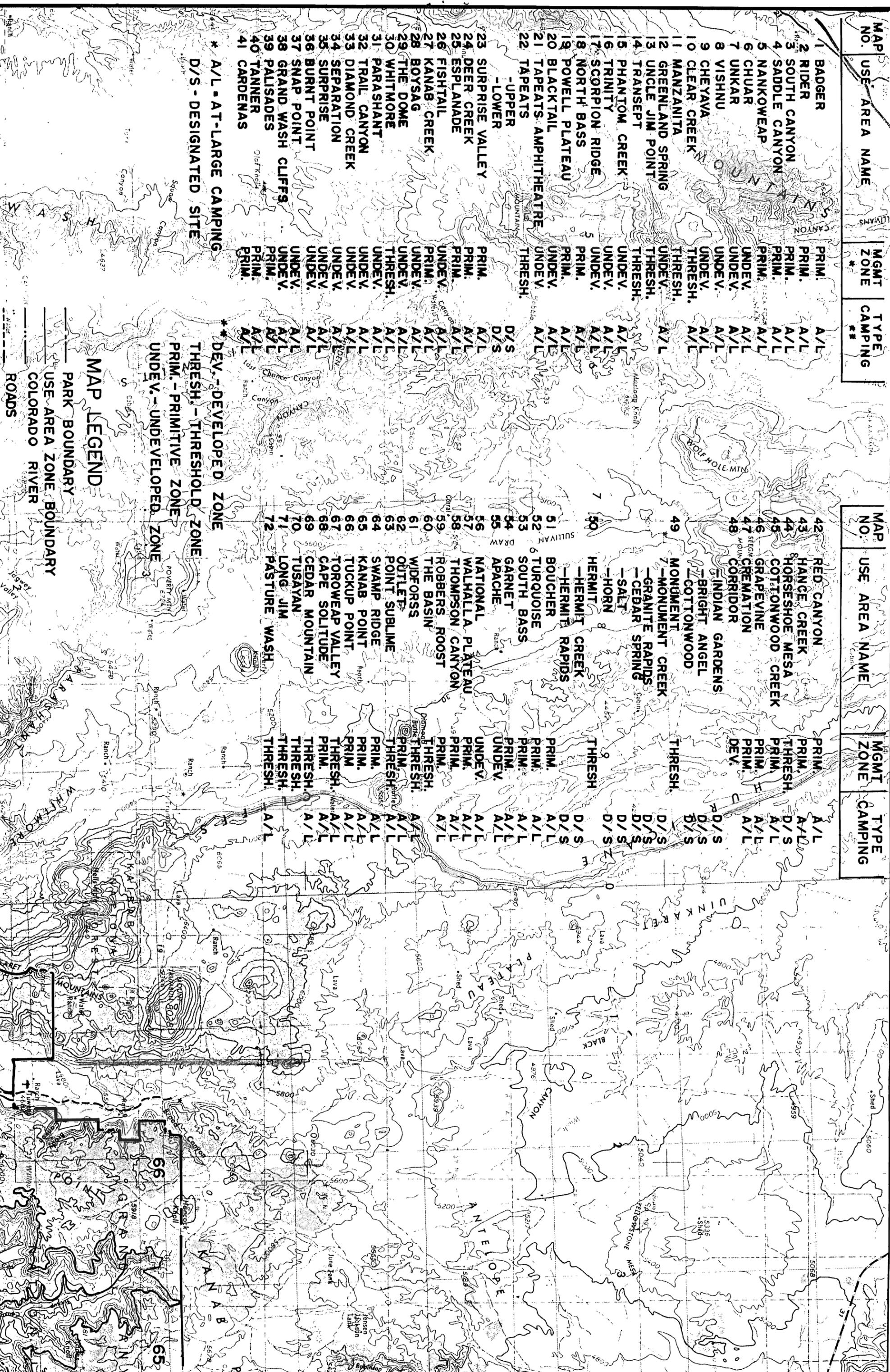
MAP NO.	USE AREA NAME	MGMT ZONE	CAMPING TYPE
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- 42 RED CANYON PRIM. A/L
- 43 HANCE CREEK PRIM. A/L
- 44 HORSESHOE MESA THRESH. D/S
- 45 COTTONWOOD CREEK PRIM. A/L
- 46 GRAPEVINE PRIM. A/L
- 47 CREMATION PRIM. A/L
- 48 CORRIDOR DEV. A/L
- 49 INDIAN GARDENS DEV. D/S
- BRIGHT ANGEL D/S
- COTTONWOOD D/S
- MONUMENT CREEK THRESH. D/S
- 7-MONUMENT CREEK THRESH. D/S
- GRANITE RAPIDS D/S
- CEDAR SPRING D/S
- SALT D/S
- HORN D/S
- HERMIT CREEK THRESH. D/S
- HERMIT RAPIDS THRESH. D/S
- BOUCHER PRIM. D/S
- 6 TURQUOISE PRIM. D/S
- SOUTH BASS PRIM. D/S
- GARNET PRIM. D/S
- APACHE PRIM. D/S
- NATIONAL UNDEV. A/L
- WALHALLA PLATEAU PRIM. A/L
- THOMPSON CANYON PRIM. A/L
- ROBBERS ROOST PRIM. A/L
- THE BASIN PRIM. A/L
- WIDFORSS THRESH. A/L
- OUTLET THRESH. A/L
- POINT SUBLIME PRIM. A/L
- SWAMP RIDGE PRIM. A/L
- KANAB POINT PRIM. A/L
- TUCKUP POINT PRIM. A/L
- TOROWEAP VALLEY THRESH. A/L
- CAPE SOLITUDE PRIM. A/L
- CEDAR MOUNTAIN THRESH. A/L
- TUSAYAN THRESH. A/L
- LONG JIM THRESH. A/L
- PASTURE WASH THRESH. A/L

* DEV. - DEVELOPED ZONE
THRESH. - THRESHOLD ZONE
PRIM. - PRIMITIVE ZONE
UNDEV. - UNDEVELOPED ZONE

MAP LEGEND

- PARK BOUNDARY
- USE AREA ZONE BOUNDARY
- COLORADO RIVER
- ROADS



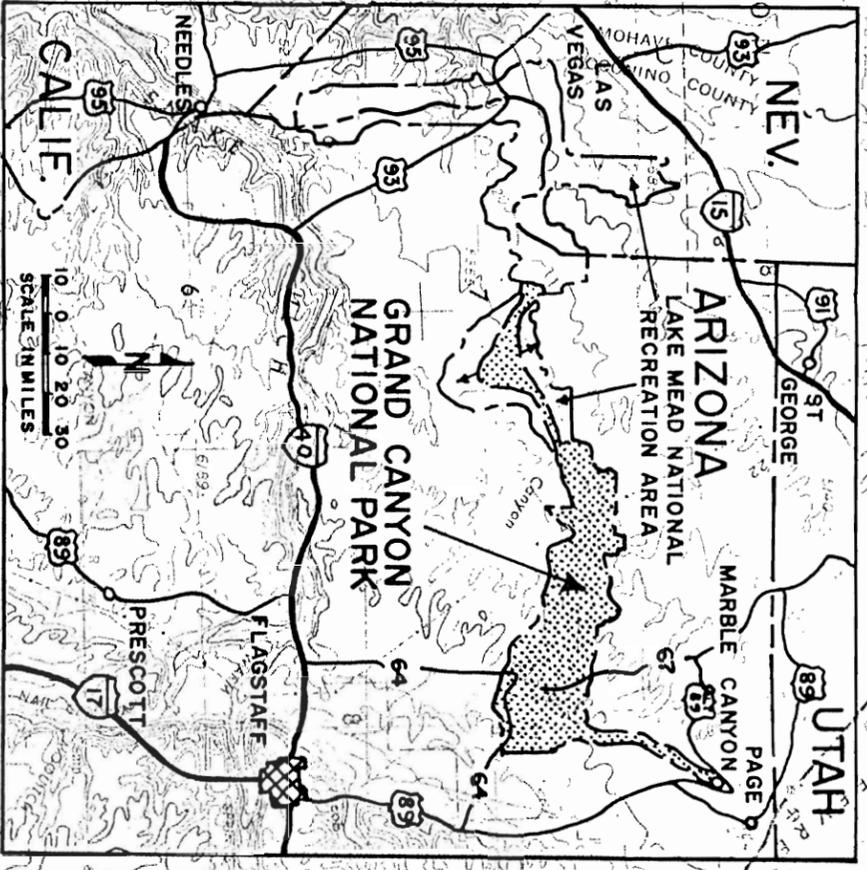
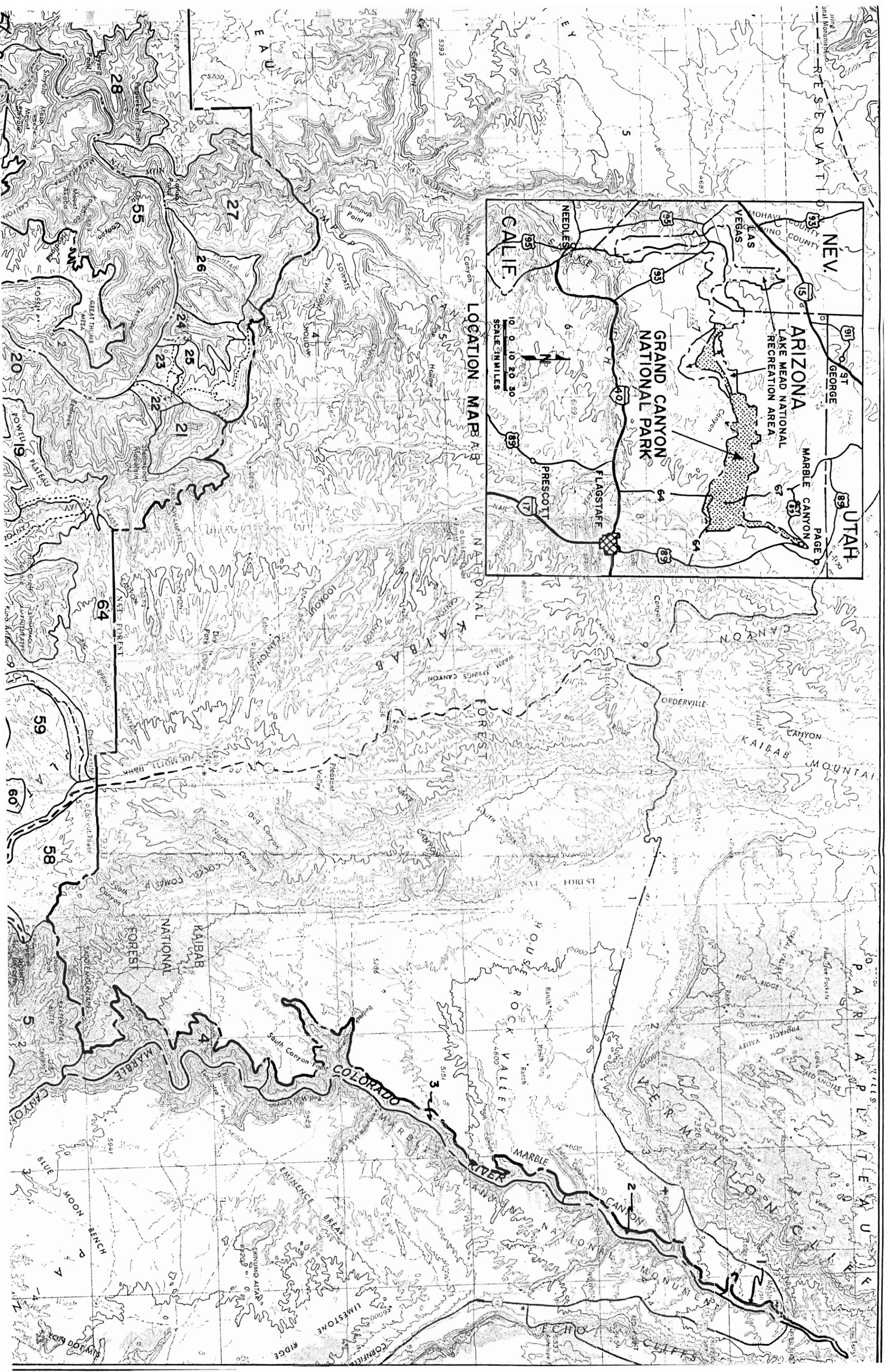
USE AREA ZONE BOUNDARY
COLORADO RIVER

ROADS
TRAILS
CAMPGROUNDS
BA - BRIGHT ANGEL
6 CW - COTTONWOOD
16 INDIAN GARDENS

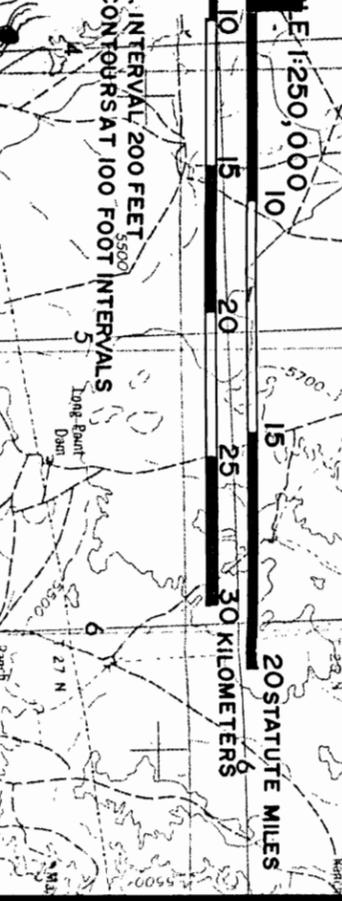
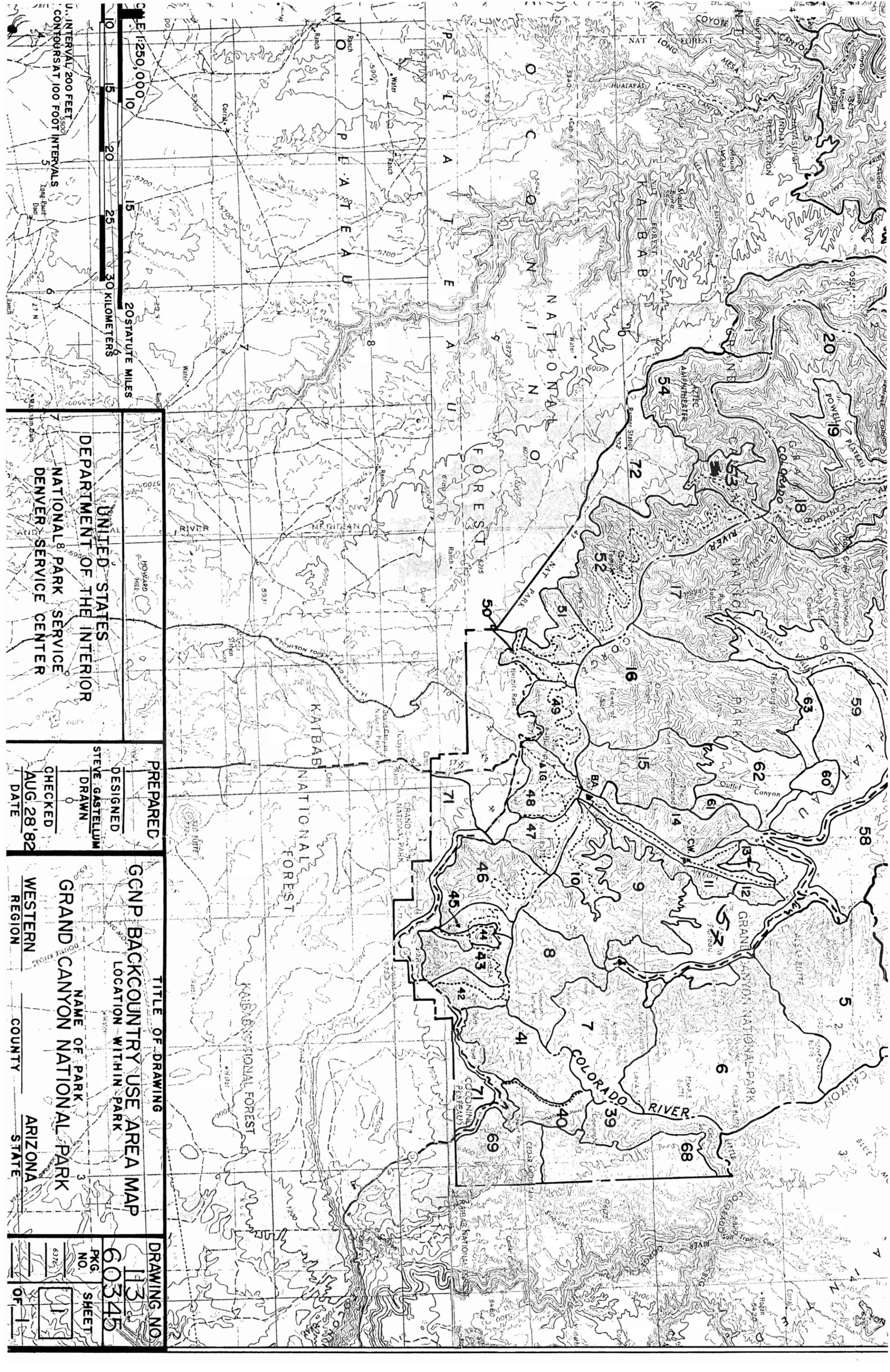


BASIC DATA

WITH SUPPLEMENT



LOCATION MAP A-B



U.S. INTERVAL 200 FEET
CONTOURS AT 100 FOOT INTERVALS

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PREPARED
DESIGNED
DRAWN
CHECKED
DATE

STEVE GASTELUM
AUG 28 '82

TITLE OF DRAWING
GCNP BACKCOUNTRY USE AREA MAP
LOCATION WITHIN PARK

NAME OF PARK
GRAND CANYON NATIONAL PARK
WESTERN REGION
ARIZONA

DRAWING NO
113
PKG NO
60345
SHEET
11
OF