NORTHERN ARIZONA UNIVERSITY

FINAL

ENVIRONMENTAL STATEMENT

Grand Canyon National Park.

Proposed

COLORADO RIVER MANAGEMENT PLAN,

GRAND CANYON NATIONAL PARK,

ARIZONA:

Prepared by

Grand Canyon National Park
National Park Service
Department of the Interior

JULY 31, 1979

Director, National Park Service

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SUMMARY

( ) DRAFT (X) FINAL ENVIRONMENTAL STATEMENT

United States Department of the Interior, National Park Service, Western Region

1. Type of Action: (X) Administrative ( ) Legislative

2. Brief Description of Action:
A river management plan for the Colorado River between Lees Ferry and Pierce Ferry (277 miles) within Grand Canyon National Park, Mohave and Coconino Counties, Arizona. The plan proposes to phase out motorized craft; to increase total use of the river; increase noncommercial allocations; increase use of the river in the winter season; and establish measures for resource protection.

3. Summary of Environmental Impact and Adverse Environmental Effects:
Elimination of motorized craft will enhance the river-running experience for most visitors; those preferring a motorized trip will be disappointed. Both private and commercial parties will receive larger use allotments. Extension of the river-running season and longer average stays in the river corridor will allow greater opportunities for interpretation and education. Scheduling and increased regulations will protect sensitive resources, but may inconvenience some users.

4. Alternatives Considered:
   a. No action
   b. Increase the visitor use levels
   c. Reduce visitor levels by 50 percent
   d. Provide exclusive periods for non-motorized use
   e. Eliminate motorized use in the Lower Gorge
   f. Allocation options

5. Comments Have Been Requested From the Following:
(see page ii for listing)

6. Date Final Statement Made Available to EPA and the Public:

Draft Statement: December 8, 1977
Final Statement: JUL 31 1979

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c.

*Advisory Council on Historic Preservation
Department of Agriculture
*Forest Service
Department of the Interior
*Bureau of Indian Affairs
*Bureau of Land Management
*Bureau of Outdoor Recreation
*Bureau of Reclamation
*Fish and Wildlife Service
*Geological Survey
Department of Transportation
*Coast Guard
*Federal Aviation Administration
*Environmental Protection Agency
*Arizona State Clearinghouse
*Arizona State Historic Preservation Officer
*Northern Arizona Council of Governments
Havasupai Tribal Council
*Hopi Tribal Council
*Hualapai Tribal Council
Navajo Tribal Council

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DO NOT REMOVE!

*Comments received and attached.

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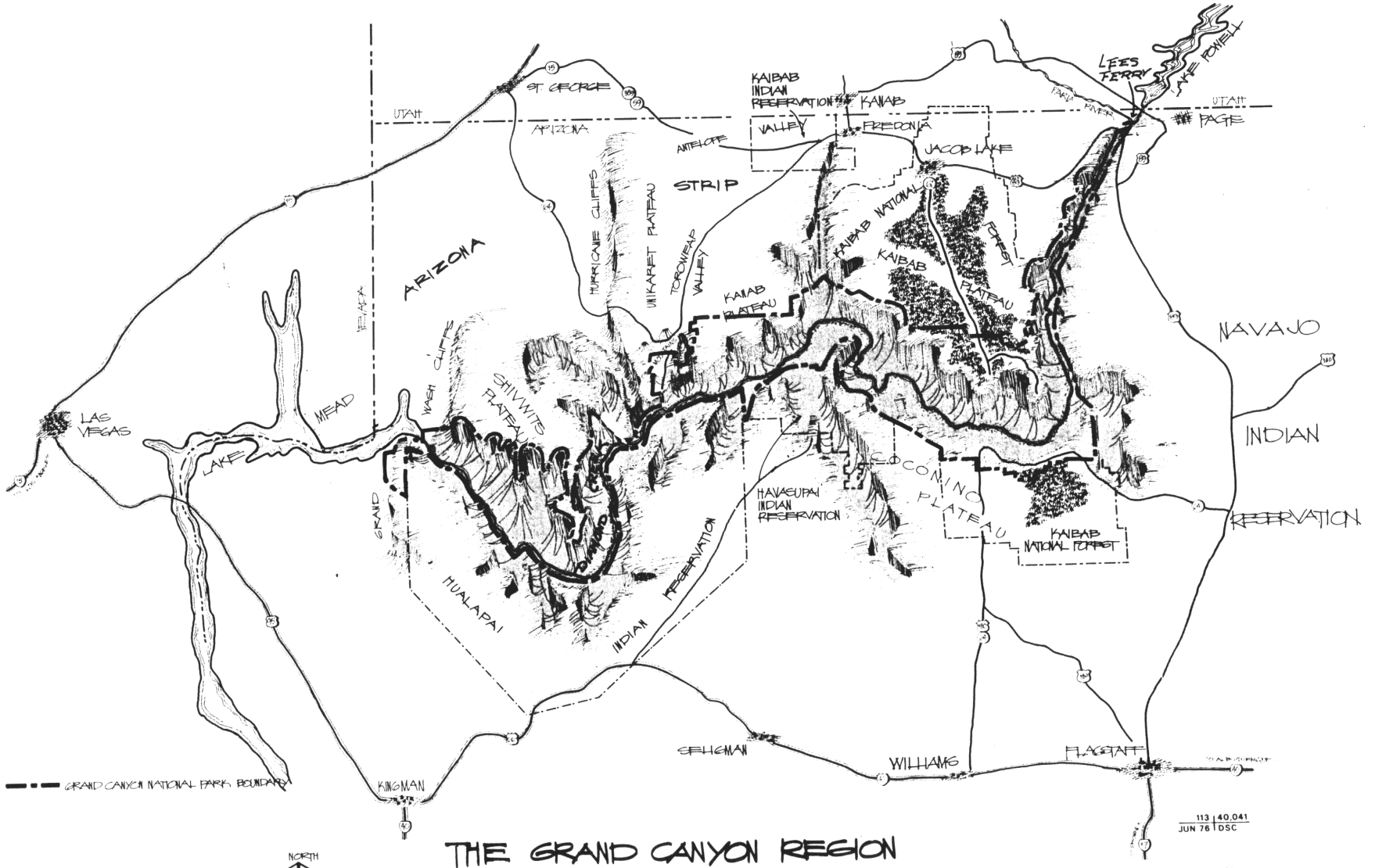


THE GRAND CANYON REGION

GRAND CANYON NATIONAL PARK

I. DESCRIPTION OF THE PROPOSAL

"The Colorado Plateau is a vast tableland that covers nearly one hundred fifty thousand square miles in northern Arizona and New Mexico, western Colorado, and eastern Utah. In this area is concentrated some of the outstanding scenery on the continent: the awesome Grand Canyon, the pinnacles of Bryce Canyon, the towering cliffs of Zion, Monument Valley, and Mesa Verde. The Grand Canyon of the Colorado River is located in the southwestern portion of the Colorado Plateau. The river runs 1,450 miles from Colorado to the Gulf of California including 277 miles through the Grand Canyon. A Colorado River trip through the Grand Canyon provides a unique and popular river-running experience for thousands of people each year.

Management of the Colorado River corridor and the riparian ecosystems has become an issue of major importance in recent years. The number of persons floating the river increased dramatically between 1967 and 1972 (from 2,099 to 16,432 visitors). By 1973, 22 commercial boating companies were operating on the river. As visitation increased, it became apparent that the canyon resources were deteriorating, but the degree or severity of change was unknown. To provide a firm basis for future management of the river corridor and to quantify the kind of impact inflicted on the resources, a comprehensive research program, including 29 separate studies, was initiated in 1973 and completed in June, 1976 (see Appendix A for the complete list).

The Grand Canyon National Park Master Plan contains some specific statements concerning management of the Colorado River which have had a direct influence on the development of the river plan.

> ". . . preservation of the Grand Canyon natural environment is the fundamental requirement for its continued use and enjoyment as an unimpaired natural area. Park management 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.
>
> 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."

In addition, several major issues were raised by the public during hearings on the wilderness proposals for Grand Canyon National Park and during workshops held in 1976 on the future management of the river. The following major issues were identified during the course of the research studies and the public involvement process:

1. Mode of travel (motorized versus non-motorized watercraft)
2. Total use capacity
3. Allocation of use to commercial and noncommercial river runners
4. Allocation of use among commercial operators
5. Permit systems
6. Disposal of human waste
7. Use of cooking and camping fires
8. Multiple trails and site damage
9. High visitor density and congestion at attraction and camping sites
10. Lack of adequate education/interpretive programs
11. Need for research and monitoring programs

A. MANAGEMENT OBJECTIVES

In order to achieve the management goals and resolve the resource impact problems outlines above, a specific set of objectives must be established. These detailed objectives must further define what a quality wilderness experience consists of and the nature and extent of resource protection measures. These detailed objectives for river management have been developed through consideration of the management framework stated above, public input and research data provided by the 29 research projects completed in 1976.

-perpetuate a wilderness river-running experience in which:
the natural sounds and silence of the canyon can be experienced
relaxed conversation is possible
the river is experienced on its own terms

-phase out the use of motorized watercraft between Lees Ferry and Separation Canyon.

-reduce high visitor density and congestion at points of interest.

-establish a total human use capacity and associated limitations on use of the river.

-allocate use equitably between commercial and noncommercial users.

-provide commercially guided trips.

-establish an equitable and efficient method of assigning noncommercial permits.

-protect and preserve the river corridor environment within the National Park Service's ability to do so considering the uncontrollable effects of Glen Canyon Dam.

-maintain water quality in side streams and in the river.

-observe all public health and safety standards.

-increase interpretive services on river trips.

-increase education and information programs for all river runners regarding protection and use of the river environment.

-establish monitoring programs to assess resource conditions and visitor experiences.

-recommend inclusion of the Colorado River in the Wilderness Preservation System.

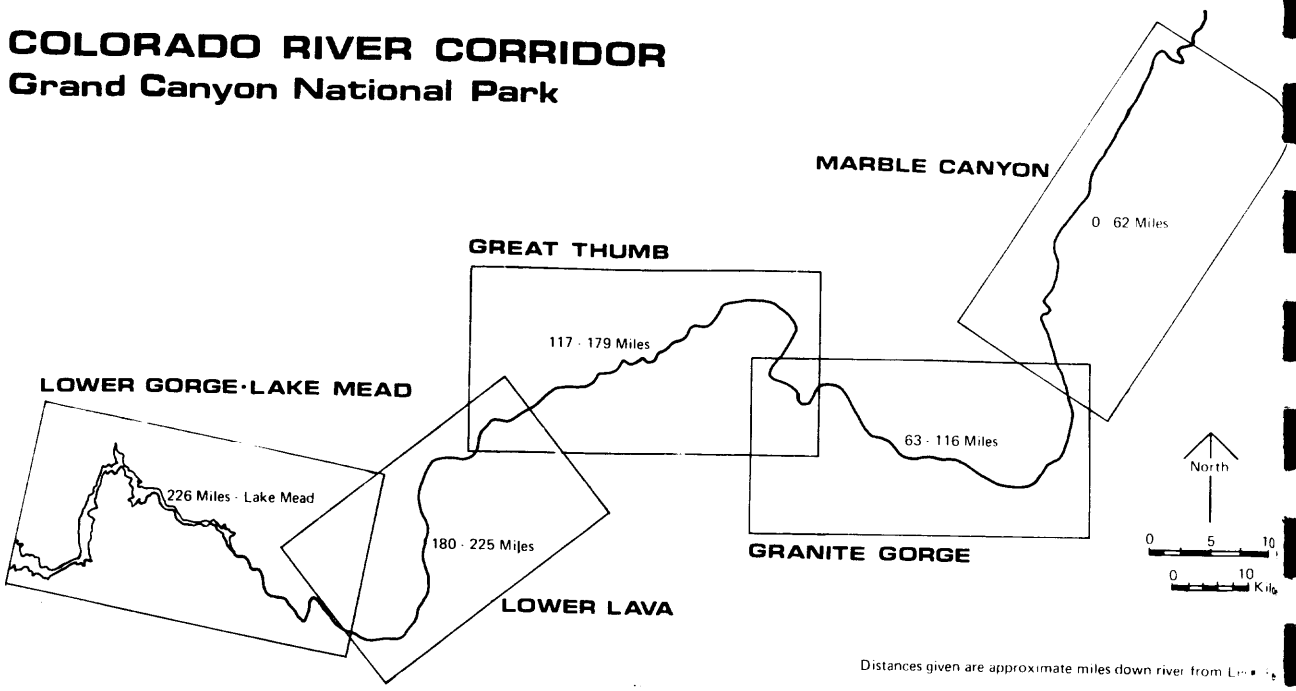
-revise the pertinent section of the Code of Federal Regulations which deals with Colorado River whitewater boat trips.

B. SPECIFIC ELEMENTS OF THE PLAN

1. Phase Out Motorized Boats

Use of motorized watercraft between Lees Ferry and Separation Canyon will be phased out over a 5-year period. This will achieve the objective of this plan to make available the high quality wilderness river-running experience which is inherently offered by the unique nature of the Colorado River through the Grand Canyon. This is also the objective of the Grand Canyon National Park Master Plan for the Colorado River Corridor, and corresponds with the park wilderness proposal. The decision is also based on the extensive Colorado River Research project for the Grand Canyon and considers public input from the two series of public meetings on river management. Motorized watercraft are allowed below Separation Canyon and on to Lake Mead. The timetable and method for phasing out motorized watercraft is outlined in Table 1. All winter trips will be oar powered.

COLORADO RIVER CORRIDOR
Grand Canyon National Park



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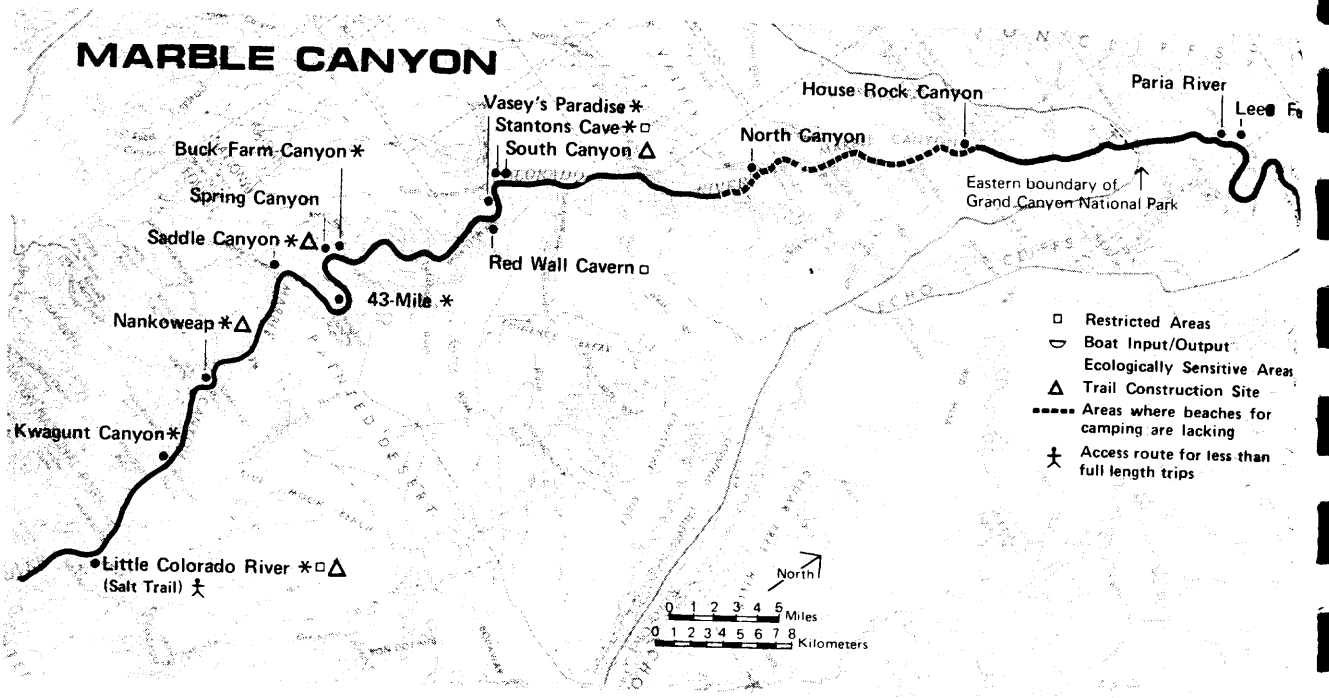

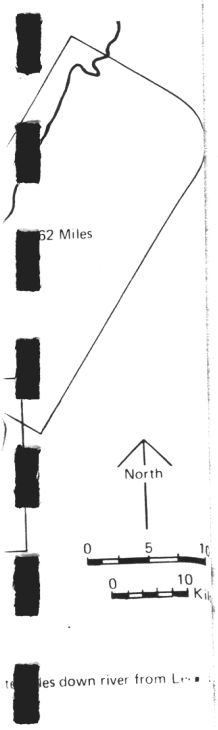
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North
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0 10 Ki
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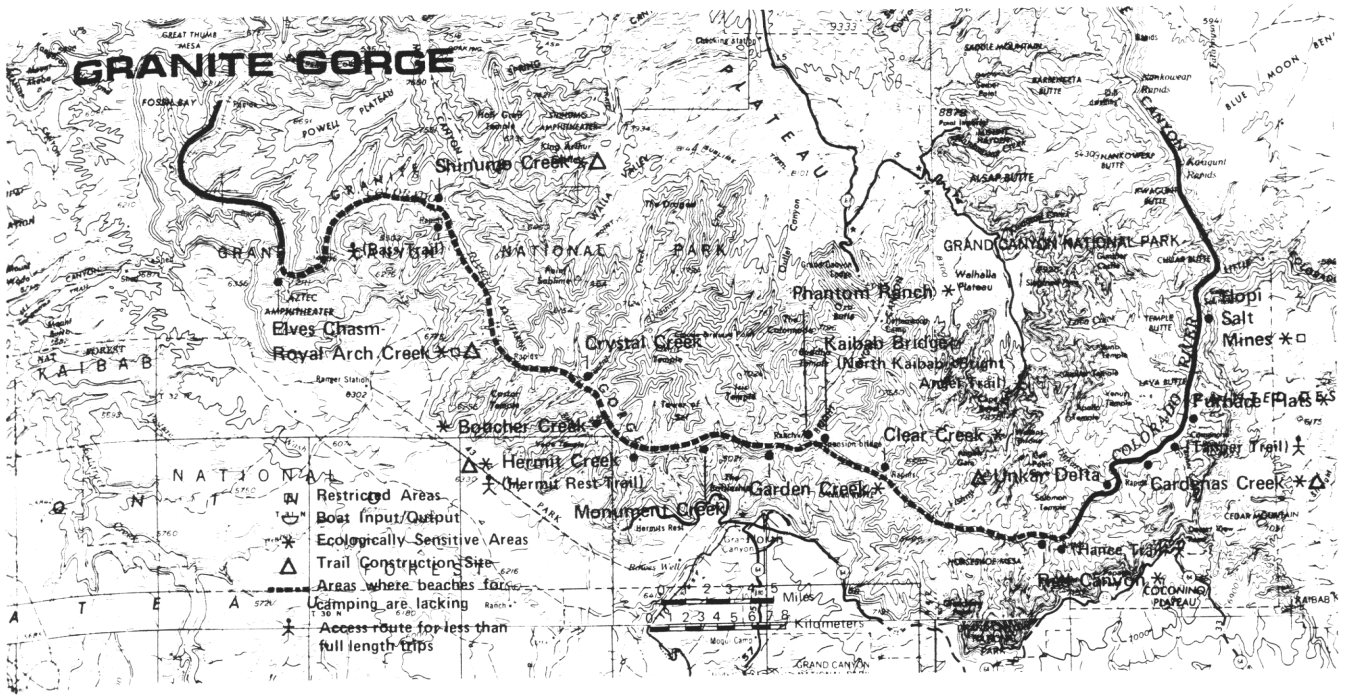
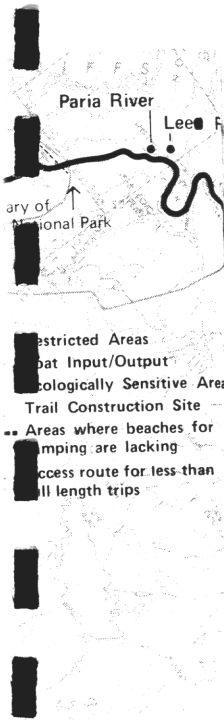

GRANITE GORGE
Shinumo Creek
(Bass Trail)
Elves Chasm
Royal Arch Creek
Crystal Creek
Phantom Ranch
Kaibab Bridge
(North Kaibab Bright Angel Trail)
Hopi Salt Mines
Furnace Flats
(Tanner Trail)
Boucher Creek
Hermit Creek
(Hermit Rest Trail)
Clear Creek
Unkar Delta
Cardenas Creek
Garden Creek
Monument Creek
(Hance Trail)
Red Canyon
GRAND CANYON NATIONAL PARK
COLORADO RIVER
KAIBAB
NATIONAL
Restricted Areas
Boat Input/Output
Ecologically Sensitive Areas
Trail Construction Site
Areas where beaches for camping are lacking
Access route for less than full length trips
Miles
Kilometers


Paria River
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Trail Construction Site
Areas where beaches for
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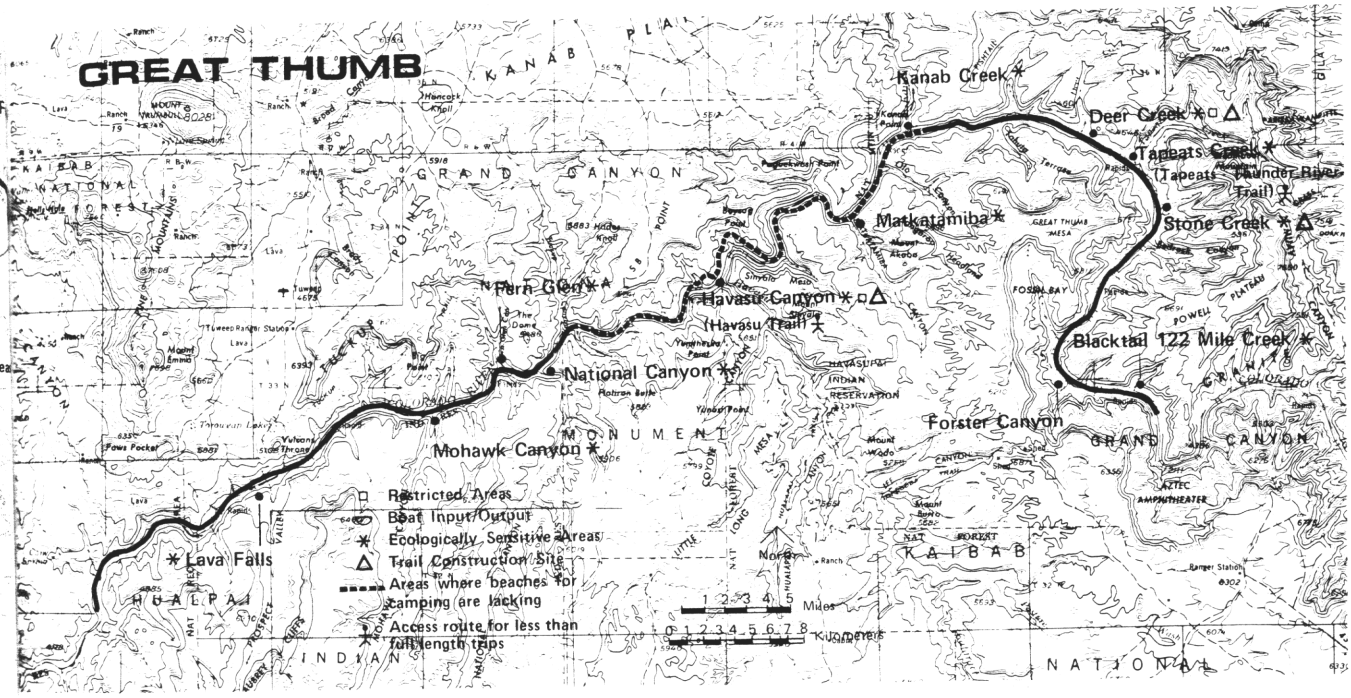
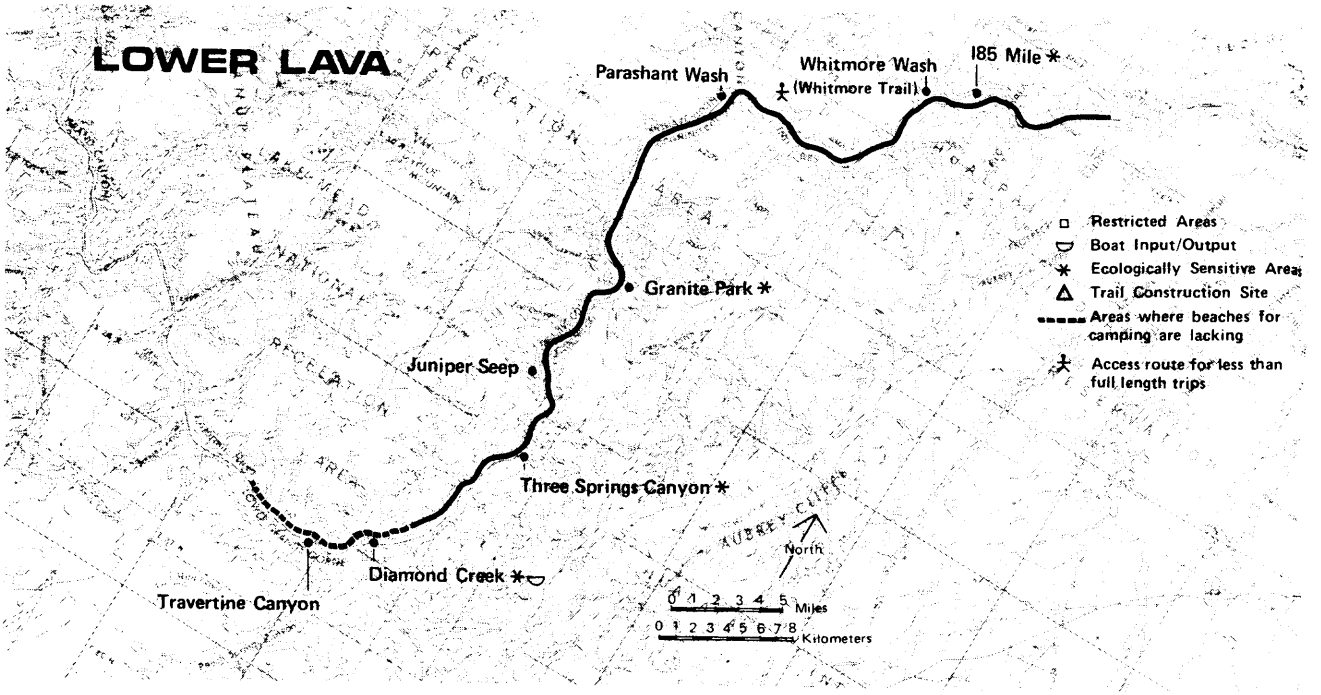

GREAT THUMB
Kanab Creek
Deer Creek
Tapeats Creek
(Tapeats Thunder River Trail)
Stone Creek
Matkatamiba
Fern Glen
Havasu Canyon
(Havasu Trail)
Blacktail 122 Mile Creek
National Canyon
Forster Canyon
Mohawk Canyon
Lava Falls
GRAND CANYON
MONUMENT
KAIBAB
HUALPAI
INDIAN
NATIONAL
Restricted Areas
Boat Input/Output
Ecologically Sensitive Areas
Trail Construction Site
Areas where beaches for camping are lacking
Access route for less than full length trips
Miles
Kilometers


LOWER LAVA
Parashant Wash
Whitmore Wash
(Whitmore Trail)
185 Mile *
Granite Park *
Juniper Seep
Three Springs Canyon *
Diamond Creek *
Travertine Canyon
North
0 1 2 3 4 5 Miles
0 1 2 3 4 5 6 7 8 Kilometers
Restricted Areas
Boat Input/Output
Ecologically Sensitive Areas
Trail Construction Site
Areas where beaches for camping are lacking
Access route for less than full length trips

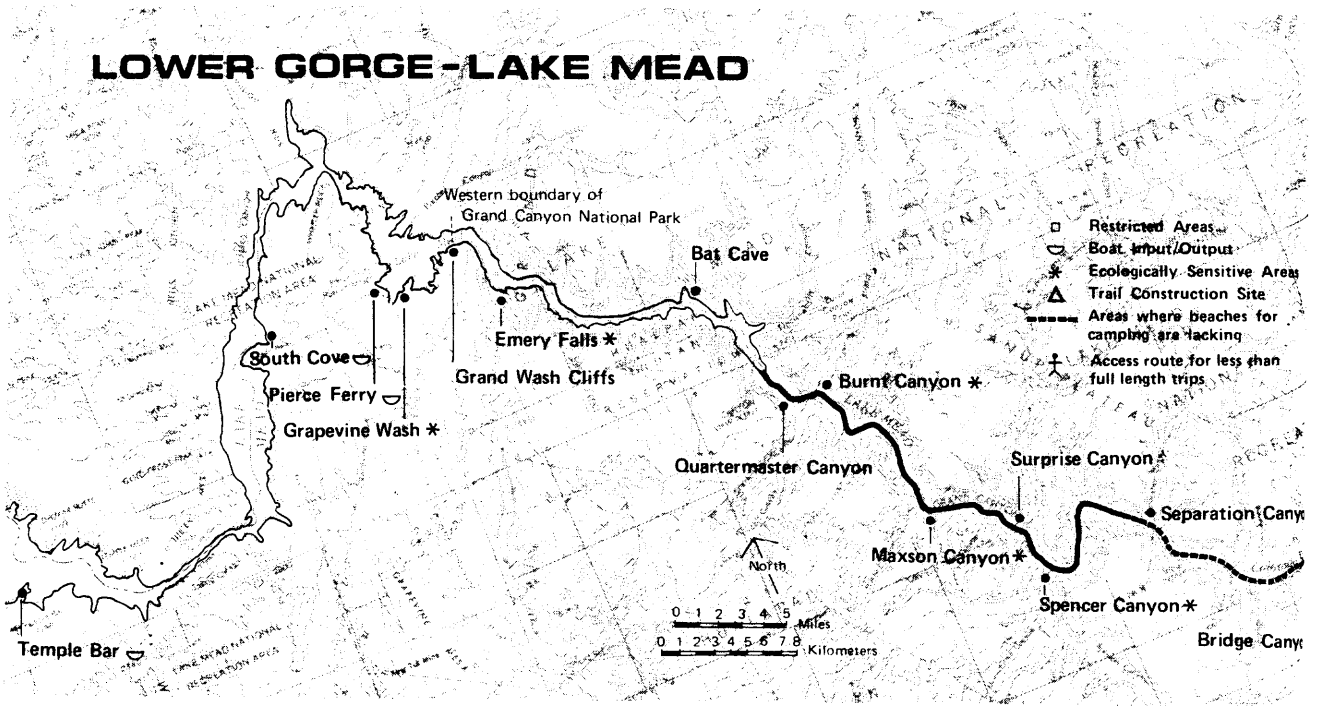

LOWER GORGE-LAKE MEAD
Western boundary of
Grand Canyon National Park
Bat Cave
Emery Falls *
Grand Wash Cliffs
South Cove
Pierce Ferry
Grapevine Wash *
Temple Bar
Burnt Canyon *
Quartermaster Canyon
Surprise Canyon *
Separation Canyon
Maxson Canyon *
Spencer Canyon *
Bridge Canyon
North
0 1 2 3 4 5 Miles
0 1 2 3 4 5 6 7 8 Kilometers
Restricted Areas
Boat Input/Output
Ecologically Sensitive Areas
Trail Construction Site
Areas where beaches for camping are lacking
Access route for less than full length trips

TABLE 1. TIMETABLE FOR REMOVAL OF MOTORS

	April	May	June	July	August	September
1979	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars
1980	Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars
1981	Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Oars
1982	Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Oars	Oars
1983	Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Oars	Oars
1984	Oars	Motors/ Oars	Motors/ Oars	Motors/ Oars	Oars	Oars
1985	Oars	Oars	Oars	Oars	Oars	Oars

2. Annual Use

Total annual use is increased both in numbers of people and user days. This is accomplished primarily by lengthening the summer season and allowing winter use.

A review of the river-runner contact research indicates that contacts between river trips is the most important single factor leading to crowding and congestion and resulting negative impacts on the environment and trip experience. Therefore, it is essential to limit the number of groups allowed to launch. The summer season is lengthened from 4 to 6 months to allow use during times when little or no use is currently being made. Also summer use is redistributed to reduce crowding in peak midsummer months. Individual group size is important in enhancing the quality of the wilderness river-running experience. Therefore, maximum group size for commercial and noncommercial trips is established. Trip length has some bearing on trip experience as well as use levels. Minimum trip length is set to enhance trip quality and maximum trip length is set to maintain reasonable overall use levels. Average trip lengths used in this plan for commercial and noncommercial trips are estimates based on past experience and judgements as to what is likely to happen.

User days are not the key limiting factor in this plan as they have been in the past. Rather, the number of daily launches from Lees Ferry and trip size are the key factors in limits and distribution of use. A maximum annual total user day limit is established in this plan but is much higher than expected levels. Expected user day levels are based on average trip lengths.

a. Summer Season (April 1 through September 30)

In order to reduce crowding and congestion, keep related resource impacts at an acceptable level, and provide a quality river-running experience, the number of people launching is set at a fixed level of 65 per day for the summer season of 183 days. This includes two groups of 25 commercial passengers and one group of 15 noncommercial trip participants.

Total use and allocation is based on the maximum number of launches and maximum group sizes. For example, total maximum number of commercial passengers to launch from Lees Ferry for the summer season will be based on 50 passengers per day X 183 days which equals 9,150 passengers per season. However, in order to provide flexibility for concessioners to make up for cancellations and no shows, group size will be allowed to vary up to 30 passengers and the number of commercial trip launches per day may increase up to 3 on certain days.

b. Winter Season (October 1 through March 31)

Winter season use is restricted to no more than three trips and an average of 60 people per week. This will keep use at levels low enough to allow the natural cleansing of beaches to continue and provide for a wilderness river trip where the likelihood of encountering other trips is remote. It has been well documented by researchers (Carothers, et al., 1976) that heavily used beaches are significantly cleaner when visited in the spring than when last visited in the fall. However, little is known about the details of this cleansing process. Until the natural processes contributing to this cleansing are investigated, winter use will be kept at a relatively low level.

TABLE 2. CURRENT AND NEW USE LIMITS

COMMERCIAL	1978 Limits		This Plan	
	Summer	Winter	Summer	Winter
Average Miles Per Day	40	40	30	30
Minimum trip length(days)	6	6	8	8
Maximum trip length "	No Limit	No Limit	18	21
Average trip length(days)	9	9	12	12
Passengers per day(max)	150	150	50	50
Launches per day	No Limit	No Limit	2	1
Launches per week	No Limit	No Limit	14	up to 3
Passengers per group	40	40	25	25
Number of People	11,335	*	9,150	975
Number of Trips	491	*	366	39
Projected User Days	89,000	*	109,800	11,700
Maximum User Days	89,000	*	164,700	20,475
NONCOMMERCIAL				
Minimum Trip Length	No Limit	No Limit	No Limit	No Limit
Maximum Trip Length(days)	No Limit	No Limit	18	21
Average Trip Length(days)	19	19	16	18
Launches per day	1	1	1	1
Launches per week	**	**	7	7
Participants per group	15	15	15	15
Number of People	395	***	2,745	585
Number of Trips	37	***	183	39
Projected User Days	7,600	***	43,920	10,530
Maximum User Days	7,600	***	49,410	12,285

* The previous number of people, trips, and user days for commercial river running was allocated annually with no distinction as to season. Therefore, winter use is included in the summer use figures.

** Launches per week was limited by the number of people that could launch each day, and the annual limit.

*** The previous annual noncommercial use allocation of 7,600 user days has worked out to about 40+ trips each year. No more than 1 noncommercial trip could launch each day. Theoretically, 7 trips could launch each week. This rarely occurred because of the overriding limit of about 40 trips each year, based on the annual user day limit.

The previous number of people, trips, and user days for noncommercial river trips was allocated annually with no distinction as to season of use. Some winter use is included in the 1978 summer use figures.

It is important to understand that maximum user day levels will not be allowed to happen. In order for maximum user day levels to occur, every trip would have to be at maximum group size and trip length. It is very unlikely that this would occur within the framework of the use limits outlined in Table 2. However, additional limits will be placed in effect if use levels at any time appear to be escalating beyond an acceptable level. Acceptable level of use is that amount shown in Table 2 as the average user day level. The average user day level is based on the total number of people allowed in a given season multiplied by average trip length. The river monitoring studies will provide data to assist management in adjusting future use levels.

For the summer season, commercial use will be based on and may not exceed 9,150 passengers launching from Lees Ferry. As outlined in Table 2, the desired group size for these trips is 25 passengers. The desired number of commercial trip launches is two each day. Based on the past several years experience it is recognized that there will be last minute cancellations and no shows on many trips. To compensate for this, concessioners will be allowed flexibility in numbers of trips and group size. Each concessioner will be allowed from two to four (depending on base allocation) makeup trips or up to 30 passengers on some trips for makeup purposes. Makeup trips will be limited to no more than three each week to keep the number of launches within acceptable limits. This flexibility is provided for makeup purposes only, and concessioners may not pre-schedule such trips.

Makeup trips will not be available for noncommercial river runners in 1980. The availability of makeup trips for noncommercial use depends primarily upon the success of the information and education program to improve noncommercial trip participants' observance of regulations pertaining to the protection of the canyon. Concurrently, some experiments with noncommercial river-trip permit processing will be necessary to determine how to handle makeups or no shows.

The number of commercial passengers allowed to launch from Lees Ferry is 9,150 during the summer season and 975 during the winter season. However, the number of individual passengers is expected to increase by approximately 3,000 through partial river trips. Concessioners are encouraged to provide partial canyon trips as they have done in the past.

Interest in partial canyon trips is high. In 1978, there were 3,997 people who took out at Lava Falls, and an additional 3,900 people who put in or took out at other locations. Of the 3,900 people, there were 3,481 who hiked in or out of the canyon in connection with their partial river trip. Section II, Table 20 shows the number of people who took partial trips with concessioners in 1978.

In addition to the noncommercial trip participants and commercial passengers outlined in Table 2, there are commercial crew members, and National Park Service patrol, administrative, and research trip personnel. The number of commercial crew on each trip varies from company to company and trip to trip depending on type of boats used and the type of trip offered. Generally, the more specialized trips require more crew. Crew members are not counted against concessioner allocations and are in addition to the 25 passengers per group. National Park Service patrol and administrative trips are not under a use limit but will normally be approximately 12 in the summer season and 6 during winter. These trips will generally be small groups of 10 or less people. There will be generally less than 10 research trips each year. Research trips are usually small groups of about 10 people. Table 3 provides information on the extent of this use and completes the total use picture.

Table 3
COMMERCIAL CREW, NPS PATROL & ADMINISTRATIVE,
AND RESEARCH TRIPS

	1978		This Plan	
	No. of People	User Days	No. Of People	User Days
Commercial Crew	2626	24,105	3,000	30,000
NPS Patrol & Admin.	100	800	180	2,500
Research	50	700	50	700

Total use including commercial passengers, commercial crew, noncommercial trip participants, National Park Service patrol, administrative, and research trips, in terms of user days based on projected trip lengths is 209,150. Total maximum use (which will not be allowed to happen based on maximum trip length and maximum group size on every trip would be 304,070 user days.

3. Allocation of Use for Commercial and Noncommercial Trips

Commercial companies currently provide river trips for those without the expertise, time, or equipment to run the Colorado River themselves. A commercial trip, then, is defined as one where services are afforded to the visitor for a fee. These services include operating the boats, preparing meals and setting up camp, as well as providing educational opportunities to learn more about the area. These are currently both motorized and non-motorized trips. Passengers on either type of trip do not operate the boats; therefore, an oar-powered commercial trip is no more strenuous than a motorized commercial trip. Commercial river companies offer river trips only if they have a current concession permit issued by Grand Canyon National Park.

Noncommercial trips, on the other hand, consist of a private group organized to run the river and are participatory in nature. The group members share the responsibilities and cost of operating the boats, along with meals and camp duties. No fees are paid for guide services or collected above the actual cost of the trip. School and other non-profit groups may qualify for these trips (see Private Trip Affidavit, Appendix B).

The allocation between commercial and noncommercial use outlined in Table 2 is based on the best available information on the demand for commercial and noncommercial trips. Figures on potential passengers turned away by commercial concessioners may count individuals more than once as they are turned away by successive companies. When certain dates are full, some companies issue brochures indicating this fact. There is no way to count potential passengers turned away in this manner. Figures on the demand for noncommercial trips are complicated by duplicat applications, false applications, failure of interested but discouraged river runners to apply, etc. Concessioners reported that in 1978, they turned away approximately 12,000 people that they were unable to accommo-date on river trips. By contrast, there were approximately 4,700 people who were included on noncommercial river trip permit applications that were not granted permits. While these figures are not entirely reliable, there is some indication that the errors are at least to some degree offsetting. This does provide some insight into relative demand for commercial compared to noncommercial river trips. From this comparison it appears that the relative demand by people who wanted river trips but were not able to take one was 72 percent commercial and 28 percent noncommercial. The proposed allocation based on number of people is 75 percent commercial and 25 percent noncommercial and does appear to be reasonably close to the demand based on 1978 information. This ratio will be reviewed and adjusted as more reliable information becomes available.

Allocation ratio for commercial and noncommercial river running varies, depending upon whether one is considering the number of trips, number of people, or user days.

Table 4
COMPARISON OF COMMERCIAL AND NONCOMMERCIAL USE

	1978				This Plan			
	Commercial		Noncommercial		Commercial		Noncommercial	
	No.	%	No.	%	No.	%	No.	%
Participants	11,335	96.6	395	3.4	10,125	75	3,330	25
Number of Trips	491	93.0	37	7.0	405	65	222	35
Projected User Days	89,000	92.0	7,600	8.0	121,500	69	54,450	31

User day figures in Table 4 are based on projected 12-day average trip lengths for commercial and 16 days for noncommercial trips. These projected trip lengths are based on five years of actual experience in observing trip lengths. During this time, no maximum limit existed for either commercial or noncommercial trips. The minimum trip length for commercial trips was a limit of not averaging more than 40 miles per day. Maximum trip length was allowed to fluctuate at the discretion of the concessioner and noncommercial trip participants.

The plan provides for significant increases in noncommercial participants, number of trips and user days. There will be minor decreases in the number of commercial trip passengers and the number of trips but a considerable increase in commercial user days. The percentage changes are outlined in Table 5.

Table 5
COMPARISON OF COMMERCIAL & NONCOMMERCIAL USE CHANGES

	Participants	Trip Numbers	Projected User Days
Commercial	10.7% decrease	17.5% decrease	137% increase
Noncommercial	843 % increase	600% increase	718% increase

Information based on verbal and written reports indicates that non-commercial river runners are less likely to comply with operating regulations. During patrol trips in 1977 and 1978, National Park Service rangers recorded more incidents of noncompliance with regulation on the part of noncommercial river runners. Noncommercial use will be phased in to allow time to implement the information and education program for these river runners. Half of the noncommercial allocation will be allowed and monitored in 1980 and 1981. The remainder of noncommercial user days will be granted in 1982, if monitoring indicates that resource impacts are within acceptable limits by the end of the 1981 summer season.

4. Commercial Permit Management

It is essential that concessioner guided river trips be available for that segment of the public who do not have the expertise, equipment, or interest to run the river on their own. River-running concession permits will be granted for a 5-year period beginning January 1, 1980, and ending December 31, 1984. When granting permits, preference will be given to those companies who have provided satisfactory service over the term of their existing permits. This is required by the Concession Policy Act of October 9, 1965 (P.L. 89-249; 79 Stat. 969; 16 U.S.C. 20):

> "SECT. 5. The Secretary shall encourage continuity of operation and facilities and service by giving preference in the renewal of contracts or permits and in the negotiation of new contracts or permits to the concessioners who have performed their obligations under prior contracts or permits to the satisfaction of the Secretary. To this end, the Secretary, at any time in his discretion, may extend or renew a contract or permit, or may grant a new contract or permit to the same concessioner upon the termination or surrender before expiration of a prior contract or permit. Before doing so, however, and before granting extensions, renewals or new contracts pursuant to the last sentence of section 4 of this Act, the Secretary shall give reasonable public notice of his intention to do so and shall consider and evaluate all proposals received as a result thereof."

As indicated in the Concession Policy Act, public notice will be given of the intention to renew permits. Anyone who so desires may submit a proposal for a permit with the assurance that it will be evaluated.

Table 6 shows the proposed method of allocating use among concessioners. This is based on historical user day allocations converted to number of passengers and trips launched.

Table 6
EXAMPLE OF CONCESSIONER ALLOCATIONS -- SUMMER SEASON

Concessioner	1978 User Day Allocations	Percent of User Days	Number of Passengers This Plan	Trip Launches This Plan
Company A	10,000	11.2%	1,025	41
Company B	8,500	9.6%	875	35
Company C	7,000	7.9%	650	26
Company D	4,000	4.5%	400	16
Company E	2,500	2.8%	250	10
Company F	1,500	1.7%	150	6
Company G	1,000	1.1%	100	4
etc.	etc.	etc.	etc.	etc.
Totals	89,000	100.0%	9,150	366

Actual river companies were not used in the example of Table 6 to avoid charges of preselection bias. "Etc." was placed at the bottom of each column to indicate that there would likely be more than seven companies. In fact, 21 companies for full-canyon trips, plus the Hualapai Tribe for Lower Gorge trips, is the maximum number that will be granted permits under this plan. Based on the past five years of operation, the National Park Service believes that from 15 to 18 companies would be preferable. This would maintain the variety of trip offerings desired and yet provide an opportunity for those existing small companies to increase their operations to the point of being more economically viable. With fewer than 15 companies, the variety of services offered would decrease significantly. However, any reduction in number of companies will occur through natural attrition.

There are 39 winter trips available to concessioners with group size of 25 passengers per trip and up to 21-day trip lengths. Each concessioner will be given the opportunity for at least one winter trip. The remaining trips will be available on a first-come, first-served basis. If there are any concessioners who do not want a winter trip, their trip will be made available to other concessioners on a first-come, first-served basis.

Scheduling of trip launch dates will be handled on a first-come, first-served basis. Concessioners will send proposed trip launch schedules for a given season to the National Park Service by July 1 of the previous year. The National Park Service will confirm launch schedules upon receipt of the proposed schedules. Any company who sends launch schedules in late will be assigned the closest launch date available to those it proposes.

If a company ceases operation, its use allocation will be reallocated at the discretion of the National Park Service. The National Park Service reserves the right to adjust or reallocate use allocation.

Concession permits will be assigned through a bid procedure, after considering the proposals submitted by all applicants. River-running concession permits cannot be transferred without prior written approval from the National Park Service.

National Park Service policy requires that all concessioners be evaluated at least three times annually. Therefore, all river-running concessioners will be routinely evaluated as required by policy. Evaluations will include on-river activities as well as compliance with permit conditions such as insurance, annual financial reports, etc. On-river evaluations will be conducted both by NPS personnel accompanying concessioner river trips and by NPS patrol personnel visiting and contacting trips on river, at attraction sites, and at camps. These contacts will be low key.

5. Noncommercial Permit Management

Noncommercial permits will be granted on a first-come, first-served basis. A waiting list will be maintained. A beginning date for receiving noncommercial permit applications will be established. It is expected that the number of applications received on the beginning date under the new plan will be more than can be accommodated during the first season. A lottery will be operated for this first block of applications. As applications are drawn, they will be granted permits until all launch dates for the first season are filled. The lottery will be continued for all initial applicants, and as they are drawn they will be placed on a waiting list for subsequent season(s). Thereafter, applications will be accepted in the River Unit Office at any time and placed first-come, first-served at the end of the waiting list.

In submitting an initial application, the applicant need not include a list of participant names. A trip participant list will be required when the applicant's name comes to the top of the waiting list and is granted a permit. If any persons on the participant list are also applicants on the waiting list, their names will be removed from the waiting list. After the trip is completed, participants may again apply for a river trip permit and be placed at the end of the list.

When a trip application comes to the top of the list, the applicants are assigned, as nearly as possible, a launch date of their choice. If they cannot meet the assigned launch date, they will have the choice of any unassigned launch dates for the remainder of the season. If there are no available dates, the permittee is placed on the top of the waiting list to be assigned the next available launch date. Cancellations will be filled by the next available person on the list until three weeks

prior to launch date. The waiting list is periodically up-dated through the mailing of interest cards. If no response is received from the interest card, the permittee's application is removed from the file. Permits and launch dates will be assigned in February for the summer season and in August for the winter season.

6. Launches from Diamond Creek

A special river-running permit is required for any noncommercial parties launching at Diamond Creek. A quota and reservation system will not be established at this time, but the permit system will make boaters aware of equipment requirements, safety procedures, and environmental considerations. It also allows the National Park Service to monitor visitor use levels. These river-running permits are issued by the River Unit or the Pierce Ferry ranger prior to a trip leaving Diamond Creek. Commercial and noncommercial river runners must meet all operational requirements for river trips as outlined in this plan. All commercial trips launching at Diamond Creek must have a current concession permit with Grand Canyon National Park.

7. Launches Between Lees Ferry and Diamond Creek

Any noncommercial river trip launching between Lees Ferry and Diamond Creek is required to obtain a permit through the system outlined in B.5. All commercial river trips launching at any point within the canyon must have a current concession permit or contract with Grand Canyon National Park.

C. ENVIRONMENTAL MANAGEMENT

1. Fires

Use of fires on river trips is limited because of the environmental impacts this activity causes. Those impacts are the buildup of charcoal and ash on beaches, and stripping of native trees and shrubs for firewood due to the lack of natural driftwood.

Fires are limited to esthetic and warming purposes during the summer season. Wood must be carried into the canyon for summer fires. Driftwood from along the river may be used for winter fires. Gas stoves must be carried for most cooking purposes. Charcoal briquettes may be used for dutchovens, grilling meat, etc. All wood or charcoal must be contained in a fire pan. No fires are allowed when away from the river corridor.

The annual operating requirements contain specific details for the use of fires, fire pans, stoves, etc.

2. Human Waste Disposal

All river trips are required to haul out human waste generated by their group. This procedure is necessary due to the potential health hazard to the park visitor, impact on natural resources, esthetic impacts (sight and smell) and the potential destruction of irreplaceable archeological resources resulting from burial of waste in the canyon. National Park Service experience indicates that human waste can be removed at an acceptable cost and with little inconvenience to the visitor. The procedure is outlined in Appendix C.

3. Trash, Litter, Soap

All trash and litter must be carried out of the canyon. Use of soap is not allowed in side streams. Any soap used must be biodegradable. Specific details may be found in the 1980 Operational Requirements, Appendix D. IV.

4. Trails

Single trails are to be designated and maintained from the river to points of interest and other environmentally sensitive areas. To continue the present haphazard multiple trail system is unacceptable. Closure of existing trails and areas presently visited would not be feasible as it would require more effort to effectively patrol the closures than is reasonable. Reduction of visitor use would not accomplish desired goals since this, along with other trampling damage, is not a function of numbers of people as much as of where they walk. Establishing or designating single trails may require occasional minor amounts of construction.

A total of 12.1 miles are to be defined and maintained at the specific locations outlined in Table 7.

TABLE 7
SINGLE TRAIL ALIGNMENT LOCATIONS

Area	River Mile	Miles of New Trail	Total Miles of Trail Maintenance
South Canyon	32 (N)	0.5	1.5
Saddle Canyon	47 (N)	1.0	2.5
Nankoweap	52 (N)	1.5	2.0
Little Colorado	61.8 (S)	1.5	3.0
Cardenas Creek	72 (S)	1.0	2.0
Unkar Delta	72.5(N)	0.5	2.0
Hermit Creek	95 (S)	2.6	4.0
Shinumo Creek	108 (N)	0.5	0.5
Elves Chasm	116 (S)	0.5	0.5
Stone Creek	132 (N)	0.5	2.0
Tapeats Creek	134 (N)	0.5	3.0
Deer Creek	136 (N)	1.0	7.0
Havasu Creek	157 (S)	0.5	1.5
		12.1	31.5

5. Historical and Archeological Resources

Specific religious Indian sites are closed to hiking and/or camping. These sites are identified in the operating requirements, Appendix D. No archeological or historic site may be disturbed. No artifact may be removed from the canyon.

The archeological sites listed in Table 8 are subject to heavy visitation and will be monitored, evaluated, stabilized, and protected as necessary to preserve their values in compliance with mandates of the National Historic Preservation Act and following consultation with the Advisory Council on Historic Preservation.

TABLE 8
ARCHEOLOGICAL SITES

Site Number	Type of Site	Work Needed
1. C:5:1	Pueblo Ruins	Stabilization
2. C:5:3	Stanton's Cave*	Repair Fence
3. C:9:1	Pueblo Ruins	Stabilization
4. C:13:4	Prehistoric Midden*	Test Excavation
5. C:13:66	Rock Shelter*	Full Excavation
6. C:13:2	Pueblo Ruins	Stabilization
7. C:13:10	Pueblo Ruins*	Test Excavations
8. C:13:11	Masonry Granary	Stabilization
9. B:16:3	Pueblo Ruins	Stabilization
10. B:15:1	Pueblo Ruins	Stabilization
11. B:10:4	Pueblo Ruins	Stabilization
12. B:10:1	Pueblo Ruins	Stabilization
13. A:16:1	Pictographs*	Test Excavations
14. G:3:3	Rock Shelter*	Test Excavations

* Regular inspection of sites with research potential may show that active preservation or data recovery measures (stabilization or emergency excavation) may be necessary.

The following historic sites will be preserved through evaluation, protection and/or stabilization:

Name of Site

1. Brown Inscription
2. Cave Springs Rapid Historic Site
3. Bert Loper's Boat
4. Grave's of Peter Hansbrough (1889) and Boy Scout (1946)
5. Grave of Willie Taylor
6. Beamer's Cabin
7. Tanner Mining Camp
8. Hance Cabin
9. Asbestos Canyon Mining Camp
10. Bass' Winter Camp and Cable Crossing
11. Hakatai Canyon Mining Camp

6. Monitoring and Continued Research

Data from research projects completed in 1976 has been used in evaluating impacts of current visitor use levels and patterns, and in developing the management plan. It is recognized that much additional data is needed. Continued effort will be required in the following areas.

a. Sociological

Further refinement of information regarding relative demand by the public for noncommercial and commercial trips is essential. Existing data has provided groundwork for setting initial allocations. However, a more reliable process is needed to accurately assess the demand for commercially guided trips, taking into account the number of turn-downs and cancellations, and the effect of advertising activities.

Analysis of noncommercial permit demand is needed to determine duplicate applications, false names, and number of people that do not apply due to the tremendous competition for permits. The data can then be compared and a more responsive allocation made.

It must be recognized that demand for commercial vs. noncommercial trips is not static. Continual monitoring and adjustments in allocations will be required.

Monitoring of contacts and crowding under the new management scheme is essential. Also important is continued assessment of visitor perception of the trip experience.

b. Biological

There is need for further data and the monitoring of ecological changes to ensure that the resource is being protected and to assess the effects of changing use patterns.

The environmental health of campsites and points of interest must be monitored. The data gathered will be used to adjust visitor use levels to mitigate longer term resource impacts.

c. Other

Monitoring of economic impacts on concessioners and visitors resulting from the restrictions, limitations, and requirements established by the plan is also necessary.

To comply with Executive Order 11593, it is imperative to evaluate cultural and historic resources within the river corridor and related use areas that are or may be affected by river travelers, and to monitor impacts on these resources resulting from river runners. Protective measures will be taken as required.

D. GENERAL GUIDELINES

1. Plan Review and Revision

It is expected that periodic modifications to the plan will be necessary. Future modifications will be based on data and information from monitoring studies and public input. Normally, specific detailed requirements concerning boat types, boat capacities, safety and emergency equipment, safety and emergency procedures, trip leader and guide standards, resource protection procedures, public health standards, etc., will be reviewed and modified where needed on an annual basis. Use, allocation, scheduling and related matters will normally be modified on a longer term basis of from three to five years. However, in any situation where a critical need for modification arises, the Superintendent reserves the right to make such a modification whenever it is necessary.

The procedure for modification will include:

- -Conducting research and evaluating data.
- -Determining alternate management directions.
- -Considering public review and comment.
- -Notifying all river-running permit holders of proposed changes
- -Notifying the general public through local and/or Federal Register publication.

2. Education of Commercial Guides, Noncommercial Trip Leaders and Visitors.

It is essential that commercial guides, trip leaders, and passengers are fully educated as to river management requirements. The educational provisions are listed below:

- -Annual written operating requirements for every guide and trip leader.
- -An audio-visual program on resource protection for all commercial and noncommercial river passengers.
- -Commercial guide and trip leader training programs in minimum impact behavior, safety, sanitation and interpretation. A minimum of two 1-week commercial boatman training sessions per year will be planned, providing funds and manpower are available to the National Park Service. Commercial guides and trip leaders should attend at least one of the 1-week sessions during the first year of employment. Alternate methods and sources of training guides may be arranged by concessioners. Ability, knowledge, and willingness to impart information gained through training or other sources to passengers will be noted on concessioner evaluations. All noncommercial trip leaders must attend a one-day training session at Lees Ferry.

Commercial guides and noncommercial trip leaders must ensure that members of their group follow all applicable National Park Service rules, regulations and guidelines.

3. Boating and Safety Requirements

Based on past experience, current boating and safety requirements have been found to be adequate and will be continued. A summary of those standards are outlined below and a complete description found in Appendix D.

There are specific types of watercraft and corresponding load capacities (numbers of people) that are allowed to run the river. Exception to the rules outlined in the annual operating requirements must be approved by the National Park Service.

Wearing of U.S. Coast Guard approved life jackets in all whitewater areas of the river is required. Continued wearing of life jackets in calm water sections of the river is highly recommended. However, flexibility is allowed to the concessioner and noncommercial river runner to allow life jackets to be taken off on flat water, depending on the type of watercraft and other conditions. Types of life jackets and other floatation devices to be worn or used by commercial passengers, boatmen, and noncommercial river runners are described in Appendix D.

All river trips are required to carry first aid supplies and equipment. Recommended supplies and equipment are found in the Appendix. In the event of an emergency medical or other situation arising on the river all trips are required to carry some emergency communications and signaling equipment. Other emergency repair and spare parts are required on all trips, such as extra oars or paddles, boat patching kits, pumps, ropes and maps.

4. Guide and Trip Leader Standards

Standards for commercial trip leaders and guides have been established. These include sufficient previous experience on whitewater rivers, including the Colorado in Grand Canyon, to ensure that a person has the skill to successfully negotiate the rapids, as well as to provide information and interpretation for the visitor. In addition, the guide must be able to: meet and cope with first aid situations and emergency evacuation procedures, deal with boat maintenance and repair, and be especially knowledgeable and actively work to protect the canyon's resources. A commercial trip leader must have had at least six trips through the canyon (as a guide) in the type of craft being used. A guide must have had three trips through the canyon in the type of craft to be run, having run all rapids in the river in this craft at least twice.

Standards for noncommercial trip leaders are less stringent regarding previous experience on the river in Grand Canyon, but it is essential that they attend a one-day training session to learn the proper procedures regarding resource protection, safety and emergency evacuation, as well as some interpretation (see Appendix D. III. for details).

5. Special Transportation Regulations

a. Helicopters

Helicopters used to transport passengers to and from the river must operate on lands outside the boundaries of Grand Canyon National Park. Commercial river-running companies will be required to schedule passenger exchanges at designated times and places specified by the National Park Service. These flights will be coordinated with commercial outfitters and those in control of the lands being used.

b. Mules and Horses

The park will arrange for a concessioner to provide mule takeouts at two points in the canyon. These areas will be Whitmore Wash and Phantom Ranch. This will be done through the existing or a new mule concession permit. These concessioners will provide transportation for passengers and baggage to and from river trips.

River concessioners must make arrangements with mule concessioners. Up to 10 mules a day will be available, by prior arrangement, for river passengers at Phantom Ranch. Up to 30 mules or horses will be available, by prior arrangement, at Whitmore Wash.

c. Hiking

Visitors may hike in or out of the canyon to meet or leave a river trip. However, overnight hiking trips require a permit obtainable from the Backcountry Reservations Office through the River Unit Manager.

6. Health and Sanitation

The proper storage and handling of food on river trips is important so as to minimize the spread of communicable disease. Personal cleanliness of food handlers, proper type and temperature of storage boxes, cleanliness of cooking equipment, and washing dishes properly are some of the most important items. Further details are found in Appendix C.

Applicable Federal, State and local government laws and regulations will govern health and sanitation procedures on all river trips.

E. INTERRELATIONSHIP WITH OTHER PLANS AND PROPOSALS

1. National Park Service

The final environmental statement for the Grand Canyon Master Plan (FES 75-97) was made available for public review in November 1975. The final master plan was approved in June 1976. The plan provides a framework for the development and management of visitor facilities on the rims and the use of the backcountry and river corridor. The river management plan has been prepared in conjunction with the master plan and takes into consideration visitor use within the transcanyon corridor (Phantom Ranch) and that of the backcountry adjacent to the river.

Certain lands within Grand Canyon National Park have been studied and evaluated for incorporation in the National Wilderness Preservation System. The proposed Wilderness Classification for Grand Canyon, Draft Environmental Statement (DES 76-28) recommends that the river corridor be placed in wilderness at such time as the lands so qualify. The total area of the river unit, including the water surface, would be approximately 17,000 acres. Existing use of motorized craft is inconsistent with the wilderness criteria of providing outstanding opportunities for solitude and for a primitive and unconfined type of recreation.

The backcountry management plan is the river management plan's counterpart in the management of the park's roadless area. The river plan is designed to be a workable document compatible with the standards, requirements, and limits for use established in the backcountry management plan.

A natural resource management plan has been developed for Grand Canyon. This plan is complementary and considers portions of the river environment as well as the rest of the park lands. The plan contains research proposals coinciding with river management actions pertaining to endangered fish species and exotic plant removal.

A cultural resource management plan is being prepared for the protection of all historic and archeological resources within the park. This plan will detail those specific sites within the river corridor needing stabilization and/or preservation and will describe how those particular activities will be accomplished.

A study of aircraft overflights and the related problem of noise is currently in progress. The results of this study will be incorporated into a proposed draft management plan and the submission of proposed rules to the Federal Aviation Administration to mitigate resulting impacts on park visitors and resources.

As a result of the 1972 Water Pollution Control Act (Public Law 92-500), a water quality inventory and biological analysis plan has been written and approved for all Grand Canyon National Park waters. This plan

provides for continued monitoring of the condition of significant water sources within the park.

A combined burro management plan and draft environmental statement was released to the public in January 1979. The plan evaluates the effects of burro populations on natural and cultural resources along the river corridor and proposes measures to control burro numbers and reduce adverse impacts. The final plan is scheduled for completion in the fall of 1979.

The park's Search and Rescue Plan provides procedures for the emergency search and rescue of park visitors including river runners.

A general management plan and wilderness proposal have been prepared for Glen Canyon National Recreation Area. The river management plan will affect operations within the national recreation area at Lees Ferry. Glen Canyon personnel will undertake added responsibilities due to the expanded education/interpretive programs proposed in the plan. These programs and personnel will be provided by the national recreation area.

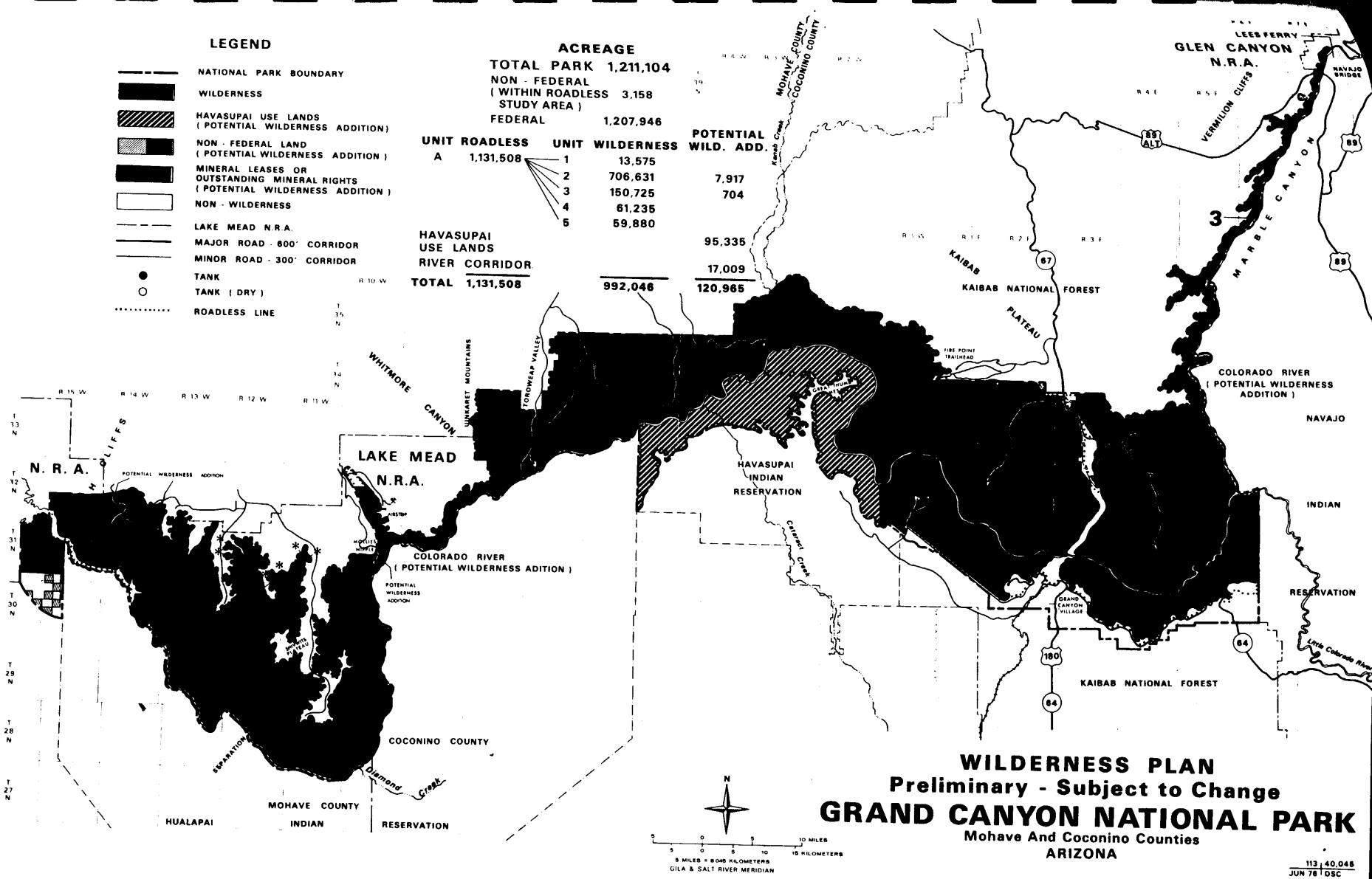
A revised wilderness proposal for Lake Mead National Recreation Area has recently been made available for public review, DES 79-12. Although lands immediately adjacent to Grand Canyon, such as the Shiviwits Plateau and those in the Whitmore Canyon area are considered for wilderness, such designation would not affect river-running activities. Visitors do leave the float trips at Whitmore Canyon and travel through national recreation lands via a jeep road, but this access road would remain open to permit other uses such as grazing.

2. Havasupai Reservation

A study of the traditional use lands, consisting of 95,335 acres within the national park boundary is currently being headed by the Bureau of Indian Affairs, together with the Havasupai Tribe and the National Park Service. The study will determine what traditional uses were made of the area below Great Thumb on the south slope of the Grand Canyon to the high water line of the river. These lands are within Grand Canyon National Park and are managed by the National Park Service, but are also available for traditional uses of the Havasupai. Of primary importance is the coordination of off-river hiking in Havasu Creek.

3. Bureau of Reclamation

The Bureau of Reclamation has prepared an environmental assessment for the operation of Glen Canyon Dam. The amount of water released from the dam affects the river-running activities in Grand Canyon, as well as the natural resources along the river corridor. The volume of water released at any given time will depend upon water and power demands in the region. Coordination has been established between the Bureau of Reclamation and National Park Service personnel to obtain water flow predictions.


LEGEND
NATIONAL PARK BOUNDARY
WILDERNESS
HAVASUPAI USE LANDS (POTENTIAL WILDERNESS ADDITION)
NON - FEDERAL LAND (POTENTIAL WILDERNESS ADDITION)
MINERAL LEASES OR OUTSTANDING MINERAL RIGHTS (POTENTIAL WILDERNESS ADDITION)
NON - WILDERNESS
LAKE MEAD N.R.A.
MAJOR ROAD - 600' CORRIDOR
MINOR ROAD - 300' CORRIDOR
TANK
TANK (DRY)
ROADLESS LINE
ACREAGE
TOTAL PARK 1,211,104
NON - FEDERAL (WITHIN ROADLESS STUDY AREA) 3,158
FEDERAL 1,207,946
UNIT ROADLESS
A 1,131,508
UNIT WILDERNESS
1 13,575
2 706,631
3 150,725
4 61,235
5 59,880
POTENTIAL WILD. ADD.
7,917
704
HAVASUPAI USE LANDS 95,335
RIVER CORRIDOR 17,009
TOTAL 1,131,508 992,046 120,965
GLEN CANYON N.R.A.
LEES FERRY
NAVAJO BRIDGE
VERMILION CLIFFS
MARBLE CANYON
MOHAVE COUNTY
COCONINO COUNTY
Kanab Creek
KAIBAB PLATEAU
KAIBAB NATIONAL FOREST
FIRE POINT TRAILHEAD
COLORADO RIVER (POTENTIAL WILDERNESS ADDITION)
NAVAJO INDIAN RESERVATION
Little Colorado River
GRAND CANYON VILLAGE
WHITMORE CANYON
UNKARET MOUNTAINS
TOROWEAP VALLEY
LAKE MEAD N.R.A.
N. R. A.
POTENTIAL WILDERNESS ADDITION
AIRSTRIP
MOLLIES NIPPLE
COLORADO RIVER (POTENTIAL WILDERNESS ADITION)
POTENTIAL WILDERNESS ADDITION
HAVASUPAI INDIAN RESERVATION
Cataract Creek
COCONINO COUNTY
Diamond Creek
SEPARATION
MOHAVE COUNTY
HUALAPAI INDIAN RESERVATION
R 15 W
R 14 W
R 13 W
R 12 W
R 11 W
R 10 W
T 33 N
T 32 N
T 31 N
T 30 N
T 29 N
T 28 N
T 27 N
N
5 0 5 10 MILES
5 0 5 10 15 KILOMETERS
5 MILES = 8.045 KILOMETERS
GILA & SALT RIVER MERIDIAN
WILDERNESS PLAN
Preliminary - Subject to Change
GRAND CANYON NATIONAL PARK
Mohave And Coconino Counties
ARIZONA
113 | 40,045
JUN 76 | DSC

II. DESCRIPTION OF THE ENVIRONMENT

A. GENERAL

The Colorado Plateau is the regional setting for the Grand Canyon. The plateau is a vast, semi-arid land of raised plains and basins typical of the Southwestern United States. Approximately half of the land on the plateau is federally administered by the National Park Service, Bureau of Land Management, and U.S. Forest Service. The remaining land is owned primarily by Native Americans. The Grand Canyon lies on the south-central edge of the plateau.

The 1,218,375 acres within Grand Canyon National Park are adjacent to the Colorado River in northern Arizona. Within the park is 277 miles of the Colorado River, from the Paria River confluence to the Grand Wash Cliffs. The 277-mile-long Grand Canyon ranges from 1 to 25 miles in width and is up to 1 mile deep. Elevations range from 1,200 feet at the western boundary where the Colorado River enters Lake Mead, to 9,165 feet on the North Rim.

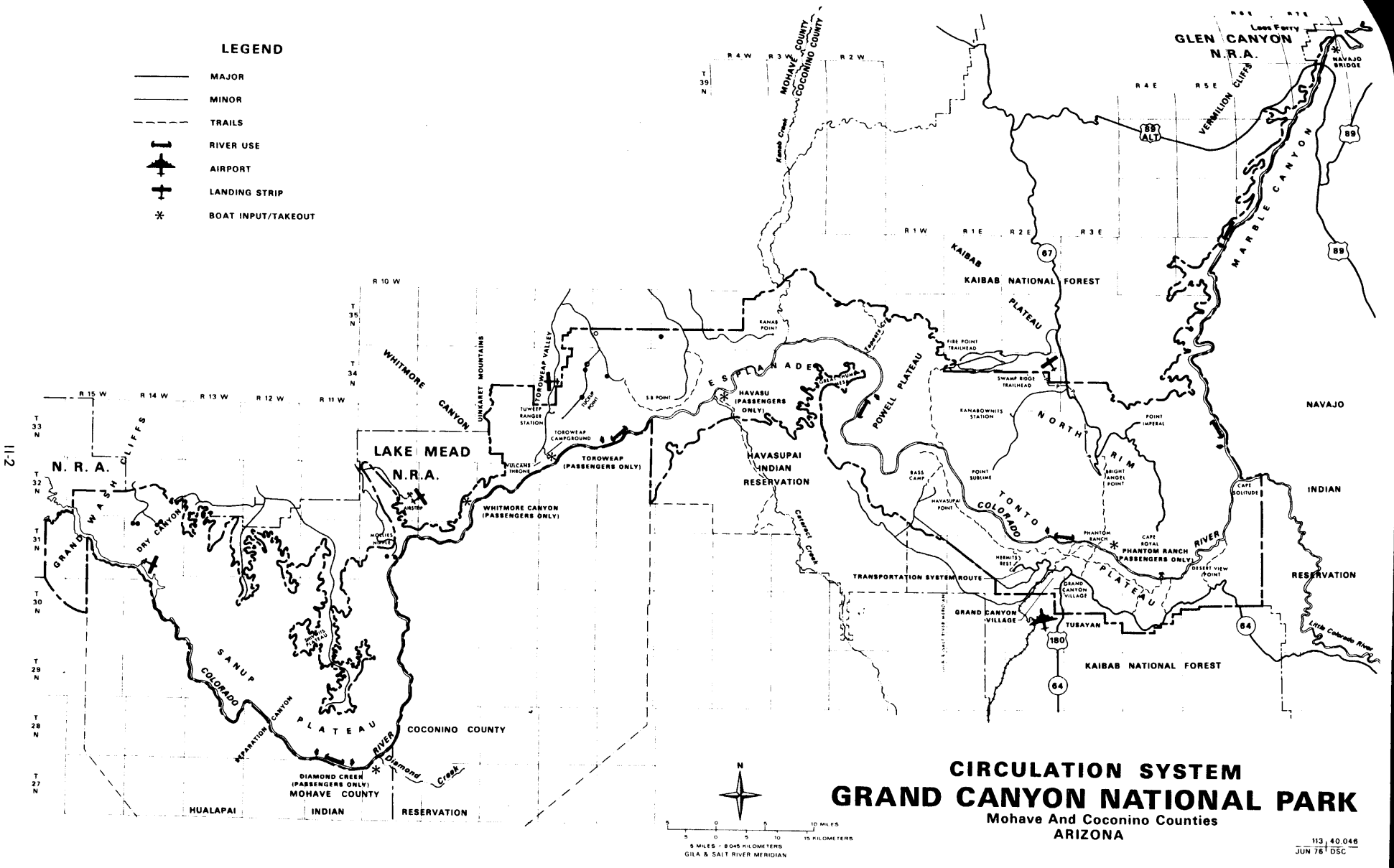
Public Law 93-620, dated January 3, 1975, incorporated Marble Canyon National Monument; Grand Canyon National Monument; Grand Canyon National Park; portions of Lake Mead National Recreation Area, the Kaibab National Forest, national resource lands (Bureau of Land Management); and other lands into the present park.

The park is bounded on the north by Kaibab National Forest and the Arizona Strip (Bureau of Land Management), on the east by the Navajo Indian Reservation, on the south by Kaibab National Forest and the Havasupai and Haulapai Indian Reservations, and on the west by Lake Mead National Recreation Area.

1. Access

The Colorado River is accessible for boat launching and takeouts in only a few places. Lees Ferry, the primary boat launch site, is accessible from U.S. Highway 89A. Diamond Creek, a primary takeout location, is accessible by a gravel road from Interstate 40 at Peach Springs. Pierce Ferry, South Cove, and Temple Bar which are the remaining takeout locations are accessible from Interstate 40 and 15.

Visitors may also hike or ride a mule into the canyon to meet or exit from river trips. At least nine trails are available: Salt Trail from the Navajo Indian Reservation to the Little Colorado River, Tanner Trail, Hance Trail, North and South Kaibab Trails, Bright Angel Trail, Hermit Trail, Bass Trail, Tapeats-Thunder River Trail, Havasu Trail, and Whitmore Wash Trail. Mule rides are available only on the Kaibab, Bright Angel and Whitmore Wash Trails. For major access points and circulation, see map page II-2. For specific river locations, refer to Colorado River Corridor map, pages I-4 through I-6.



CIRCULATION SYSTEM
GRAND CANYON NATIONAL PARK

Mohave And Coconino Counties
ARIZONA

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II-2

NORTHERN ARIZONA UNIVERSITY

2. Adjacent Lands and Jurisdictions

Largely surrounded by lands within the national park, the river corridor and its public use are influenced to varying degrees by other agencies that administer or manage adjacent lands or resources.

a. Bureau of Reclamation

Bureau of Reclamation has responsibility for management of Glen Canyon and Hoover Dams including water storage and releases. Water releases from Glen Canyon Dam and water storage in Lake Mead have direct effect on river running in Grand Canyon. When Lake Mead is at maximum capacity, there is only about 5 miles of free-flowing river below Diamond Creek, with the remaining 42 miles to the Grand Wash Cliffs being lake waters. Although there is a current to Grand Wash Cliffs, it is very slow and for the most part not perceptibly moving. Water releases from Glen Canyon Dam fluctuate daily.

The Colorado River Front Work and Levee System Act of March 3, 1925, as amended, authorizes the Bureau of Reclamation to investigate, operate, and maintain the Colorado River from Lees Ferry to the International Boundary between the United States and Mexico. In addition to regulating water releases, the Bureau studies potential hydroelectric and water storage sites, investigates water quality and techniques of improvement, and carries out miscellaneous operational functions associated with river flow, including gaging, sedimentation, side wash inflow, and monitoring rockslides.

There is a large area of riverfront land under Reclamation withdrawal in the Arizona Strip within the 1975 Enlargement Act of Grand Canyon National Park that is administered by the National Park Service. This land has been retained under Reclamation's jurisdiction for potential future uses in connection with hydroelectric or water storage projects as may be ultimately authorized in connection with development of the Nation's multiple resources.

The Bureau of Reclamation has released approximately 8.23 million acre-feet of water annually from Lake Powell in recent years. This flow in terms of daily releases in cubic feet per second (cfs) fluctuates considerably. The daily fluctuations require adjustments in river-running schedules as the high and low flows arrive at different times of the day, depending upon location in the canyon. Also in years of low precipitation and run-off, when there is low power demand, only minimum flows are released to store as much water as possible. Low water flow periods make it difficult and sometimes impossible to run the river, especially for the larger motorized boats. During years of excess water, continued high flows are common, with the future possibility of water being released over the spillways of Glen Canyon Dam. High flows erode beaches in the canyon more rapidly. Also, daily fluctuation of water releases erodes beach sands more rapidly than more stable or consistent flows.

Coordination with the Bureau of Reclamation is necessary to keep river runners informed on water release rates from Glen Canyon Dam and the level of Lake Mead. The Bureau of Reclamation will also be advised on the effects of water releases on the Grand Canyon environment and river running activities.

b. Glen Canyon National Recreation Area

Most Grand Canyon river trips launch just above the mouth of the Paria River at Lees Ferry within Glen Canyon National Recreation Area.

Until 1929, Lees Ferry was the only regularly used river crossing between Hite, Utah, and Pierce Ferry, Arizona. There are several historic ranch and ferry buildings at the site which are visited by river runners and other tourists. Many fishermen launch at Lees Ferry and fish upstream as far as the dam.

The most significant activity at Lees Ferry is launching Colorado River trips destined to run through the Grand Canyon. On a typical summer day, the area is filled with passengers, noncommercial river runners, and logistical personnel who drive shuttle cars, buses or trucks, and assemble and launch boats.

There is a permanent National Park Service ranger stationed at Lees Ferry with additional seasonal personnel at various times. All Grand Canyon river trips launching at the ferry are checked by the ranger to ensure compliance with the requirements of the Superintendent of Grand Canyon National Park.

c. Navajo Indian Reservation

The 12.5-million acre Navajo Indian Reservation borders the east bank of the Colorado River in the Marble Canyon section of the park from River Mile 0 to River Mile 61.8 at the confluence of the Little Colorado River. The area from the river to the rim is a tribal park and is also within the authorized boundary of Grand Canyon National Park. These lands may be added to the park through the consent of the Navajo Tribe. The primary land use on the reservation adjacent to the park is livestock grazing and the sale of native arts and crafts to tourists.

River runners using this area occasionally explore side canyons and hike into and out of the canyon via the Little Colorado River gorge and the Salt Trail.

d. Havasupai Indian Tribe

The Havasupai Traditional Use Lands in Grand Canyon National Park are located between the south bank of the Colorado River from River Mile 116 to River Mile 165 and 1/4 mile back from the canyon rim around Great Thumb Mesa from Royal Arch Creek to National Canyon. Use of these lands

by the Havasupai is subject to agreement between the Havasupai Tribe and the National Park Service. The National Park Service regulates all public use. Many river trips exchange passengers at Havasu Creek. Hiking into or out of Havasu Canyon to meet or leave the trip necessitates an overnight stay. A hiking permit and reservation must be obtained from the National Park Service at Grand Canyon in order to camp on traditional use lands.

On the Havasupai Indian Reservation, a fee is charged for crossing tribal lands. In addition, there is a per person, per night camping fee. All arrangements should be made with the Havasupai Tourist Enterprises, Supai, Arizona. No camping is allowed in Havasu Canyon on National Park lands, which extends about four miles back from its confluence with the Colorado River. It is also possible for a person to day hike either into or out from a river trip through Havasu Canyon. The National Park Service informs the Havasupai Tourist Enterprise of river runners planning ingress or egress through Havasu Canyon.

e. Hualapai Indian Reservation

The Hualapai Tribe occupies a 992,000-acre reservation bounded on the east by the Havasupai Reservation and on the north by the river from River Mile 165 near National Canyon on the south bank to River Mile 273.

Diamond Creek at River Mile 225, located on the reservation, provides the first road permitting vehicle access to the river below Lees Ferry. This road is used by a majority of river users, especially non-motorized parties, as a takeout point. It is also a launching point for trips running only the Lower Gorge. The Hualapai Tribe charges a fee for river takeouts at Diamond Creek and helicopter landings on tribal land above Diamond Creek. This fee is subject to change and will be published yearly along with the operating requirements.

All river runners will be notified in permit conditions or operating requirements that the Hualapai Tribe owns the land within the Grand Canyon above the river high water line on the south bank to the south rim between River Mile 165 and River Mile 273. Any hiking, camping or other use of the Hualapai Tribal lands must be approved by the Hualapai Tribal Council. Helicopter landings for river trip takeouts on Hualapai Tribal lands require prior approval of the Tribal Council.

f. Lake Mead National Recreation Area

Lake Mead National Recreation Area is located adjacent to the lower end of the Grand Canyon and is administered by the National Park Service. When filled to capacity, Lake Mead backs into Grand Canyon National Park about 47 miles. There is considerable boating and fishing on these waters. Many of the river-running expeditions continue through the Lower Gorge into Lake Mead and terminate at Pierce Ferry about three miles beyond the Grand Wash Cliffs. Some trips go on to South Cove or

Temple Bar. Use of launch ramps and facilities at Pierce Ferry, South Cove, Temple Bar by river runners requires close coordination with the National Park Service at Lake Mead. Management activities that change river runner use levels of Lake Mead or their need for more or less logistical facilities will be communicated to Lake Mead National Recreation Area in a timely manner.

A National Park Service ranger resides at Meadview near Pierce Ferry, and patrols the Lower Gorge of the Grand Canyon. This ranger is responsible for visitor protection, law enforcement, search and rescue, and visitor use statistics. The rangers for Lake Mead National Recreation Area and Grand Canyon National Park maintain close liaison and coordinate patrol efforts.

B. GEOLOGY

The Grand Canyon is the deepest and most extensive canyon found in the plateau country and is a world-renowned scenic spectacle. The exposed rock layers represent all of the eras of geologic time and contain evidence of the evolution of life through more than 600 million years of earth history. The oldest dated rocks in the canyon approach 2,000 million years in age and, thus, the observer comes metaphorically face to face with the beginnings of time.

All of the individual plateaus within the Plateau Province are elongated in a north-south direction and bounded on the east and west by sharp structural breaks and folds. These major zones occur at intervals ranging from 15 to 40 miles apart across northern Arizona. The Grand Canyon is an east-west cross section through several of these plateaus, providing a window through which the geologic history of the region may be viewed.

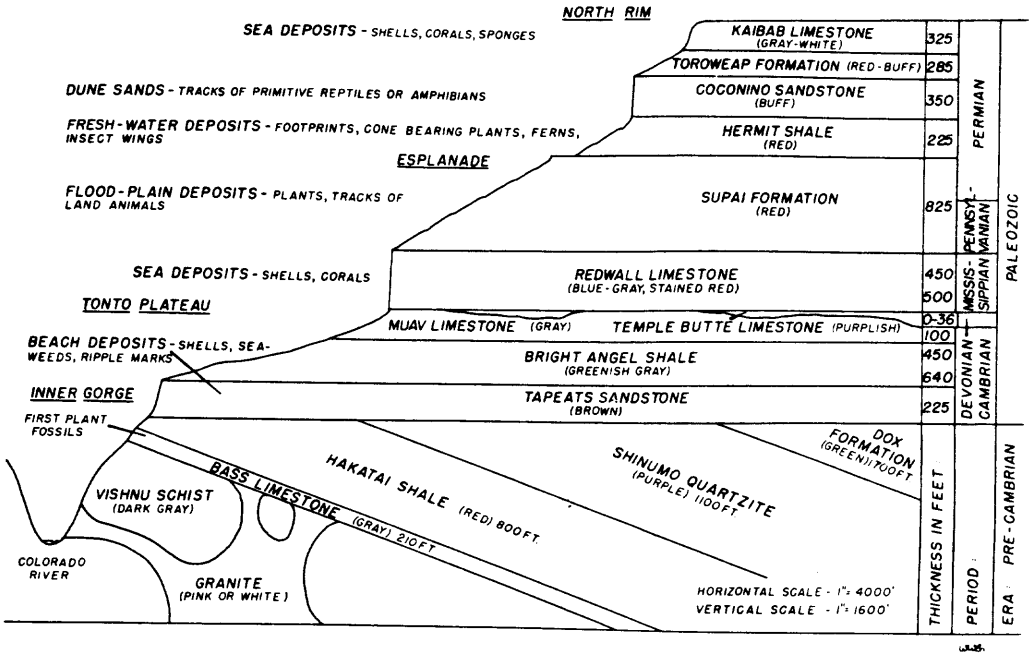
Chemical weathering is minimal in the semi-arid climate of the canyon, and horizontal strata erode into a series of alternating steep slopes and near vertical cliffs. The metamorphic rocks of the inner gorges present a relatively uniform face to erosion and form nearly unclimbable cliffs and steep, jagged slopes.

A generalized geological cross section of the canyon is illustrated on page II-7 and the structural divisions of the canyon on page II-8.

C. SOILS

Few areas within the park have well developed soil profiles. A shallow skin of dirt, covering bedrock, appropriately describes the soils throughout the area.

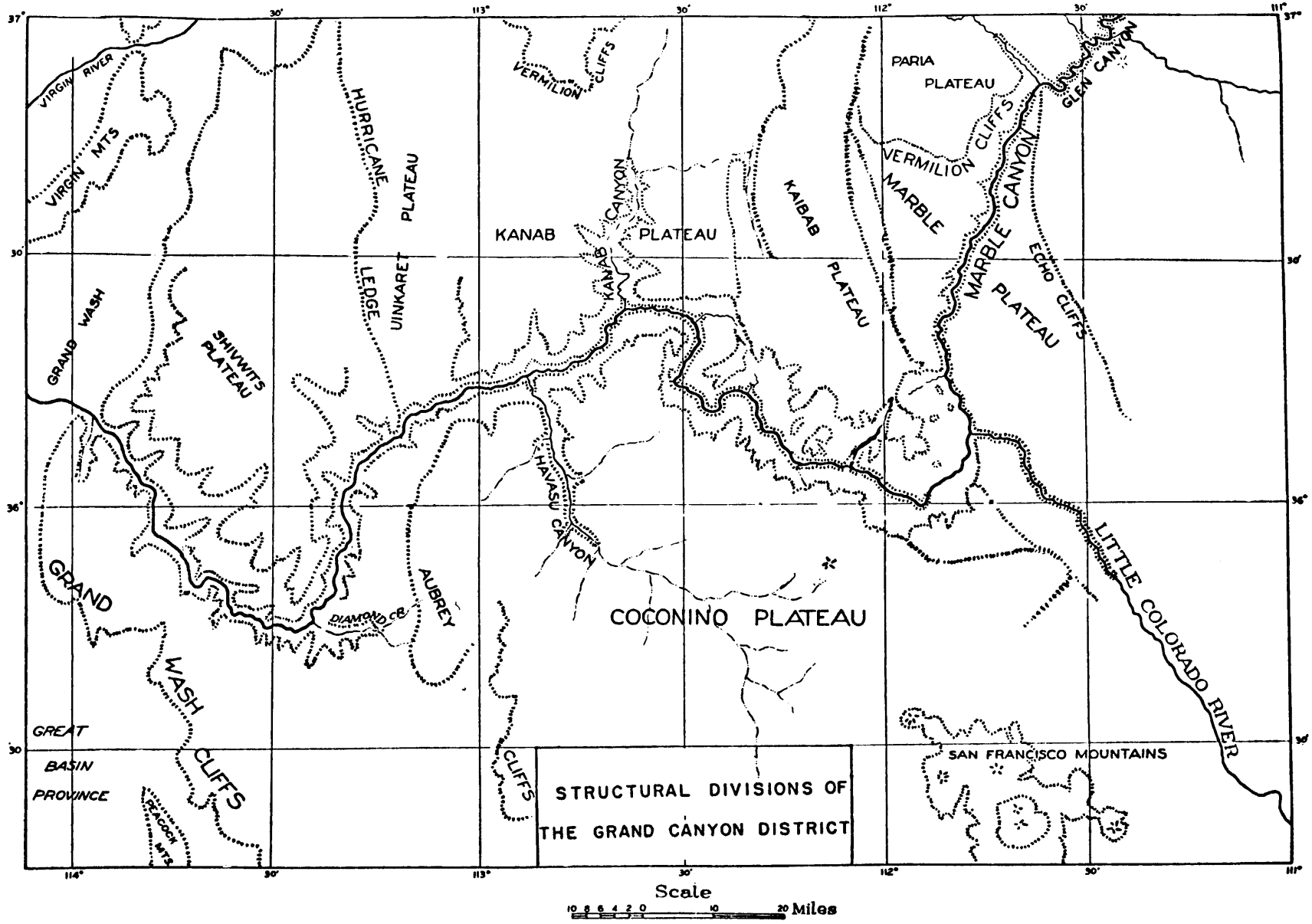
Alluvial deposits along the Colorado River combine with colluvial deposits to form the major transported soils of the Inner Canyon. The large areas of bedrock, shallow soils, and relatively sparse vegetative



GENERALIZED

GEOLOGIC SECTION

AT GRAND CANYON VILLAGE



STRUCTURAL DIVISIONS OF THE GRAND CANYON DISTRICT

cover provide an ideal situation for sheet wash, flash flooding, and high erosion potential. Once disturbed, the soils erode easily and regenerate slowly.

The areas in immediate association with the river are characterized by fine-grained fluvial terraces (beaches), coarse-grained cobble bars, and tributary fan deposits. The fine-grained deposits found on the terraces of the river may be classified according to age of deposition (pre- or post-Glen Canyon Dam), agent of deposition (floods, aeolian action or fluvial reworking in the zone below present normal high water), and grain size (cohesive silts, predominantly silt with a small percentage of clay; silt-sand, with about 30 percent silt content; and sands, with negligible silt). The normal spatial relationships of the various deposits are shown on page II-10. These deposits respond differently to environmental stresses induced by post-dam conditions and human impact.

1. Pre- and post-dam flood terraces are usually silt-sand.

2. Pre-dam aeolian deposits are but little coarser than the flood terraces from which they are derived.

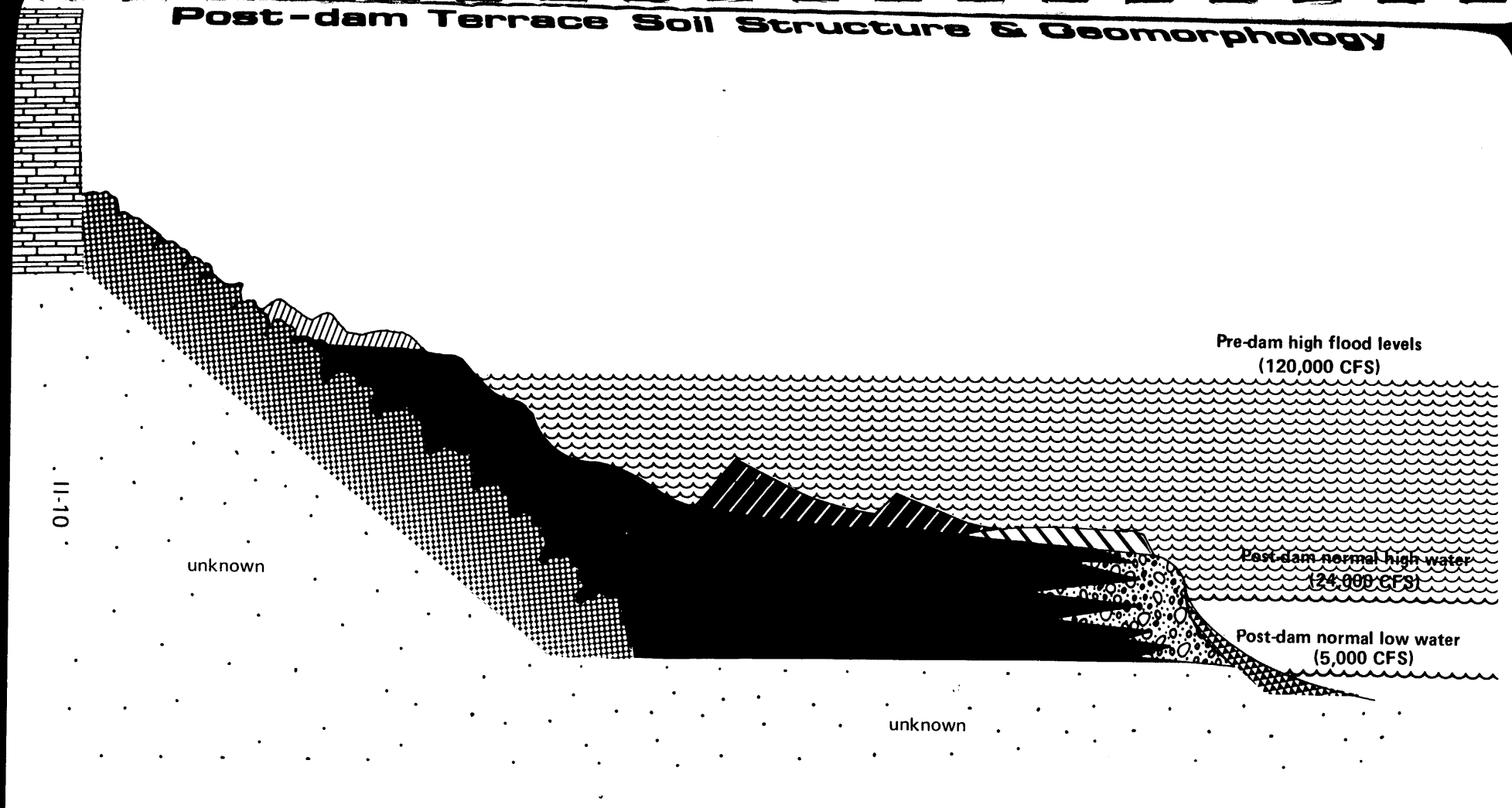
3. Pre-dam cohesive silt was deposited by mild summer floods resulting from summer runoff carrying high percentages of clays and silts. These deposits seldom extend more than a few feet above present high water levels and, because of the abundance of water and the fine substrate, have been covered to a great extent by a dense vegetative growth since the dam.

4. Post-dam beach deposits, reworked by wash and current from pre-dam terraces and bed material, are predominantly sand, with noticeable silt content only along the wide, quiet sections of the river. These deposits are well sorted and are the predominant source for post-dam aeolian deposits, which are likewise coarse grained.

Measurements made using an 8-year aerial photographic record (Howard and Dolan, 1976) indicate an average rate of back wasting (erosion of beach surface) of about 0.9 feet per year along the river. It has been determined, however that the lateral erosion caused by the clear post-dam river is not uniform along the fine-grained beaches. Input of sediment from the Paria River and the Little Colorado River, and other tributaries below Lees Ferry may be sufficient to sustain a temporary equilibrium between sediment supply and removal.

The relatively low rates of lateral erosion by the Colorado River suggest that abundant fine-grained beaches will remain for several tens of years, but a few beaches will gradually disappear. After several decades, dam related erosion may result in a virtual lack of sandy beaches. This erosional process could be accelerated if the Bureau of Reclamation either (a) adds capability at Glen Canyon Dam for additional water releases to provide peaking power, and/or (b) releases water over the spillways and through the penstocks.

Post-dam Terrace Soil Structure & Geomorphology



- Bedrock
- Talus
- Pre-dam cohesive silts
- Pre-dam silt-sand terraces
- Pre-dam silt-sand eolian deposits
- Post-dam flood silt-sands
- Post-dam eolian sands
- Post-dam beach sands

(after Howard and Dolan, 1976)

D. WATER RESOURCES

1. The Colorado River

The Colorado River originates in the Rocky Mountains. It is 1,450 miles long from its source to the Gulf of California. A major tributary is the 720-mile-long Green River which begins in the Wind River Mountains of Wyoming and joins the Colorado River in Canyonlands National Park. Other major tributaries above its entrance into Grand Canyon include the Gunnison, Dolores, Dirty Devil, and San Juan Rivers. The Colorado River system drains 245,000 square miles or one-twelfth of the continental United States.

The mainstream flow of the Colorado River through Grand Canyon Park is water that has been previously impounded by Lake Powell. Water is released from Glen Canyon Dam through gates located about 200 feet below the fluctuating surface of the lake. Waters originating from this depth result in a yearly maximum water temperature range of 42°F to 48°F at Lees Ferry.

At Lees Ferry, the mean concentration of suspended sediment ranges from 2 to 124 mg/1. At Phantom Ranch, approximately 87 river miles below Lees Ferry, and below several important tributaries (Paria River, Little Colorado River and Clear Creek), the turbidity ranges from 6 to 47,100 mg/1. The amount of turbidity of the river through the Grand Canyon is dependent upon the annual runoff into the Colorado River below Lees Ferry.

Historic virgin (pre-dam) flows have ranged from 4.4 to 21.9 million acre-feet annually. The 10-year mean virgin (pre-dam) flow has ranged from 11.6 to 18.8 million acre-feet annually. Opinions thus differ concerning the period of record that best predicts future runoff. The significance lies in the fact that a period of about 25 years (1906 - 1930) of predominantly above-average runoff has been followed by a 40-year period (1931 - 1970) of predominantly below-average runoff.

Article III of the Colorado River Compact requires that, "The States of the Upper Division will not cause the flow of the river at Lees Ferry to be depleted below an aggregate of 75 million acre-feet for any period of ten consecutive years." Current usage in the Upper Basin is projected by the Bureau of Reclamation to be 5.8 million acre-feet by the year 2000. Although the flow of the Colorado River through the Grand Canyon is assured by the Colorado River Compact, the daily and seasonal flows may fluctuate greatly as reservoir and energy commitments are met. A minimum flow of 3,000 cubic feet per second (cfs) is needed for white-water boating.

Ten major dams are now located on the Colorado River system. Glen Canyon Dam and Hoover Dam have the most noticeable effect on the river in Grand Canyon National Park. Hoover Dam, forming Lake Mead, has

backed water to Mile 240 or for 37 miles into the park. This portion of the river has changed from a stream to a lake system.

Before Glen Canyon Dam, the flow at Lees Ferry varied from 700 cfs to 200,000 cfs. The average silt load was 500,000 tons per day at Phantom Ranch. The pre-dam river temperature varied from near freezing to 80°F. Its tributaries, the Paria River and the Little Colorado River, are the principal contributors of silt. Present flows through dam vary between 1,000 cfs to 32,000 cfs at Lees Ferry. The present silt load is about 80,000 tons per day, less than one-sixth the pre-dam load. The Colorado River flows at an average 4.5 miles per hour (mph) with velocities up to 30 mph in the rapids. The total descent of the river from Lees Ferry to the Grand Wash Cliffs is approximately 2,200 vertical feet or about 7 feet per mile.

2. Water Quality

In addition to the Colorado River, other major water sources in the canyon are the following springs or tributaries: Paria River (River Mile 0); Vasey's Paradise (River Mile 32); Little Colorado River (River Mile 61.8); Bright Angel Creek (River Mile 87); Shinumo Creek (River Mile 108); Royal Arch Creek (River Mile 116); Tapeats Creek (River Mile 134); Deer Creek (River Mile 136); Kanab Creek (River Mile 143); Havasu Creek (River Mile 157); Diamond Creek (River Mile 225); and Spencer Creek (River Mile 246). All of these water sources are easily accessible, and some are frequently used for drinking water by river runners and hikers.

The water quality of the Colorado River, its tributaries and associated springs and seeps, can be evaluated on the basis of five major criteria: (a) levels of contamination by total coliforms: (b) concentrations of specific trace elements; (c) total dissolved salt concentrations; (d) concentrations of biotic and abiotic parameters that could lead to hypereutrophication (nutrient enrichment and rapid growth of undesirable organisms); and (e) known levels of pollutants added by direct or indirect human contact.

The State of Arizona has established water quality standards for surface waters. The standards for the primary uses of full and partial body contact, domestic supply, cold and warm water fishery, aquatic life and wildlife uses are applicable to Grand Canyon National Park (see Table 9).

Recent investigations on the water quality in Grand Canyon National Park indicate that, in general, unpolluted conditions exist (Cole and Kubly, 1976; Czarnecki et al., 1976; Decon and Baker, 1976; and Sommerfeld et al., 1976). However, during certain periods of the year, during peak flood flows or at specific tributary sites, contaminants are in excess of U.S. Public Health Service (USPHS) standards for human drinking water. These potential problem areas and situations are discussed below under each of the major criteria used for evaluating the water quality of the system.

TABLE 9
SUMMARY OF ARIZONA WATER QUALITY CRITERIA FOR DESIGNATED USES

Standard	Full Body Contact	Partial Body Contact	Domestic & Industrial Water Supply	Cold Water Fishery	Warm Water Fishery	Agri-culture & Industry	Aquatic Life & Wildlife
FECAL COLIFORMS (No./100 ml.)							
Geometric Mean	200	1000	1000	1000	1000	1000	1000
90% value (for 5 samples over 30 days)	400	2000	2000	2000	2000	2000	2000
pH							
Range	6.5-8.6	6.5-8.6	None	6.5-8.6	6.5-8.6	None	6.5-8.6
Maximum change	±0.5	±0.5	None	±0.5	±0.5	None	±0.5
TURBIDITY (JTU)							
Streams	Lowest practical value		None	10	50	None	Lowest practicable value
Lakes	Lowest practical value		None	10	25	None	Lowest practical value
DISSOLVED OXYGEN (mg/l)							
Minimum	None	None	None	6.0	6.0	None	None
TEMPERATURE (°F)							
Maximum change	5°	5°	None	2°	5°	None	No temperature Interference
Maximum	93°	93°	None	(winter)55° (summer)70°	93°	None	No temperature Interference
TOXICS (mg/l)							
Arsenic	0.050	0.050	0.050	0.050	0.050	None	0.050
Barium	1.000	1.000	0.100	0.500	0.500	None	0.500
Boron	None	None	None	None	None	1.000	None
Cadmium	0.010	0.010	0.010	0.010	0.010	None	0.010
Chromium (hexavalent)	0.050	0.050	0.050	0.050	0.050	None	0.050
Copper	1.000	1.000	0.100	0.050	0.050	None	0.050
Cyanide	0.200	0.200	0.200	0.100	0.100	None	0.100
Mercury	0.005	0.005	0.005	0.005	0.005	None	0.005
Lead	0.050	0.050	0.050	0.050	0.050	None	0.050
Phenol	0.001	0.001	0.001	0.001	0.001	None	0.001
Selenium	0.010	0.010	0.010	0.010	0.010	None	0.010
Silver	0.050	0.050	0.050	0.050	0.050	None	0.050
Zinc	5.000	5.000	5.000	0.500	0.500	None	0.500
RADIOACTIVITY (pCi/mg)							
Combined Radium 226 & 228	None	None	5	None	None	None	None
Gross alpha particle activity	None	None	15	None	None	None	None
Tritium	None	None	20,000	None	None	None	None
Strontium 90	None	None	8	None	None	None	None

a. Levels of Contamination by Total Coliform

U.S. Public Health Service standards for water for human consumption recommend that coliform levels not exceed 1 coliform (c) /100 ml. The desirable criteria set by the Federal Water Pollution Control Administration (U.S.D.I., 1968) for raw surface waters is less than 100/ c/100ml., and the permissable limit is 10,000 c/100ml. Both "desirable" and "permissible" waters can be used for human consumption if treated.

Total coliform concentration levels of the Colorado River and the 11 most popular tributaries and springs for four sampling periods in 1975 are presented on pages II-15 and 16.

The total coliforms found in the Colorado River and the tributaries and springs are extremely variable, ranging from nondetectable to more than 400 c/100ml.

Indications of pollution occasionally occur under special conditions.

- Paria River, Bright Angel, Shinumo, Havasu, and Diamond Creeks show occasional presence of pollution-indicator algal associations (Blinn et al., 1976).
- Potential health hazards may exist at some river campsites in the form of high total coliform counts, possibly due to seepage from porta-potty disposal (Deacon and Baker, 1976).
- Total viable coliform bacterial numbers exceeded desirable water quality standards at several river sampling sites and in most of the tributaries throughout the year (Sommerfeld et al., 1976).
- Heavily used tributaries generally had total coliform numbers that exceeded desirable water quality criteria (Sommerfeld et al., 1976).

No data are available on fecal coliforms within the Colorado River or its tributaries within the Grand Canyon. Therefore, it cannot be determined whether or not these waters are within Arizona water quality standards. From available data it does not appear that there are any significant problems with State standards relative to specific element concentrations within these waters.

b. Concentrations of Specific Trace Elements

Natural surface waters contain dissolved minerals that reflect the type of substrata the waters have contacted and the duration of that contact. Streams may reflect the chemical characteristics of surface runoff, as well as ground water that enters the springs or seep.

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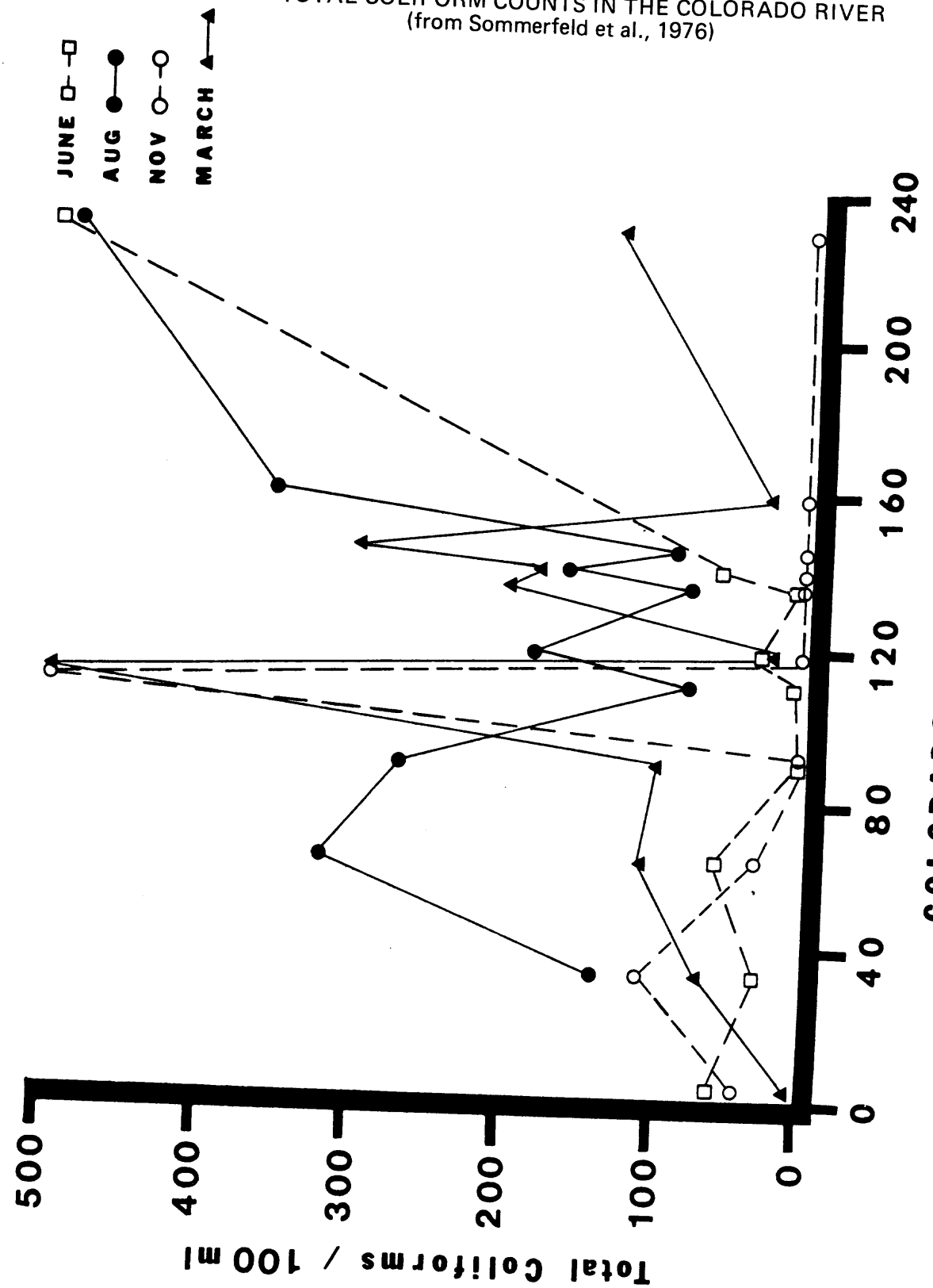
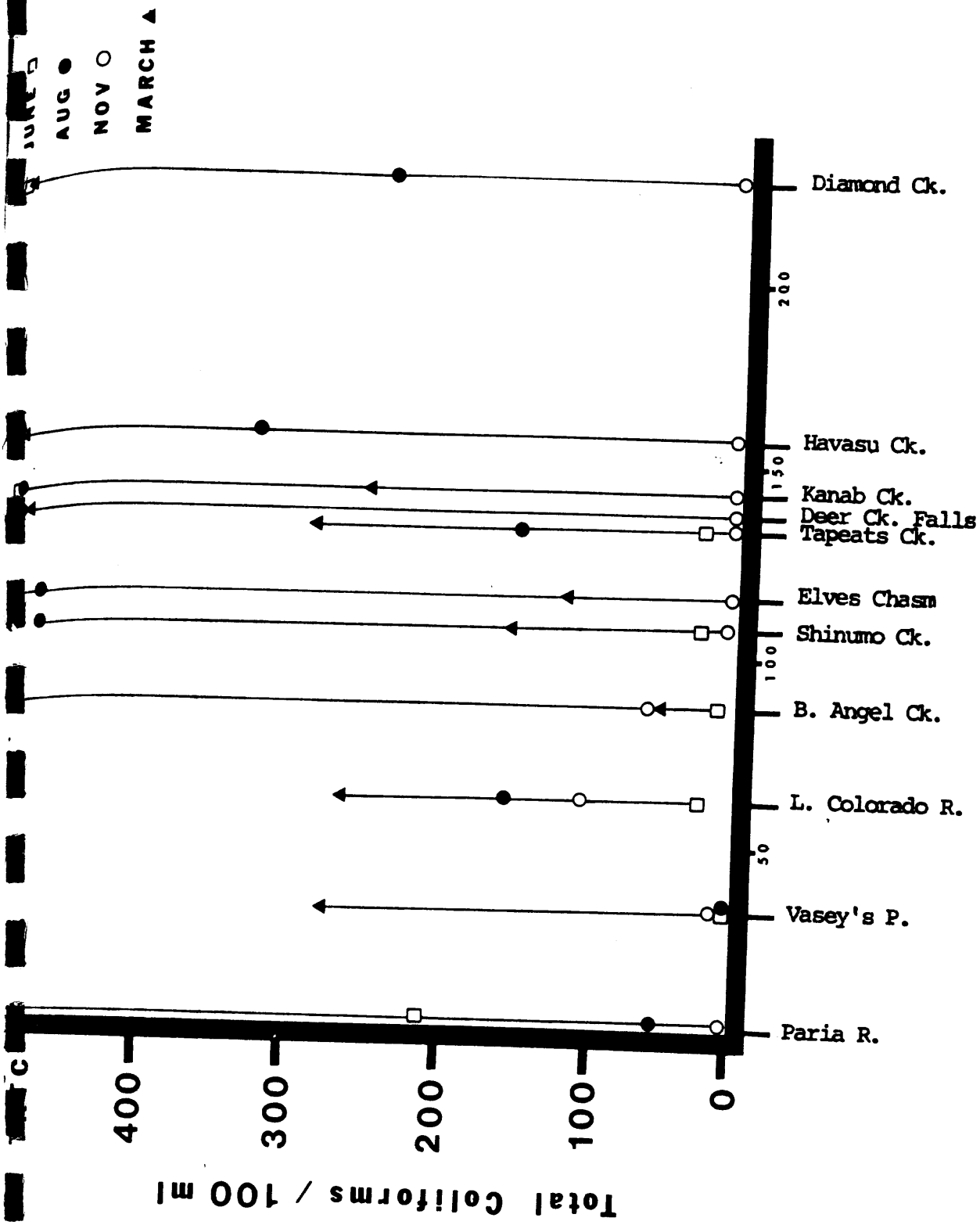
TOTAL COLIFORM COUNTS IN THE COLORADO RIVER
(from Sommerfeld et al., 1976)



TOTAL COLIFORM COUNT IN THE TRIBUTARIES OF THE COLORADO RIVER
(from Sommerfeld et al., 1976)



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Of fifteen elements surveyed, (boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, potassium, sodium, and zinc), only two, iron and manganese, were ever found to exceed recommended drinking water standards (EPA Water Quality Criteria, 1972). These elements were found in excess of the standards only in the Little Colorado River drainage during high and sustained floods. Neither iron nor manganese are known to be health hazards, particularly at these concentrations.

c. Total Dissolved Salt Concentration

The salinity of the Colorado River is in excess of present health standards (500 mg/liter) for sustained human consumption (US Public Health Service, 1962). The USPHS allows, however, a twofold increase in salinity for occasional consumption. The salinity levels found in the Colorado River range from 623 to 644 mg/liter, and thus fall within the criteria for occasional consumption. For the tributaries and springs, complete data are not available; however, it is known that the Little Colorado River is essentially a sodium chloride water. However, the normal, clear water flow of the Little Colorado River is insufficient to change the total salt concentration of the Colorado River.

d. Concentration of Biotic and Abiotic Parameters That Could Lead to Hypereutrophication

The Colorado River is rich in essential plant nutrients and has the potential to be a productive system (Cole and Kubly, 1976). Yet all the aquatic studies to date indicate that the entire system is relatively unproductive with low population densities of the primary producers (phytoplankton, etc.) (Sommerfeld et al., 1976). Reasons hypothesized for the low productivity are the low water temperatures and the high and variable degree of turbidity (Cole and Kubly, 1976; Deacon and Baker, 1976).

e. Known Levels of Pollutants Added by Direct or Indirect Human Contact

Emissions from motorized watercraft on the Colorado River cause at least short-term water quality degradation. Oil and gasoline can be spilled into the Colorado River at Lees Ferry from boat servicing facilities. Ruptured gasoline tanks can also leak during motorized trips through the canyon. On the average, an estimated 20 to 35 percent of the fuel used in outboard motors is wasted in the exhaust. Laboratory studies of pollutants from outboard motor exhaust indicate that approximately 0.23 pounds of petroleum residue, as measured by non-volatile suspended solids, are wasted per gallon of fuel consumed. The turbulence caused by the propeller creates conditions ideal for dispersion of the waste material into the water.

It has been estimated that approximately 25,000 gallons of gasoline are used annually on the motorized trips. Therefore, approximately 5,750 pounds of petroleum residue are dumped in the Colorado River annually. However, even this amount when compared to the volume of water flow in the river has not been enough to be measurable.

A water quality monitoring program for the park is ongoing, to establish base data in reference to the Water Quality Standards for the State of Arizona. Details of this monitoring work are outlined in the Grand Canyon National Park, 208 Water Quality Project Plan of Action.

E. CLIMATE

The Grand Canyon has many climates depending primarily on the elevation. Average annual precipitation varies from more than 25 inches along the forested North Rim (9,000 feet) to less than 9 inches on the desert of the Inner Canyon (2,400 feet). About 16 inches per year fall on the South Rim (7,000 feet). The North Rim receives more precipitation in winter than in summer. The South Rim and the Inner Canyon receive about equal amounts during the two seasons. The spring and fall are relatively dry in all three areas. Summer precipitation is usually received from thunderstorms that form over the heated canyon almost every afternoon from early July until the end of August. Although these storms are capable of producing locally heavy downpours, they rarely last more than 30 minutes and usually cease completely shortly after sundown.

Winter precipitation varies greatly from year to year in both amount and frequency. It is associated with middle latitude storms moving eastward from the Pacific Ocean and normally falls in gentle to moderate showers which may persist for several days. However, severe storms with heavy snow and strong winds can strike. Most of the winter precipitation on the North and South Rims occurs as snow. Snowfall is a rarity in the Inner Canyon and averages less than 1 inch per year.

As a general rule, the temperature increases as one descends into the canyon. However, during the winter months there are short periods of temperature inversion when clouds fill the canyon and cold air drains into and is trapped within the canyon while the rims are being warmed by sunshine. Based on an elevation gradient of 4,800 feet and a dry adiabatic lapse rate of 5.4°F/1,000 feet, the average adiabatic temperature change between the rim and the river is approximately 26°F. The air in the canyon is considered to be conditionally stable in August and September; statically unstable in June and July; and statically stable for the rest of the year. The hourly temperatures at the rim and the river approach each other to within a few degrees in the hour just preceding sunrise.

The data in table 10 summarizes the annual temperatures for the Grand Canyon area. In addition to the river canyon data, temperatures are also presented for the North and South Rim and the Desert View weather

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TABLE 10
MEAN PRECIPITATION AND TEMPERATURE
GRAND CANYON NATIONAL PARK

MONTHS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MEAN MAXIMUM TEMPERATURES (°F)												
Inner Canyon	56	62	71	82	92	101	106	103	97	84	68	57
Tuweep	49	50	61	68	79	89	95	92	85	74	61	49
Desert View	40	43	49	57	69	79	84	81	73	61	49	39
South Rim	41	45	51	60	70	81	84	82	76	65	52	43
North Rim	37	39	44	52	62	73	77	75	69	58	45	40
MEAN MONTHLY TEMPERATURES (°F)												
Inner Canyon	46	52	59	69	77	86	92	89	83	72	57	47
Tuweep	38	40	47	54	64	73	80	78	71	60	48	39
Desert View	30	33	38	44	56	65	71	69	61	50	39	30
South Rim	30	33	38	46	54	64	69	67	61	50	39	31
North Rim	26	28	34	40	48	56	62	60	54	45	35	30
MEAN MINIMUM TEMPERATURES (°F)												
Inner Canyon	36	42	48	56	63	72	78	75	69	58	46	37
Tuweep	26	30	34	40	49	58	65	63	56	46	35	29
Desert View	21	23	27	31	42	51	59	56	59	39	30	21
South Rim	18	21	25	32	39	47	54	53	47	36	27	20
North Rim	15	18	24	28	34	40	46	45	39	31	24	20
MEAN PRECIPITATION (Inches)												
Inner Canyon	.72	.73	.79	.48	.31	.28	.79	1.31	.88	.69	.51	.82
Tuweep	1.10	.90	1.25	.73	.40	.40	1.28	1.97	.79	.80	.77	1.31
Desert View	1.00	.94	1.52	.75	.50	.32	1.29	1.34	.99	1.39	.80	1.72
South Rim	1.32	1.53	1.37	.92	.65	.46	1.87	2.28	1.50	1.21	.95	1.61
North Rim	3.28	3.17	3.12	1.67	.97	.76	1.86	2.53	1.81	1.50	1.44	2.62

stations. Comparision of this data dramatically demonstrates the marked differences in temperatures from rim to river.

F. AIR QUALITY

Natural dust particles, water vapor, chemicals given off by growing plants, and the refraction of light all combine to form a haze which is a natural part of the Grand Canyon environment. The predominant wind direction above the rims is from the southwest. Below the rims, there is little large-scale horizontal air movement; the deep, narrow configuration of the canyon forms a relatively closed air system of over 5,000 vertical feet.

Available information indicates that dustfall and sulfation rates, as well as the levels of sulphur dioxide, nitrogen oxides, lead, benzene, organics, and total oxidants are all low to very low (see Table 11).

Because of its almost pristine purity, the air in Grand Canyon can be degraded by introducing pollutant levels which would be considered negligible in metropolitan areas. Visible ranges often exceed 190 kilometers (118 miles) in the exceptionally clean atmosphere above the canyon. Very small increases in atmospheric pollutants can significantly decrease visibility through air of this clarity and thus degrade the esthetic values of the park. Because of this, the area has been established as a Class I area under Public Law 95-95, the Clean Air Act Amendment of 1977. Air visibility measurements are being taken to monitor any changes relative to current visibility.

The air moves primarily up and down canyon at very low velocities, making the potential for removal of air pollutants very low. Most of the higher wind velocities encountered in the canyon are not due to the exchange of canyon air with air above the rims, but rather the movement of a limited volume of local air back and forth within the canyon. The slow circulation of air and low dispersive capabilities increase toward the level of the Colorado River. Each night within the canyon inversion layers or stable environmental lapse rates increase the stagnation of air circulation.

G. NOISE

A sound survey made on Labor Day in 1971 at points along the South Rim, by Dr. Charles H. Black of Northern Arizona University, reported that the drone of aircraft engines could be heard almost continuously. The aircraft were a mixture of fixed-wing and helicopter tour planes, private planes, military aircraft, and high altitude commercial craft. Automobile noises were the most pervasive at overlooks and within Grand Canyon Village.

Black found that in general the ambient noise levels ranged from about 45 to 50 decibels (dBA) in remote backcountry areas, to around 70 dBA in late afternoon on the front steps of the El Tovar Hotel.

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TABLE 11 -- AIR QUALITY DATA AVAILABLE
GRAND CANYON VILLAGE AND VICINITY
1962 -- 1972

Pollulant	Grand Canyon EPA Mean	Annual Phoenix Mean	Grand Canyon Walther's Data	EPA Standard-1[1]	EPA Standard-2[2]	Arizona Standard
Total particulates	34 (n = 56)	108-265	18	75[3]	60[3]	60[3]
Dustfall ug/cm^2/day	-	11.5	5.3	-	-	-
Sulphur Dioxide ug/m3	10	cal0	cal0	80[4]	-	50[4]
Sulfation rate ug/cm^2/day	-	1.75	0.38	-	-	-
Nitrogen Dioxide ug/m^3	21 (n-58)	168	22	100[4]	100[4]	100[4]
Total oxidants ug/m^3	-	17.5	10.4	160[5]	160[5]	80[5]
*Lead ug/m^3	0.15	3.12	-	-	-	-
Benzene soluble organics ug/m^3	1.0	-	-	-	-	-
Benzopyrene ug/m^3	0.11	-	-	-	-	-

* 1969 data. n = number of data points
1. Level of pollutant which, if exceeded, endangers "public health"
2. Level of pollutant which, if exceeded, endangers "public welfare"
3. Annual geometric mean
4. Annual arithmetic mean
5. Maximum 1-hour concentration

While the sounds from motor vehicles and aircraft are the most disruptive along roadways, at overlooks and in the developed areas of the park, the sounds from aircraft and outboard motors are the most disruptive in backcountry and river areas. Outboard motor noise was studied in 1973 by Drs. D. N. Thompson, A. J. Rogers, Jr., and F. Y. Borden of the University of Pennsylvania. They found that sound pressure and levels of the motors, measured at head level in the boatman's station, ranged from 83 to 89 dBA, compared with background levels of 35 to 45 dBA. This borders on, but does not exceed, present health standards, although it can cause significant shifts in the hearing threshold. In the presence of motor noise, natural environmental sounds or the almost unnatural lack of sound in the canyon can rarely be sensed by river runners. The study concluded that outboard motor noise was a deterrent to normal, relaxed conversations that one should expect in such an environment, a safety hazard in motorized raft operation, and a potential health hazard to boatmen.

H. VEGETATION

Along both banks of the Colorado River exists a dynamic riparian (streamside) community. The riparian habitat includes all the vegetation from the river's edge, outward toward the canyon walls. Riparian vegetation may be defined as "those species of plants which are there only because of the presence of the river." Glen Canyon and Hoover Dams have strikingly influenced the structure and integrity of this habitat in Grand Canyon.

Prior to the construction of Glen Canyon Dam, the Colorado River was a silt-laden river, warm in summer and cold in winter; the river's flow could fluctuate anywhere from almost no flow during dry summers to an excess of 200,000 cfs during spring floods (Fenneman, 1931). Now the river, as it originates from the bottom of Lake Powell, is clear and perpetually cold (42-48°F) and diurnally tidal, as water releases are based on power demands; rarely does the flow fluctuate outside a range from 1,000 cfs to 32,000 cfs. As a result, the natural biotic system of portions of the riparian zone has been severely altered and subsequently replaced by a new, "exotic" system.

Prior to and during the construction of Glen Canyon Dam, numerous studies were undertaken to provide a data base and to determine what resources would be lost by the inundation of Glen Canyon (Woodbury et al., 1959). Unfortunately, there were no studies undertaken on what changes would occur in Grand Canyon. By using data gathered during a brief pre-dam botanical study of the river environs (Clover and Jotter, 1944) and through analysis of pre-dam habitat photographs, Karpiscak (1976) has been able to reconstruct what was present along the banks of the Colorado River prior to the influence of the dam (Carothers et al., 1977).

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1. Pre-Dam Riparian Vegetation

Before the dams, there existed three distinct zones of vegetation which paralleled the river from Lees Ferry to the Grand Wash Cliffs (see illustration, page II-25). The zone closest to the river (Zone 3), and hence subjected to annual flooding, was composed partially of many ephemeral herbaceous species that were adapted to periodic disturbance, and partially of some mesophytic woody plants such as seep willow and desert broom (Baccharis spp.), and the true willows (Salix spp.), that would make a futile attempt to become established before the next scouring flood. Above the ephemeral zone was a belt of vegetation whose lower boundaries were delineated by the high water line of major floods which would periodically scour away all vegetation growing below the zone. Typical plant species of this high water line zone (Zone 2) were Apache plume (Fallugia paradoxa), redbud (Cercis occidentalis), hackberry (Celtis reticulata), honey mesquite (Prosopis juliflora), and acacia (Acacia greggii). On the talus slopes (Zone 1) above this zone lived desert species that were not influenced by the river environment below; e.g., brittle bush, Encelia farinosa; various cacti, creosote bush (Larrea tridentata), Mormon tea, (Ephedra trifurca spp.).

2. Post-Dam Vegetation

The construction of Hoover Dam inundated the two lower vegetational zones and much of the desert vegetation of the upper zone upstream from the dam to River Mile 240. Within a few years, however, a new zone consisting almost exclusively of saltcedar (Tamarix chinensis) appeared at the edge of Lake Mead.

The significant reduction in high flood waters in the Colorado River below Glen Canyon Dam has permitted the development of a new riparian community that extends from Lees Ferry (River Mile 0) to the backwaters of Lake Mead (River Mile 240). This rapidly proliferating community (Zone 4) is composed of saltcedar (Tamarix), arrowweed (Pluchea sericca), coyote willow (Salix exigua), four species of baccharis, and hundreds of species of herbaceous plants. In most areas, this new community occupies all of the former ephemeral zone (Pre-dam Zone 3), while in other locations particularly where the bedrock has always been close to the river, there are no discernible changes between the pre- and post-dam vegetational patterns. Above the new riparian community and below the high water line community is now found another distinct zone (Zone 3) of ephemeral plants; red brome (Bromus rubens), tansy mustard (Descurainia pinnata), fescue (Festuca spp.), and the composite Chaenactis fremontii, to mention only a few. Two exotic species, Russian thistle (Salsola kali) and camelthorn (Alhagi camelorum) also proliferate in this zone. The majority of campable beaches are within this zone and many of the species typical of this zone are indicators of disturbed areas.

Preliminary investigations indicate that the woody vegetation particularly Apache plume, redbud, hackberry, and mesquite of Zone 2 is beginning to

die back. Although the high water floods of pre-dam days only rarely reached the lower limit of this zone, it may have been of sufficient frequency to provide nourishment. The high water flows now never approach the lower limits of this community, and each year more and more of the plants appear to be dying.

The vegetation in Zone 1 remains unaffected by the changes in flow of the river. This zone is characterized by hackberry trees, brittle bush, Mormon tea, yucca, century plant, blackbrush, various cactus and many grasses and forbs in the upper canyon. The vegetation expression of this zone changes in the lower canyon largely due to the drop in elevation to creosote bush, ocotillo cactus, large barrel cactus, but still includes blackbrush, brittle brush, Mormon tea, and a variety of grasses and forbs.

3. Vegetational and Topographic Habitats

Within the inner gorge, six topographical and eight vegetational habitat types have been delineated as follows:

Rocky Outcroppings, Cliff Faces, and Upper Talus Slopes: These areas generally provide as nesting areas the minimum of essentials for the survival of many animals.

Lower Talus Slopes and Bench: This type exists above the historic floodline, and can be divided into talus and bench as separate entities. Erosion of upper areas provides sufficient soil for sparse plant growth, which is limited by the lack of enduring moisture within the root zone.

Upper Terraces: Commonly called "benches," these pre-dam fluvial deposits just below the old high water line are no longer eroding due to the absence of flooding. They provide one of the most fertile habitats in the canyon. These areas show high incidence of invasion by native and exotic plant species.

Lower Terraces: Fluvial deposits formed prior to the construction of Glen Canyon Dam are now eroding because of the reduced sediment load of the river. This may cause a stabilized condition where marsh species will increase. These post-dam areas increase the size of the cattail marsh habitat and are the sole nesting sites for some riparian animals of the canyon.

Side Canyons and Seeps: With permanent to seasonal water regimes separate from the main flow, and with protection from wind and sun not offered by the open river banks, tributaries, seeps, and alcoves provide an additional unique habitat type within the canyon.

Sand and Gravel Bars: These areas are relatively free of vascular plants. Frequently submerged, this is an interfall between the river and the lower terraces.

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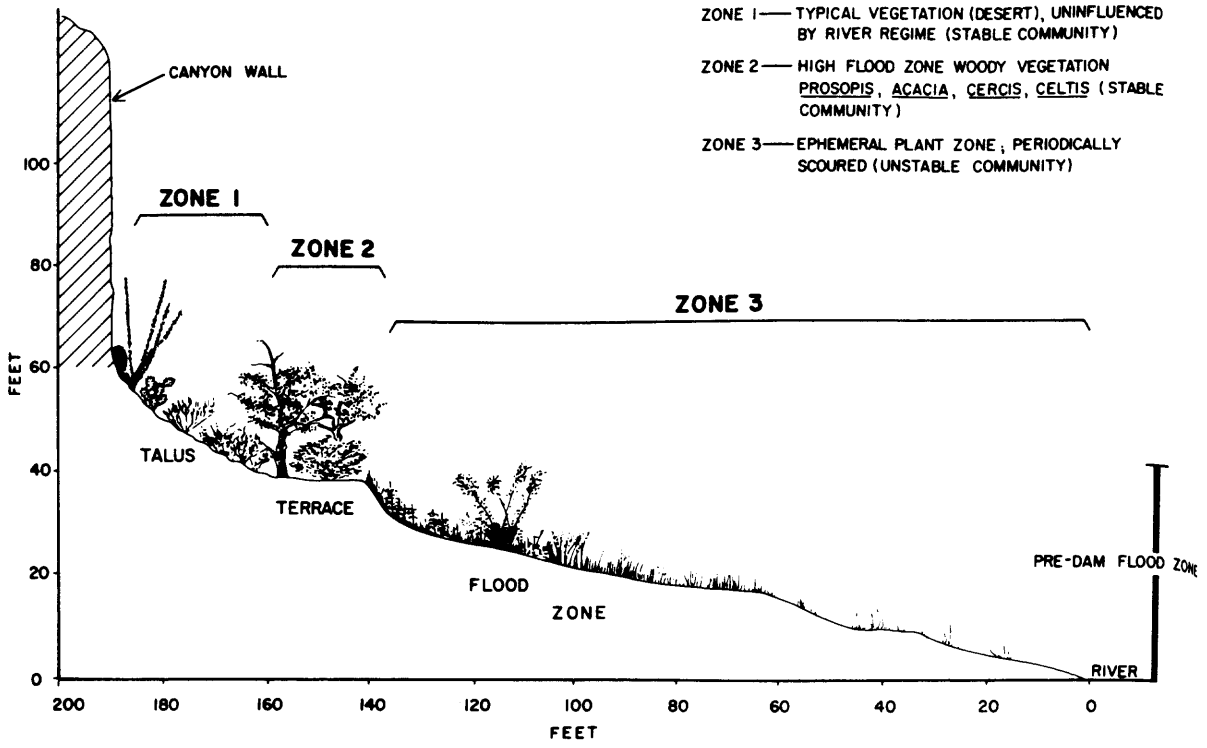
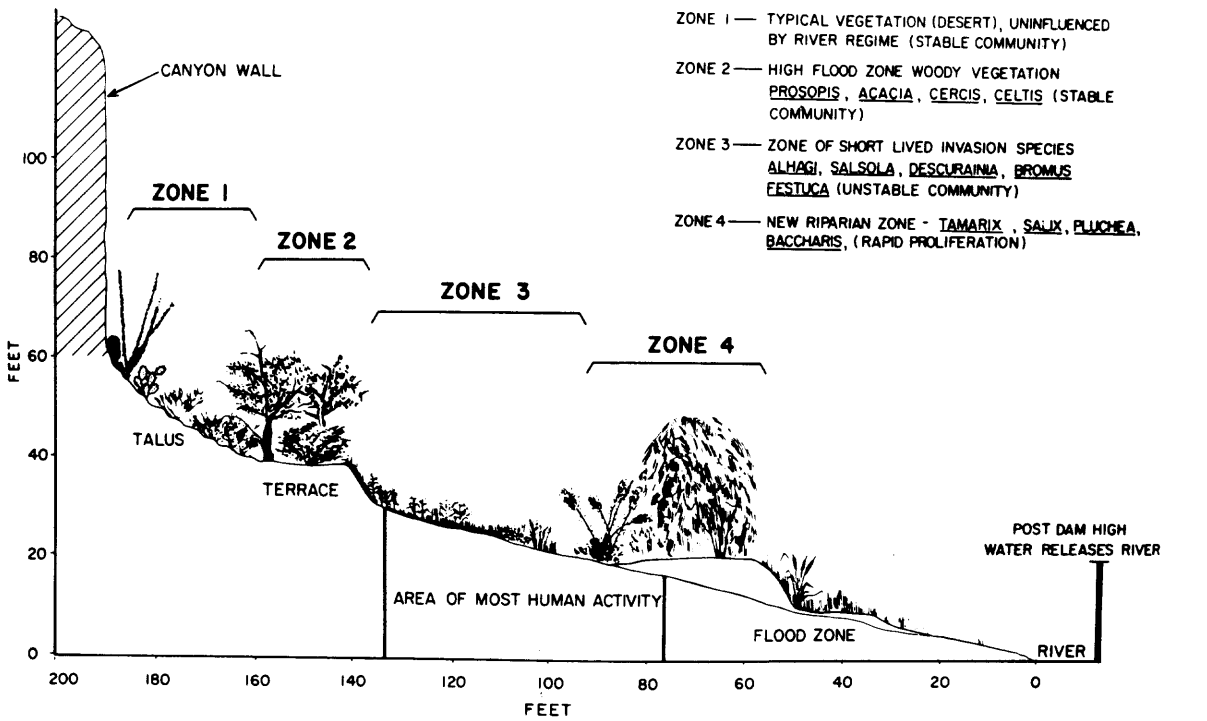
PRE-DAM AND POST-DAM RIPARIAN VEGETATION

(from Carothers et al., 1976)





The vegetational habitats which may be found in association with the topographical habitat types are as follows:

Sparse Vegetation: This type is characterized by rock outcroppings, cliff faces, upper talus, and sand and gravel bars.

Decidious Forest: Found in side canyons, seeps and upper and lower terraces. Characterized by mature cottonwood (Populus fremontii), box elder (Acer negundo), willow and redbud. Dense to sparse ground cover occurs as an herbaceous understory.

Evergreen Scrub: Found in side canyons, seeps, lower terraces, and upper terraces characterized by arrowweed, seep willow (Baccharis spp.), with immature willow and saltcedar often in dense stands.

Deciduous Scrubs: Found in upper terraces and lower talus slopes and benches with acacia, mesquite, Apache plume, and closed ground cover.

Deciduous Dwarf Scrubs: Found in upper talus, lower talus, and benches, with brittle brush, Mormon tea, cheat grass (Bromus tectorum), and the composite Chaenactis.

Seasonal Marsh: Often found in a transition between the river and lower terrace includes scarlet monkeyflower (Mimulus spp.), cattail (Typha spp.), and horsetail rush (Equisetum spp.).

Evergreen Savanna: Found in upper talus slopes, lower talus slopes, and benches characterized by yucca (Yucca spp.), agave (Agave spp.), cholla (Opuntia spp.), barrel cactus (Ferocactus); sparse to moderate ground cover.

Desert Scrub: Found in upper talus slopes, lower talus slopes, and benches, are creosote bush, bur-sage (Franseria spp.), blackbush (Coleogyne ramosissma), and ocotillo (Fouquieria splendens) are found here along with a sparse ground cover (Carothers et al., 1976).

A complete catalogue of the plant species known to occur within the inner gorge includes 807 species of vascular plants representing 92 families. A number of species, such as saltcedar, camelthorn and Russian thistle have been introduced from the eastern hemisphere and are termed exotics. Others are endemic, (known only from the area) such as Schribner's needle grass (Stipa scribneri) and bittercress (Cardamine parviflora). Most representative species are of wide geographic distribution and are plants common to the upper and lower Sonoran life zones and their related riparian communities (Carothers and Aitchison, 1976).

4. Ecologically Sensitive Areas

Ecologically sensitive areas within the river corridor can be defined as "areas with high density and/or diversity of plant and animal life

and/or areas that provide a unique element required for the reproduction and survival of indigenous plant and/or animal populations." Ecologically sensitive areas that have been identified to date are presented in Table 12. They represent biotic resources that are unique to the Grand Canyon riparian system. (Also, refer to map, pages I-4 through I-6.)

I. WILDLIFE

1. Amphibians and Reptiles

Amphibians are not well represented in the Inner Canyon. The arid surface conditions that almost exclusively pervade the entire area, preclude high densities and wide distributions. The amphibians that are present demonstrate a high degree of specialization for desert environments.

Reptiles, especially lizards, appear to flourish in the riparian habitats of the Grand Canyon. The abundance of saltcedar seems to benefit the populations of such species as the desert spiny lizard (Sceloporus magister), western whiptail (Cnemidophorus tigris), and western rattlesnake (Crotalus viridis).

Common reptiles and amphibians known from the immediate river environs are:

Red-spotted toad	Bufo punctatus
Woodhouse's toad	Bufo woodhousei
Chuckwalla	Sauromalus obesus
Desert spiny lizard	Sceloporus magister
Side-blotched lizard	Uta stansburiana
Western whiptail	Cnemidophorus tigris
Gopher snake	Pituophis melanoleucus
Common kingsnake	Lampropeltis getulus
(Grand Canyon) Western rattlesnake	Crotalus viridis abyssus

(after Carothers and Aitchison, 1976, Suttkus et al., 1976)

2. Birds

Approximately 284 species of birds have been recorded in the Grand Canyon region (Brown, et al., 1978), an area encompassing not only the Colorado River and its riparian habitat, but also the wide variety of

TABLE 12
ECOLOGICALLY SENSITIVE AREAS ALONG THE COLORADO RIVER

Name	Mile	Side of River or Location
House Rock Marsh	17.5	South
Stantons Cave	31.8	North
Vasey's Paradise	31.9	North
Buck Farm Canyon	40.8	North
Spring Canyon	41.2	North
43-Mile	43.2	South
Saddle Canyon	47.5	North
Nankoweap	52.0 - 53.0	North
Kwagunt Canyon	56.0	North
Little Colorado River	61.5	South
Hopi Salt Mines	62 - 64	South
Furnace Flats	65.6	South
Cardenas Marsh	71.0	South
Red Canyon	76.6	South
Clear Creek	84.0	North
Phantom Ranch	87.5	North
Garden Creek	89.0	South
Monument Creek	93.5	South
Hermit Creek	95.0	South
Boucher Creek	96.5	South
Shinumo Creek	108.8	North
Elves Chasm-Royal Arch Creek	116.5	South
Blacktail 122 Mile Creek	122.0	North
Stone Creek	132.0	North
Tapeats Creek Thunder River (Mi. Tapeats and Thunder River Caves)	133.7	North
Deer Creek	136.2	North
Kanab Creek	143.5	North
Matkatamiba	147.9	South
Havasu Canyon	156.8	South
National Canyon	166.5	South
Fern Glenn	168.0	North
Mohawk Canyon	171.5	South
Lava Falls	179.5	South
185-Mile	185.5	North
Granite Park	208.6	South
Juniper Seep	215.0	North
Three Springs Canyon	216.0	South
Surprise Canyon	248.4	South
Maxson Canyon	252.4	South
Burnt Canyon	259.3	North
Spencer Canyon	246.0	South
Emery Falls	274.4	South
Rampart Cave	275.0	South
Grapevine Wash	279.0	South

(Taken from Carothers and Aitchison, 1976)

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habitat types found throughout the Grand Canyon area. The riparian habitat of the Inner Canyon contains its distinct assemblage of breeding birds, yet during the non-breeding or migratory season, the riparian areas are frequented by birds that breed in all Grand Canyon habitats and some that breed elsewhere throughout the United States and Canada. The riparian habitat of the Inner Canyon provides a natural corridor for migratory movements of birds on their way to or from breeding grounds.

The very depth and size of the entire Grand Canyon system provide for striking climatic differences between canyon bottom and canyon rim. Generally, the spring and fall weather along the Colorado River is much more hospitable than that of either rim. The deciduous riparian vegetation enjoys a longer growing season providing insects with a longer period of food, which in turn provides a predictable food source for some migrating birds.

A total of 41 species are known to breed within the river corridor. Of these, 27 species utilize the riparian vegetation as nesting habitat. The remaining 14 species nest in association with the surrounding desert scrub, the vertical cliffs or the loose talus slopes of the inner gorge.

The riparian vegetation is preferred by 74 percent of the total population of breeding birds in the inner gorge; only two bird species are permanent residents. Thus, it may be generalized that the summer resident species of the Inner Canyon are almost exclusively restricted to the narrow belt of riparian vegetation along the river, while the permanent residents are restricted to or prefer the desert scrub, talus or vertical steep cliffs adjacent to the riparian habitat. The species most dramatically affected by the new stabilized vegetative community are: Willow flycatcher (Empidonax traillii), Bell's Vireo (Vireo bellii), yellow warbler (Dendroica petechia), common yellowthroat (Geothlypis trichas), yellow-breasted chat, (Icteria virens), northern oriole (Icterus galbula), brown-headed cowbird (Molothrus ater), and blue grosbeak (Guiraca caerulea). These species account for about 14 percent of the total breeding bird population along the Colorado River. They will continue to increase in density as long as the vegetation below the old high waterline continues to proliferate. They probably did not occur with significant frequencies along the river during the pre-dam era. Other species that are equally dependent upon this green vegetation such as the lazuli bunting (Passerina amoena) and indigo bunting (Passerina cyanea) might be expected to begin utilizing this vegetation along the banks of the river as well as the heavily vegetated tributaries in which they are now found (Carothers et al., 1976).

The most common breeding bird of the river corridor is the Lucy's warbler (Vermivora luciae) accounting for almost 20 percent of the total population of breeding birds. The house finch (Carpodacus mexicanus) is the second most common species (15 percent) followed by the canyon wren (Catherpes mexicanus) (11 percent) whose distinctive song is commonly heard by river runners. See Appendix E for a summary of breeding bird

species known to occur in the river corridor, their preferred habitats and relative densities.

The exotic house sparrow (Passer domesticus) and common starling (Sturnus vulgaris) breed in the Inner Canyon but almost always in association with human habitation, e.g., Phantom Ranch, Indian Gardens and Havasu Village. Recent exception to this restricted distribution was the occurrence of a breeding pair of house sparrows at Deer Creek Falls Campground, River Mile 136. This campsite is one of the most heavily used areas by river runners (Carothers et al., 1976).

3. Mammals

Within the riparian zone of the Colorado River approximately 22 species of terrestrial mammals and 18 species of bats are known to occur. The most common mammals are the rodents, with 13 species inhabiting the riparian, semi-riparian or desert habitats. On the beach and terrace habitats rodents are the most common mammals, comprising an average density of about 20 individuals per acre (Carothers and Aitchison, 1976). The bats have been little studied, and are present in very high densities, utilizing rock cliffs for roosting sites, the river for drinking, and the insects associated with the riparian habitat for food. Carnivorous mammals; i.e., bobcats (Lynx rufus), coyotes (Canis latrans), foxes (Urocyon spp.), and mountain lions (Felis concolor) are uniform in distribution, but extremely rare. Spotted skunks (Spilogale putorius) ringtails (Bassariscus astutus), and rock squirrels (Spermophilus variegatus) are common scavengers throughout the canyon but especially concentrated in popular camping areas. The rock squirrels have reached such high population densities in some campgrounds; e.g., Indian Gardens, that they have become pests, robbing food from backpackers and destroying camping gear. The larger mammals are represented by the mule deer (Odocoileus hemionus) and the bighorn sheep (Ovis canadensis).

The most conspicuous exotic animal within the Inner Canyon is the feral ass or wild burro (Equus asinus). This animal was introduced into the canyon area during the late 1800's by early explorers and prospectors. When the mineral exploration subsided and national park status precluded further mineral exploitation in the canyon, the animals were released. Since 1923, resource managers have attempted to reduce or eliminate the feral burro from the Grand Canyon, but direct reduction was halted in the late 1960's. The impact inflicted on the native ecosystem by this feral equine has been determined to be extensive (Carothers et al., 1976). Feral horses (Equus caballus), owned by Havasupai Indians, are known to occur in central Grand Canyon. They are not found along the Colorado River corridor.

See Appendix F for a summary of the mammals known to occur in the river corridor, their preferred habitats and relative abundance.

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4. Fishes

The Colorado River has only a few native fish species. Because of the post-dam changes in the river environment, the Colorado River squawfish (Ptychocheilus lucius) and the humpback chub (Gila spp.) may possibly be nearing extinction. These native fish depended on the seasonal fluctuation of water temperatures to breed; cold, stabilized temperatures now limits breeding to warm side streams.

Known fish species of the Colorado River in Grand Canyon and its tributaries are:

Native Species

Flannel mouth sucker	Catostomus latipinnis
Bluehead sucker	Pantosteus discobolus
Bonytail chub	Gila elegans
Humpback chub	Gila cypha
Colorado squawfish	Ptychocheilus lucius
Speckled dace	Rhinichthys osculus

Exotic Species

Threadfin shad	Dorosoma petenense
Rainbow trout	Salmo gairdneri
Brown trout	Salmo trutta
Cutthroat trout	Salmo clarki
Eastern brook trout	Salvelinus fontinalis
Coho salmon	Oncorhynchus kisutch
Carp	Cyprinus carpio
Fathead minnow	Pimephales promelas
Red shiner	Notropis lutrensis
Channel catfish	Ictalurus punctatus
Black bullhead	Ictalurus melas
Rio Grande killifish	Fundulus zebrinus
Green sunfish	Lepomis cyanellus
Large mouth bass	Micropterus salmoides
Bluegill	Lepomis machrochirus
Golden shiner	Notemigonus crysoleucas
Mosquito fish	Gambusia affinis

(after Suttkus et al., 1976)

Carp and various chubs, shiners, minnows, bullheads, bass, and other fish have been introduced to the Colorado River in varying quantities. Rainbow, brook, and brown trout have been introduced into Bright Angel, Clear, Shinumo, Garden, and Tapeats Creeks. Plantings have been made as recently as 1967 in cooperation with the Arizona Game and Fish Department. Earlier efforts to establish trout in Havasu Creek were not successful.

Stocking still occurs at Lees Ferry, Arizona, where five to seven inch rainbow trout are planted from one to two times a year. Lees Ferry is less than 1 mile from the park boundary on the Colorado River. Trout are known to migrate along the length of the Colorado River in the park. Being carnivorous, they place pressure on the young of the endangered native species, but the impact of this factor is not known at this time.

Stocking has also occurred and will continue at Lake Mead. Coho salmon (Oncorhynchus kisutch), rainbow trout, striped bass (Morone saxitilis), and walleye (Stizostedion vitreum) have been stocked since 1968. Coho salmon, rainbow trout, smallmouth bass (Micropterus dolomjeui), walleye, and striped bass all move from the lake into the lower park, and as the river continues to alter from the pre-dam system, they will probably increase in abundance. There is no quantative data on fish densities in the river.

5. Insects

Canyon habitats support a great diversity of both aquatic and terrestrial insect species. To date more than 260 families of insects have been recorded along the river corridor and tributaries.

The post-Glen Canyon Dam cold waters of the Colorado River have prevented an influx of aquatic species in the usually clear-running mainstream. Thus far, only two families of Diptera (Simuliidae and Chironomidae) are commonly found in the main channel. The aquatic Hemiptera and Coleoptera which are occasionally found along the banks of the river may best be considered litoral, as are several dipteran families. Tributaries provide most of the habitat for aquatic species in the Inner Canyon but differences between tributaries are great. Ion concentrations, pH, water temperature, turbidity, water flow, isolation, elevation, and tributary location within Grand Canyon all affect aquatic insect populations, and as yet insufficient data have been gathered to present a composite description of the distribution of insect species.

Terrestrial species are concentrated in the riparian vegetation between Zone 2 and the river, with a great deal of activity in the recently stabilized Zone 4. The population dynamics of some insect species in Zones 3 and 4 appear to be changing irregularly, apparently in adjustment to the post-dam invasion of plant species. Climax balance or regularity in population fluctuations remains to be shown for certain species of Orthoptera, Hemiptera, Coleoptera, Neuroptera, Lepidoptera, and Diptera. Climax balance of these species of insects is apparently closely related to exotic plant species such as saltcedar and camelthorn which are undoubtedly undergoing a gradual incorporation into the overall community. Lately, certain Acrididae (most notably Schistocera shoshoni), Cicadellidae and Buprestidae species have expanded their use of saltcedar.

Formicid species (Pogonomyrmex spp.) and various dipteran species are among the more commonly encountered insects in beach areas, their

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concentrations being related in part to human use. While bothersome, they do not pose a significant health hazard.

Almost no information exists on the population levels of poisonous arthropods other than insects, though two families of Scorpionida and black widow spiders (Latrodectus spp.) are quite common in Zones 1 through 3 throughout the canyon.

Diversities and densities of insects in the xeric Zone 1 are lower and probably more stable than those in the riparian zones.

The obsolete viceroy (Limenitis archippus obsoletus) found in Grand Canyon is being considered for inclusion on the list of endangered species. The monitoring program will continue to evaluate its status. (Carothers et al., 1976; Cole and Kubly, 1976).

J. RARE, ENDANGERED, AND THREATENED SPECIES

1. Animals

Along the river corridor, the bald eagle (Haliaeetus leucocephalus), the American peregrine falcon (Falco peregrinus anatum), brown pelican (Pelecanus occidentalis), the humpback chub (Gila spp.) and the Colorado River squawfish (Ptychocheilus lucius) are on the list of endangered fauna, maintained by the Secretary of the Interior.

The status of the three endangered bird species in the national park has recently been reviewed (Carothers and Johnson, 1975). Peregrine falcons are permanent residents of the canyon, although few in numbers. They utilize the river corridor for hunting, primarily preying on waterfowl and swifts. The other two are either transient (bald eagle) or accidental (pelican).

The endangered fish species are "endangered" because of the drastic changes in their habitat that have taken place since the impoundment of Lake Powell by Glen Canyon Dam. These changes include the increases in non-native fish populations, which are believed to be competing with the native fishes for necessary resources (Minckley and Blinn, 1976). The Colorado River squawfish may, in fact, already be extinct in Grand Canyon, as none were encountered during exhaustive searches in 1974, 1975, 1976, 1977, and 1978. The humpback chub is now restricted in distribution to the mouth of the Little Colorado River.

The spotted owl (Strix occidentalis) and the prairie falcon (Falco mexicanus), known occupants or visitors to the river corridor, were considered "threatened" species by the U.S. Fish and Wildlife Service in the 1973 edition of "Threatened Wildlife of the United States." They have not, however, been recorded as threatened species in the official Fish and Wildlife Service list of "Endangered and Threatened Wildlife and Plants," Federal Register, July 14, 1977.

The prairie falcon is an occasional resident of the
and its numbers in the park seem to be declining in ke
national trend (Carothers and Johnson, 1975).

Several other species exist along the Colorado River in Gra
whose status in Arizona may be in jeopardy in the near futur
Game and Fish Department, 1976). These include the following:

Desert bighorn sheep	(Ovis canadensis)
Snowy egret	(Egretta thula brewsteri)
Black-crowned night heron	(Nycticorax nycticorax hoactli)
Osprey	(Pandion haliaetus carolinensis)
Bonytail chub	(Gila elegans)
Desert tortoise	(Gopherus agassizi)
Gila monster	(Heloderma suspectum)

It is believed that river otter (Lutra canadensis) at one time frequented the Colorado River in Grand Canyon. However, there have been no sitings of this animal in the Grand Canyon for many years.

The fish and reptile species listed above, encountered during the research projects, are susceptible to disturbances initiated by increased human use of the riparian zone. The National Park Service and the U.S. Fish and Wildlife Service have jointly recommended the bonytail chub for endangered status and the razorback or humpback sucker for threatened status under the Endangered Species Act of 1973.

2. Plants

A number of endangered or threatened species of plants are known from Grand Canyon National Park. Species endemic to the area or species much diminished in range or habitat and listed as Endangered in House Document 94-51, "Report on Endangered and Threatened Plant Species of the United States," are:

Goldenweed	Haplopappus salicinus
Draba	Draba asprella var. kaibensis
Plains cactus	Pediocactus bradyi
Scouler catchfly	Silene rectiramea
Milkvetch	Astragalus cremnophylax
Phacelia	Phacelia filiformis
Wild buckwheat	Eriogonum darrovii
Wild buckwheat	Eriogonum thompsonae var. atwoodi
Wild buckwheat	Eriogonum zionis var. coccineum
Primrose	Primula hunnewellii
Mustard	Sisymbrium kearneyi

The following plants in Grand Canyon National Park are recommended for consideration as a threatened species in House Document 94-51:

Paint-brush	Castilleja kaibabensis
Prickle-poppy	Argemone arizonica
Crossosoma	Crossosoma parviflorum
Beavertail cactus	Opuntia basilaris var. longeareolata
Fleabane	Erigeron lobatus
Goldenweed	Haplopappus subintegra
Actinea	Hymenoxys subintegra
Draba	Draba asprella var. stelligera
Phacelia	Phacelia serrata
Agave	Agave utahensis var. kaibabensis
Flowering ash	Fraxinus cuspidata var. macropetala
Milkvetch	Astralagus troglodytus
Primrose	Primula specuicola
Wild buckwheat	Eriogonum densum
Wild buckwheat	Eriogonum ovalifolium var. vineum
Columbine	Aquilegi desertorum
Wild rose	Rosa stellata
Palmer amsonia	Amsonia palmeri
Clematis	Clematis hirsutissima var. arizonica
Cymopterus	Cymopterus newberryi
Encelia	Encelia frutescens var. resinosa
Nama	Nama retrorsum
Scurf-pea	Psoralea epipsila

Very little is known regarding the distribution and abundance of the endangered and threatened species of plants in Grand Canyon National Park. The bulk of the available information has come from recent ecological studies performed throughout the river corridor (Carothers and Aitchison, eds., 1976). Although more complete information on these species and their critical habitat is not available, it is possible that human interference in the form of river recreation is not significantly adversely effecting the survival of these plants.

K. THE CULTURAL RESOURCES

1. Archeology

Archeological resources in Grand Canyon constitute a primary scientific and historic value. The more than 1,200 known Indian ruins within the national park indicate and represent the adaptation of man to his environment over the past 4,000 years in the Grand Canyon region. The initial occupation of the canyon began about 4,000 years ago, and is represented by the Grand Canyon Split-Twig Figurine Complex occupation of dry caves. These deposits contain split-twig figurines which are found only in a few other locations in the southwest. An apparent lull in human occupation followed, with primary occupation in the canyon occurring between

A.D. 700 and 1200. During this time, Anasazi to the north and east, and Cohonina to the south and west, used the plateaus for their agriculturally based way of life. The Anasazi occupied the depths of the canyon as well. In the historic period, Hualapai, Havasupai and Paiute evidenced the only use of the canyon by the surrounding Indian tribes. These various cultures all left evidence of their life styles upon the land.

Archeological surveys of the river corridor were completed in 1978 (Euler, 1979).

At the present time, over 50 prehistoric archeological sites have been recorded adjacent to the Colorado River from Lees Ferry to the Grand Wash Cliffs and Lake Mead. In addition to the presence of sites adjacent to the river, other important cultural resources have been located in tributary canyons. Dozens of ruins have been identified in virtually every major drainage of the Colorado River system. Many of these sites are undergoing rapid and irreversible impact, some due to natural erosive forces, but in other instances considerable impact is due to visitor activities. Nineteen commonly visited archeological sites include a number of pueblo ruins, rock shelters, pictographs, masonry granaries, caves, and sacred Indian sites.

Sites in danger of disturbance by natural forces (erosion through flash flooding) or by the trampling activities of the feral ass are located throughout the lower Grand Canyon. Many of these sites are within the river corridor.

Although 10 archeological sites are eligible for nonimation to the National Register of Historic Places, no sites within the river corridor are presently listed on the register. Site evaluation and preparation of nomination forms is now underway. Compliance with Executive Order 11593 is expected within the next few years.

2. History

Although the archeological record indicates a very early human interaction with the Grand Canyon, it has been only during the past 75 years that extensive organized activity has occurred. The historic resources of Grand Canyon relate primarily to the establishment and development of the national park.

Recorded history of the Grand Canyon began with its discovery in 1540 by Don Lopez de Cardenas, one of Coronado's captains, and 12 followers who were seeking the fabled wealth of the Seven Cities of Cibola. Fathers Dominguez and Escalante crossed the Colorado River in Glen Canyon in 1776 and in that same year Francisco Tomas Garces visited the Havasupai Indians during a traverse south of Grand Canyon. American fur traders made forays into the Grand Canyon region during the early 19th century.

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After the war with Mexico, the United States acquired the region in 1848 by the Treaty of Guadalupe Hidalgo. The first comprehensive report on Grand Canyon resulted from the work of a War Department expedition of 1857-58 headed by Lieutenant Joseph C. Ives. His mission was to ascend the Colorado River and report on its navigability.

Major John Wesley Powell and nine companions won lasting fame as a result of their daring descent by boat of the Colorado River in 1869. Their trip began at Green River, Wyoming, and ran the river through the Grand Canyon. Powell repeated the trip again in 1871-72, as far as Kanab Creek. These scientific explorations gathered worthwhile information in spite of the hardships involved. A U.S. Army expedition led by Captain George Wheeler passed immediately south of the canyon in 1871 as they were mapping potential railway routes.

Along the river corridor there are no historic sites that are presently on the National Register of Historic Places. Below is a list of currently known sites within the river corridor which require historic evaluation. Some of these sites may meet the national register criteria when they are more fully evaluated.

Name of Site

Brown Inscription
Cave Springs Rapid Historic Site
Bert Loper's Boat
Grave of Peter Hansbrough (1889) and Boy Scout (1946)
Grave of Willie Taylor
Beamer's Cabin
Tanner Mining Camp
Hance Cabin
Asbestos Canyon Mining Camp
Phantom Ranch
Bass' Winter Camp and Cable Crossing
Shinumo Canyon Mining Camp
Hakatai Canyon Mining Camp
Havasu Canyon Mines

Other sites, not immediately adjacent to the Colorado River but easily accessible to river runners and backcountry users that need investigation, include Hermit Camp, Boucher Camp, and Bat Cave Guano Mine.

L. RIVER RECREATION

The Colorado River through Grand Canyon is one of eight stretches of recreation rivers on the Colorado-Green River system. It is one of more than 44 stretches of recreational rivers in the western United States.

In Grand Canyon, the Colorado River has unique characteristics which set it apart from other rivers. It is the longest stretch of river for

recreational use entirely within a national park. It is surrounded by more than 1 million acres of land with little human development. Some of the world's most difficult and exciting white water occurs here. The Colorado River's isolation in the mile deep gorge of Grand Canyon gives it wilderness qualities which enhance in addition to river running, off-river hiking, climbing, sightseeing, and solitude.

Prior to the early 1960's, there was little need to be concerned with resource impacts along the river. Most park visitors were concentrated on the South Rim of the canyon, and to a lesser extent, the North Rim. Relatively few visitors entered the canyon, and when they did it was usually on the Kaibab and Bright Angel Trails. Few visitors hiked in the backcountry or ran the river, and attention to these activities was minimal.

In 1963, the gates of Glen Canyon Dam were closed, forming Lake Powell, and river management problems began to appear. In addition to changing the biotic regimen of the Colorado River and its associated habitats, Glen Canyon Dam also drastically altered the maximum and minimum flow of the river and the silt concentrations. The dam also changed the timing of flows. Pre-dam flows were so high during spring run-off that river running was difficult. On some years, flow volume dropped so drastically that by September there was too little water for river running. The more consistent flows and clear water resulted in the Colorado River below Glen Canyon Dam becoming one of the most sought after whitewater recreation rivers in the Western Hemisphere. Simultaneously other factors encouraged growth in river running: emerging interest in wilderness experience, increased mobility and leisure time, expanding numbers of people with river-running expertise, and an increased amount and variety of, as well as improvement in equipment.

In late 1969, the National Park Service became concerned with the increase in river running activity. Before 1953, fewer than 200 people had run the Colorado River through The Grand Canyon (Johnson and Martin, 1976). In 1967, 2100 people ran the river and river running was becoming a thriving business. By 1973, 22 commercial boating companies and non-commercial river runners carried over 15,000 people down the river, an increase of almost 700 percent in 6 years (see Table 13). The number of river runners in 1972 alone exceeded the total number for the 100 years from 1869 (Powell trip) through 1968. Twenty one of the commercial river running operations are authorized to run the river from Lees Ferry to Pierce Ferry and other points on upper Lake Mead. The Hualapai Tribe is authorized to run only from Diamond Creek to Pierce Ferry and other points on upper Lake Mead.

1. User Days and Allotments

For 1973, a ceiling was placed on the number of user days (one user day equals one person on the river for one day), to allow time to determine what the effect this use was having on the resources and on the visitor's experience.

The commercial allotment for 1972 was 105,000 user days. Of these, only 88,135 were used, so for 1973 the allotment was set at 89,000, an overall reduction of 16 percent. This level has been maintained to the present time. Noncommercial river runners used 7,600 user days in 1972 and that level has been their ceiling to the present time. These use limits and allocations for commercial and noncommercial river running were for that section of the river from Lees Ferry to Diamond Creek. There were no use limits established for the Lower Gorge below Diamond Creek. User days are not counted against allocations for those trips continuing on below Diamond Creek.

The number of user days allocated to individual concessioners was based on their actual levels of use in 1972. Most concessioners authorized allotment was reduced by 16 percent in 1973 from the 1972 allotment figure (see Table 14). The Hualapai Tribe are not included in Table 14 since they are not under a user day limit because they operate only in the Lower Gorge below Diamond Creek.

Table 13
TRAVEL ON THE COLORADO RIVER THROUGH THE GRAND CANYON
FROM 1867 TO THE PRESENT (AFTER NASH, 1976)

Year	Number of People	Year	Number of People
1867	1[1]	1957	135
1869-1940	73	1958	80
1941	4	1959	120
1942	8	1960	205
1943	0	1961	255
1944	0	1962	372
1945	0	1963-1964	44[2]
1946	0	1965	547
1947	4	1966	1,067
1948	6	1967	2,099
1949	12	1968	3,609
1950	7	1969	6,019
1951	29	1970	9,935
1952	19	1971	10,385
1953	31	1972	16,432
1954	21	1973	15,219[3]
1955	70	1974	14,253
1956	55	1975	14,305
		1976	13,912
		1977	11,830
		1978	14,356

1. Some contend that James White, a trapper fleeing from Indians, floated the Grand Canyon on a makeshift log raft two years before the expedition of John Wesley Powell.

2. Travel on the Colorado River in these years was curtailed by the completion of Glen Canyon Dam upstream and the resultant disruption of flow.

3. The downturn in visitation was the result of the institution by management of a quota system. The numbers applying for the available private permits continued to rise annually.

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Table 14
CURRENT ALLOCATION OF AVAILABLE PASSENGER DAYS (PD) TO EACH OF THE 21 CONCESSIONERS

Company	1972 P/D Allot	1972 P/D Use	1973 P/D Allot	1973 P/D Use	1976 Use	1977 Use	1978 Use	# Tr 19
WEST	12000	13125	10080	10052	10153	8455	10086	50
HATCH	12000	11689	10080	10034	8297	6761	9746	70
SAND	12000	10636	10080	10039	10011	9302	10496*	52
ARTA	11000	9775	9240	9096	9241	7577	9155	41
GRCE	10000	11000	8400	8347	9470*	6290	8458	24
CROS	8000	3560	6720	5297	4349	3343	5156	40
WHIT	4500	4589	3780	3765	3476	3114	3758	21
TOUR	4500	4515	3780	3734	3755	3524	3593	25
CANY	4000	2893	3360	3344	3409	2876	3304	23
GRCD	3600	2329	3025	2979	2944	3416*	4117*	16
ARIZ	3000	3050	2600	2609	3078	2600	2924*	18
WILD	3000	721	2520	2526	2478	2470	2542*	9
FORT	2600	1391	2200	2213	2054	1844	2377*	12
MOKI	2400	1241	2050	1466	2190	2200*	2312*	14
GEOR	2300	1414	2000	1988	2015	1974	2365*	7
COLO	2000	1879	1800	1819	1951*	1916*	1876	17
HARR	2000	975	1680	1570	1580	1565	1506	11
KENS	2000	600	1680	1449	1629	1457	1700*	8
OARS	1600	1218	1600	1589	1603	2518*	1617*	10
OUTD	1200	738	1200	1215	1206	1129	1209	7
GRCY	1300	784	1125	1134	1117	1469	1105	6
	105000	88135	89000	86264	85006	75800	89362	481

* Any significant departures in excess of allocated use were covered by borrowin or was deducted from the following year allocation.

The 7,600 user days allocated for noncommercial river runners sector has been dispensed by a variety of methods. In 1972 and 1973, user days were assigned on a first-come, first-served basis. In 1974-75, postmark priority and a no-repeat rule was tried. In 1976, the no-repeat rule was dropped and a lottery was established. Considerable controversy has pervaded the decision on both commercial and noncommercial disbursements since 1972, becoming more intense and widespread in 1976 and continuing to the present.

The percentage of user days allocated between commercial and noncommercial user days has generated much controversy, including two lawsuits that are still pending. The following tables show the allocation of use between commercial (92 percent) and noncommercial (8 percent) river runners. Table 15 presents the number of noncommercial user days and table 16 the allocated and actual user days used for all 22 commercial outfitters from 1972 and 1976.

Commercial use did not reach the total allotment level until 1978. However, the data indicate clearly that some concessioners could use more user days than they are currently allotted while others do not use their total allotment. At the same time, 81,448 user days were denied the noncommercial applicants in 1976. National Park Service files contain many complaint letters from unsuccessful noncommercial applicants, but none from people indicating they could not book a commercial trip. The data on applications received and user days issued to noncommercial river runners are not realistic. For example, there were over 1200 application blanks sent out for 1977, with 507 completed applications submitted and 37 permits issued. Some of those who requested applications desired a trip, but did not submit an application due to the limited chance of drawing a permit, and other related reasons. Also, duplicate applications were included in the 507 submitted. The demand for non-commercial trips appears to be greater, but the data are inadequate to determine the extent of demand.

Commercial use was increasing at a rapid rate prior to 1973 when the ceiling was imposed. There is no question that this use would be at a much higher level today had it been allowed to operate in a free market situation where concessioners were allowed to increase trips freely in response to demand. How much higher use might have been is entirely speculative.

In summary, it appears that noncommercial user interest is most intense at this time, but comparative demand, noncommercial to commercial, cannot be accurately assessed.

2. Levels and Distribution of Use

The maximum commercial user days allotted each month cannot exceed 25 percent of the concessioner's annual allotment. A maximum of 150 commercial

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Table 15
NUMBER OF NONCOMMERCIAL PERMIT APPLICATIONS
AND PERMITS GRANTED FROM 1972 THROUGH 1978

Year	Number of Applications	Number of User Days Requested	Number of Permits Granted	Number of User Days Granted
1972	47	7,611	47	7,611
1973	74	14,193	49	7,833
1974	84	17,115	41	7,638
1975	173	33,569	42	7,679
1976	425	89,084	36	7,636
1977	507	86,862	40	7,766
1978	370	73,834	37	7,477
1979	441	86,346	47*	7,600*

* Estimates

Table 16
TOTAL USER DAYS ALLOTTED VERSUS TOTAL USER DAYS
USED BY COMMERCIAL RIVER RUNNERS FROM 1972 TO 1978

Year	Number of Days Allotted	Number of Days Used	Number of Days Not Used
1972	105,000	88,135	16,865
1973	89,000	86,264	2,736
1974	89,000	84,159	4,841
1975	89,000	84,709	4,291
1976	89,000	85,006	3,994
1977	89,000	75,800	13,200*
1978	89,000	89,362	———

*Extremely low water year

passengers, and one party of up to 15 private users (average in 1978 was 11.2), is permitted to depart from Lees Ferry on any single day. The maximum number of commercial passengers per type of boat ranges from 6 to 20, and the maximum number of passengers per commercial trip is 40 (average in 1978 was 21.4). Commercial trips are not permitted to average more than 40 river miles per day.

Current use levels range from 80 to 940 people leaving Lees Ferry each week with up to 200 people launching on a single day (including crew, research, and administrative personnel). The majority of river trips launch Mondays and Tuesdays, and most of the allotments are used in June through August (see Tables 17 and 18). Little use occurs between October and March.

3. Lower Gorge

The use levels and allotments discussed above apply only to the first 225 miles of the river. The portion of river from Diamond Creek to Grand Wash Cliffs is currently not under use allotment.

This section of the river was added to the park in January 1975 (Grand Canyon National Park Enlargement Act, P.L. 93-620) and has a history of use and management that is substantially different than upstream from Diamond Creek. In 1978, (under permit from NPS and auspices of the Hualapai Tribe) an estimated 500 passengers took trips from Diamond Creek to Lake Mead. In addition, approximately 6,000 commercial passengers who annually start their trip at Lees Ferry continue past Diamond Creek downriver to Lake Mead. There are no data available on the numbers of noncommercial passengers that float from Diamond Creek to Lake Mead, but an estimated 100 trips launch at Diamond Creek annually.

Motor boats also run upriver to Diamond Creek at the present time, but are not permitted to continue beyond this point. Fishing and water skiing also occur below Separation Rapids (Mile 240). This area is considered to be a portion of Lake Mead, and approximately 12,000 persons, other than river runners, engage in lake recreation yearly.

M. THE NATURE AND EFFECT OF EXISTING USE PATTERNS

Rapid irreversible physical and ecological changes are occurring in the riparian resources of the Colorado River as a result of the present visitor use levels and patterns. The irreversible changes are not necessarily a simple function of the total number of visitors, but more importantly, of use patterns and activities (Carothers and Aitchison, 1976).

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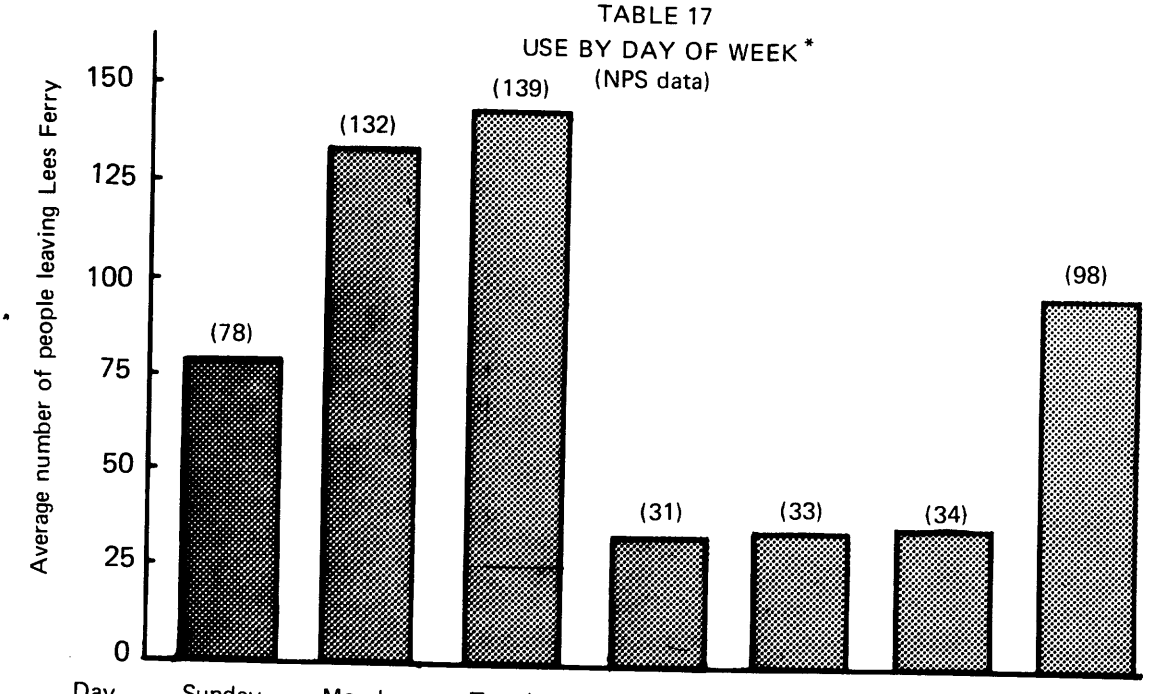
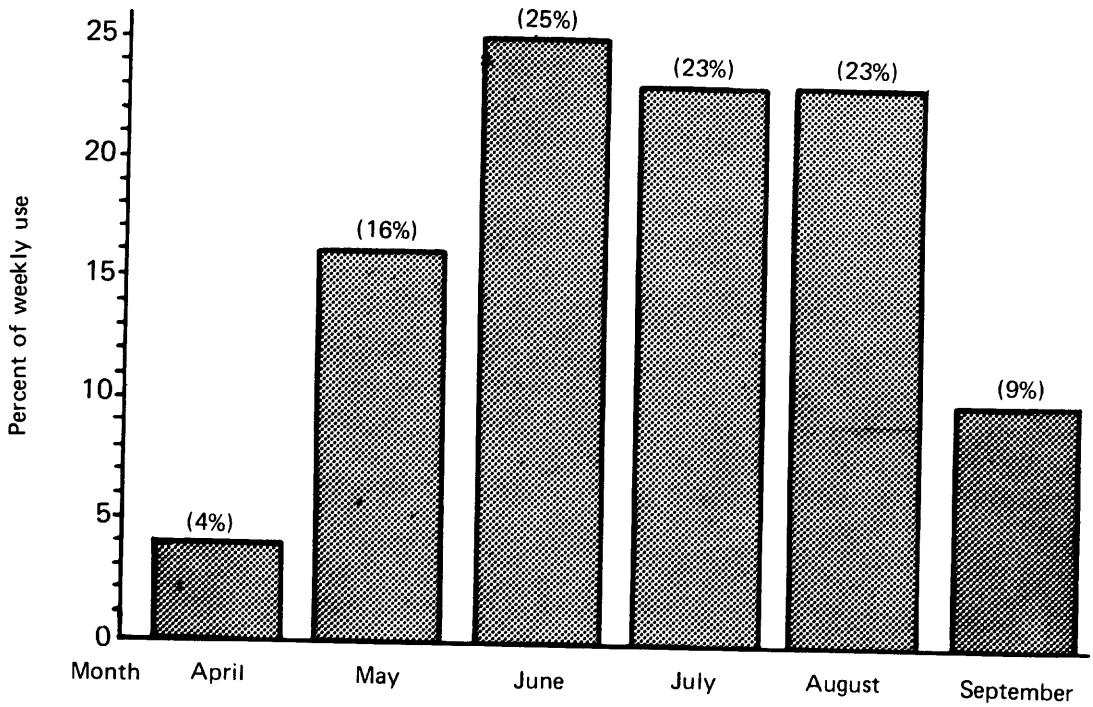
TABLE 17
USE BY DAY OF WEEK*
(NPS data)



	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Percent of weekly use	14	24	26	6	6	6	18

*April through September only

TABLE 18
USE BY MONTH OF SEASON*
(NPS data)



	April	May	June	July	August	September	
Average Number of people leaving Lees Ferry	(487)	(2,193)	(3,398)	(3,104)	(3,127)	(1,277)	13,586

*April through September only

1. Beaches

From Lees Ferry to Grand Wash Cliffs (277 river miles), about 400 campsites are available for an average of 1.4 per mile. However, most beaches occur in clusters and portions of the river have abundant camps while others have few or no camping areas. The critical sections with few beaches are in upper Marble Canyon, Granite Gorge, Marble Gorge, and Lower Gorge (see River Corridor sections, pages I-4 to I-6). Fewer than 100 beaches receive 75 percent of all camping activity during one season (Carothers et al., 1976). At the more desirable sites 30 to 40 persons camp on the beaches each night during a 3- to 4-month season. Most of the campable beaches are less than 5 acres in size, and 20 to 30 campsites with capacities of 20 or more persons show impact from overuse.

At present use levels and densities, there is evidence of impact on the riparian vegetation and soils within and adjacent to popular beach areas. The most heavily used beaches have areas of 2,500 to 10,000 square feet largely to completely devoid of vegetation. This results from direct stress associated with people walking on the unstable sedimentary deposits and vegetation. The vegetation is sometimes so impacted by visitors that the spread of both exotic and native species is reduced or eliminated. This may be either through destruction of the plants themselves or by foot traffic disturbing the soil structure. However, without some visitor activity, many campable areas would become overgrown and not suitable for camping (Howard and Dolan, 1976; Carothers and Aitchison, 1976).

Most of the foot traffic on the prime camping beaches is concentrated within 100 meters of the mooring sites and decreases outward exponentially with distance. Use is concentrated along pathways that radiate outward from the main campsite. These pathways are commonly .75 to 1.25 meters deep. The foot traffic to and from boats and camps dislodges beach material downslope and roughens beach material which increases turbulence at bed surface. Both of these factors accelerate erosion of beach material (Howard and Dolan, 1976). Human debris (food particles, plastic, pop-tops, etc.) is being incorporated into the sand/silt deposits at rates that exceed the purging capacities by natural processes, causing beaches to look and smell like sandboxes found in heavily used public parks.

Also significant has been the rate of incorporation of charcoal and ash into beach deposits, despite current regulations for fire pans. The charcoal has spilled out of the pan or thrown into the river and redeposited on downstream beaches or transported by wind up and onto campsites (Howard and Dolan, 1976).

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Foot Traffic on Beaches

Charcoal and Debris on Beach

2. Off-River Use and Attraction Sites

Off-river activities are important factors in the visitor's experience. Many spectacular side canyons, river overlooks, and historical and archeological sites are easily reached from the river. Heavy visitation has resulted in resource impacts and visitation to some restricted areas.

Variable rates of travel, trip length, number of people leaving Lees Ferry, and type and amount of off-river activities such as hiking and camping contribute to resource impacts directly related to congestion and crowding at attraction sites.

On commercial motorized trips of 7 days or less in length, little time is spent off-river. On longer commercial motorized trips or on oar-powered trips an average of one-third of each day is spent hiking to attraction sites. Also, some groups hike overnight to off-river sites.

Private trips average 17.5 days per trip. As many as 15 days are spent hiking to off-river sites. Currently, there is no limit for length of off-river use or maximum length of river trip, except that no more than two nights may be spent in any one location.

Noncommercial users visit more off-river attraction sites than commercial users, but commercial oar trips spend more time at particular sites. Table 19 presents data on the relative differences in attraction site visitation for commercial (oar and motor) and noncommercial (virtually all oar) river trips.

Table 19
ATTRACTION SITE VISITATION BY COMMERCIAL AND NONCOMMERCIAL RIVER TRAVELERS

	Commercial		Noncommercial
	Motor	Oar	All Trips
Total number of sites visited	12.1	17.0	21.3
Average length of visit (hours)	1.3	6.0	3.9

(after Shelby and Nielsen, 1976)

High visitor densities at prime attraction sites impact both the physical and biological resource as well as visitor satisfaction. For example, two or three river parties (40 to 60 persons) may meet and congregate at such popular sites as the Little Colorado River, Elves Chasm, Deer Creek Falls, or Havasu Creek. Encounters with other parties occur at about

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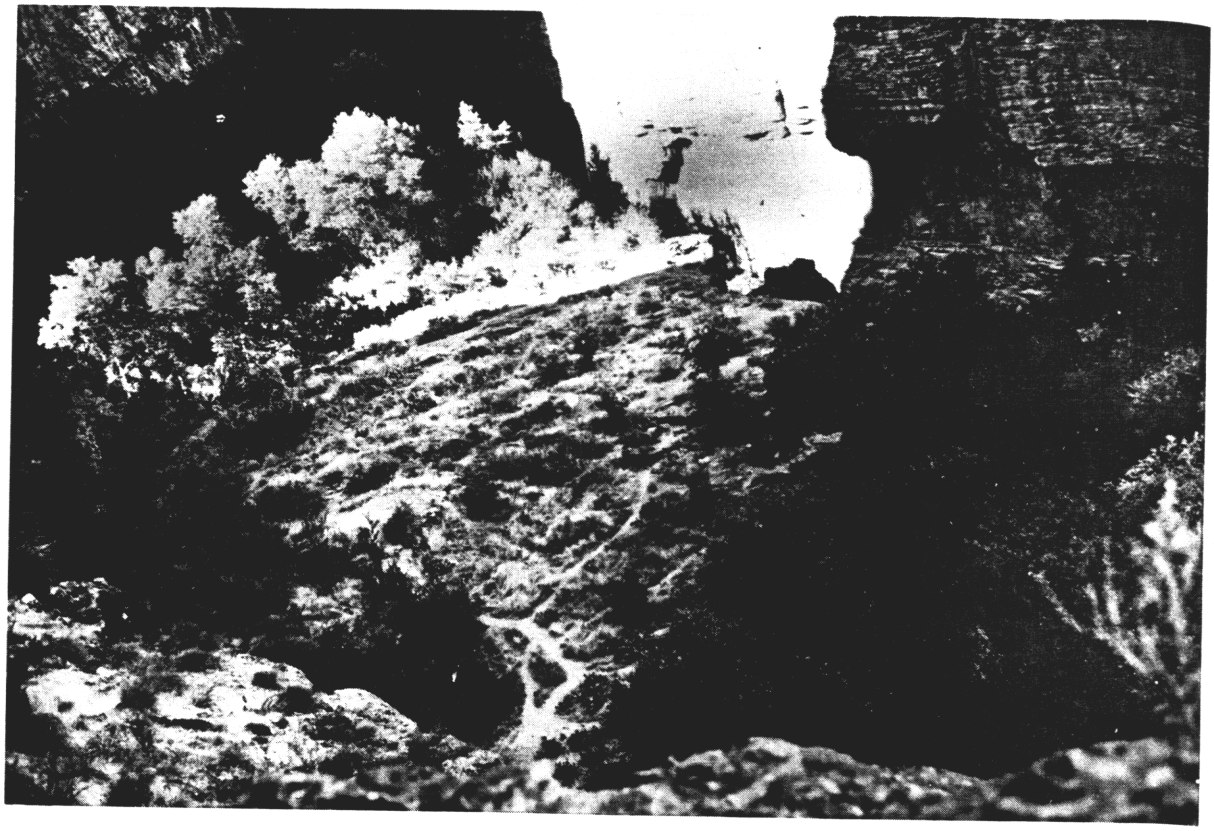

Examples of Multiple Trailing

half of all other sites visited. When groups arrive at attraction sites at the same time, they tend to use different access routes from the river to and from the site to avoid inter-group contact. The chaotic patterns of foot traffic to side canyons, attraction sites, and beaches have resulted in severe vegetation damage and soil disturbance. Multiple trails, trampled vegetation and aeolian erosion are evident at all prime attraction sites.

3. Partial Trips

There are currently a considerable number of commerical passengers taking partial river trips. Most partial trips end or begin at Phantom Ranch. Many people take what amounts to a partial trip by taking out at Lava Falls. This trip is generally advertised as a full-canyon trip even though it takes out two thirds of the way through the canyon. In 1978, there were 3,481 people who hiked in or out from river trips. Table 20 shows the number of people who took partial river trips in 1978 and the locations they began or ended their river trip.

Table 20
PARTIAL TRIPS TAKEN WITH CONCESSIONERS 1978

	Passengers In	Passengers Out
Lees Ferry	11,335	
Phantom Ranch	1,271	1,251
Little Colorado	10	1
Hance	17	0
Tapeats	0	13
Havasu	89	56
Lava Falls	419	3,097
Whitmore Wash	109	664

Exchanges at Lava Falls involve the use of a helicopter to get to or from the river. The helicopter operates from lands just outside the park boundary.

4. Fire

The use of wood fires for cooking, recreation (campfire talks, etc.) and warmth has been a common practice of river runners during all seasons of the year. Research findings indicate that major resource management problems were associated with this use of fire, such as:

- Depletion of the firewood supply (driftwood) occurring at a rate exceeding the natural replenishment rates.

- Removal of driftwood piles affects certain wildlife resources (particularly reptiles).

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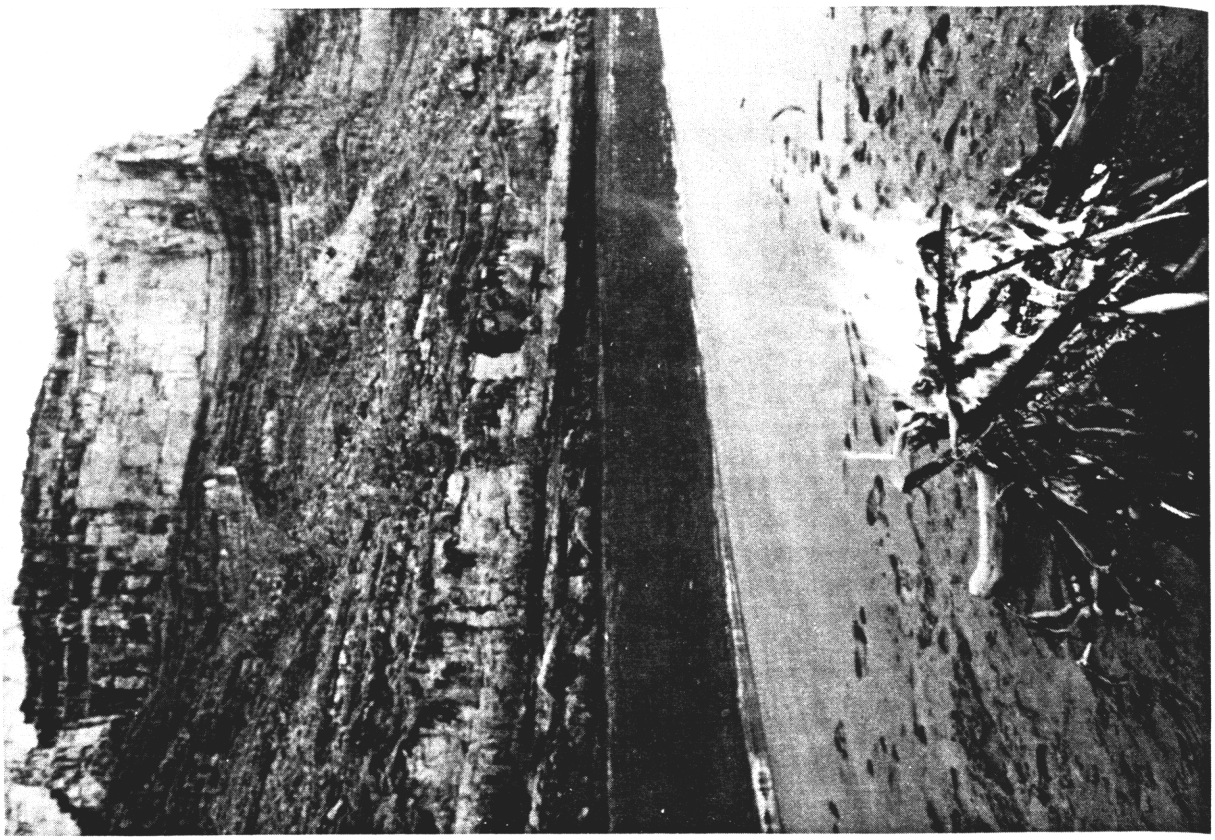

Illegal Fire - No Firearm

Results of wildfire started by Bear Bumper

- The ash and charcoal resulting from combustion of the firewood being incorporated into the beaches at a rate that far exceeded the natural purging processes that clean beach sands.

- Standing and fallen dead trees native to the canyon were being used for firewood.

- Brush fires have been caused by the careless incineration of toilet tissue.

Although the previous regulations regarding the use of fire were designed to prevent resource impacts, these regulations were (a) not always followed, (b) difficult to enforce, and (c) not adequate for the variety of situations that developed during river trips.

5. Sanitation

The primary sanitation problem that existed as a result of the river recreation practices was the disposal of human waste. Past regulations required that all organic and inorganic garbage be carried out of the canyon, but allowed for the burial of human body waste. Under existing visitor use levels, approximately 20 tons of fecal materials were buried annually in the beach soils of the riparian zone.

National Park Service river regulations required that all river trips carry a portable toilet or other means of containerization of human waste, and that these wastes be buried at least 200 feet from any area normally used for camping, 6 feet above the normal high water mark at least 50 feet from the riverbank, and the hole itself be at least 2 feet deep.

At many popular camping areas, it was physically impossible to bury the wastes according to regulation; in fact, 18 sites were placed off limits to sewage burial because they were not 200 feet long or wide, and there were no areas, other than the immediate camping area, where a burial site could be located. Under this situation, river parties were instructed to carry their waste products to another site downstream where burial according to regulations was possible. These regulations were often not observed, frequently resulting in waste burial sites being located in the center of a camp.

Burying waste products resulted in potential health and actual esthetic problems. Because of colloidal interactions between feces, beach sand, and water, some burial sites do not drain adequately, resulting in feces being buried only a few inches below the soil surface rather than 2 feet down in the burial hole. Wind would uncover the feces, resulting in noxious smells and visual impacts on visitors. The actual pathogenic hazard potential of the burial sites is relatively short-lived. Sartor-Lynch and Phillips (1976) determined that 99.98 percent of the viable fecal coliforms perished within the first month of burial and that it is

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unlikely that contamination from this source could persist from one season to another. Nevertheless, with some of the more popular camping areas used almost every night during the height of the river running season, potential health problems existed. Recent research (K. Johnson, 1976 and Knudsen, 1976) indicates the following:

- The health of river runners was potentially endangered due to the numbers of fecal coliform bacteria and associated pathogens which were found capable of surviving up to 11 months of burial in porta-potty dump sites located on or near camping beaches.

- Fecal contaminants were not restricted to the actual porta-potty dumpsite, but have been found to migrate up to 8 inches away from the dumpsite.

- Random sand samples taken from sleeping, eating, and cooking areas at some campsites contained viable fecal coliform bacteria.

- The disinfectant chemicals used in porta-potties do not provide for total disinfection of pathogens associated with fecal wastes.

- Viable fecal coliform bacteria have been isolated from the top 3 to 6 inches of porta-potty dumpsites.

Under past use levels and patterns, over 5,000 human waste burial sites annually were dug in the beaches of the Colorado River. At the more heavily used campsites, it was not uncommon for a boatman to unearth the remains of the previous group's fecal dumpsite when attempting to bury wastes. Many of these campsites, for example the Deer Creek Camp (River Mile 136, left), were receiving up to 150 separate dumps each river season in an area of less than 5 acres.

Associated with improper disposal of the fecal wastes was the improper disposal of toilet tissue, sanitary napkins and tampons which, along with raw feces, could be found in surface beach deposits at most of the heavily used sites. In some cases, they were not associated with portable toilet dumps. These materials are not always placed in the present carry out containers.

There is also a serious esthetic and possible infectious contamination problem associated with human waste disposal in all backcountry areas of the Grand Canyon where visitors congregate. This problem is accentuated by allowing indiscriminate disposal of fecal materials when the parties are away from the river.

It should be noted that the proposed action of requiring all river runners to carry out their human waste was implemented in the 1978 season. The river monitoring studies conducted in 1978 showed significant improvement in beach cleanliness.

6. Fishing

Fishing has not been a major activity. However, interest in trout fishing is increasing because rainbow trout of 5 to 8 lbs. are commonly being caught and some up to 18 lbs. have been caught recently. This has the potential for developing considerable interest in fall and winter trips when fishing success is highest. Fishing occurs along the river and in some of the major tributaries; e.g., Bright Angel and Tapeats Creeks. The common fish are rainbow trout, channel cat, carp, striped bass, walleye, and occasionally brook trout and Coho salmon. All these fish have been introduced to the river through stocking at Lake Mead, Lees Ferry, Diamond Creek, and the major tributaries within the park. The humpback chub is an endangered species occasionally caught on hook and line.

Fishing in the backwaters of Lake Mead is a popular activity in the lower gorge. For approximately half of the 12,000 lake recreationists, fishing is either a main or an incidental pursuit.

N. SOCIAL FACTORS

1. Commercial Passengers

The commercial passengers that annually make passage of the Colorado River through Grand Canyon are a select socioeconomic group.

Commercial river-running passengers in Grand Canyon have above average income levels, with over half the people reporting family incomes over $24,000. Education level is also high, with 78 percent having at least some college and 53 percent possessing a bachelor's or more advanced degree.

Average age of river runners is 33, 43 percent are married, and half are women. The majority (64 percent) currently live in large cities or suburban areas. Only 22 percent belong to an outdoor club or conservation organization, and for a sizable portion (31 percent), the Colorado River trip represents their first wilderness expedition and for the overwhelming majority (91 percent) the river trip represents their first float down the Colorado (Shelby and Nielsen, 1976).

It has been reported in the "Congressional Record" that restricting river travel to non-motorized craft only, would eliminate a particular socioeconomic/demographic group of park visitors traveling the Colorado River. Studies show, however, that this appears unlikely (Shelby and Nielsen, 1976). Although the demographic characteristics indicate that the commercial passenger is from a fairly select group, there are only minor pre-trip background differences between passengers that select motorized trips and non-motorized trips. That is, the social demographic factors which act to "select" river travelers in general are the same for passengers on all commercial trips, regardless of mode of river craft locomotion.

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2. Private or Noncommercial Passengers

There are differences in the socioeconomic/demographic characteristics between noncommercial and commercial river trip passengers (Shelby and Nielsen, 1976). Noncommercial river runners in Grand Canyon have slightly lower incomes (half report incomes over $16,000), are more predominately male (77 percent), are generally slightly younger in age, and are less likely to live in cities. Noncommercial users are more likely to belong to outdoor groups, and have had more wilderness experiences and began having them at an earlier age. The noncommercial user also has more experience running rivers and is more likely to have had prior experience on the Colorado River; about 70 percent of 1977 applicants have been on at least one and some have been on as many as 100 Colorado River trips (Grand Canyon National Park data).

3. Lower Gorge Users

Visitor characteristics in this zone are of two types. Those continuing their trip from Lees Ferry would have the characteristics described for that area. The remainder can be described by the Arizona Statewide Comprehensive Outdoor Recreation Plan (1975). They have incomes between $10,000 and $15,000, and the median size family is 2.21 members. Most of the visitors come for active water-based recreation, such as water skiing and motorboating.

4. Visitor Perceptions and Preferences

a. Mode of Travel

There are a number of structural differences between the usual motor and oar trips. Motor trips are larger, have more people per boat, have a higher passenger/guide ratio, have more contact with other parties each day, spend less time in the canyon, make fewer and shorter side stops, and make more adjustments for crowding (Shelby and Nielsen, 1976). Adjustments for crowding are defined as occurring whenever trips went farther or faster than planned, slowed down, changed the location of a planned campsite, or passed up attraction sites because of the presence of others.

Table 21
COMPARISON OF MOTOR AND OAR TRIPS

Average	Group Size	Boat Size	Number of Boats	Persons Per Boat	Trip Length	Number of Boatmen
Motor Trip	30	30 - 37 ft.	2	15	7	2
Oar Trip	24	15 - 22 ft.	5	5	14	5
Noncommercial Groups (mostly oar)	12	small/varied	6	2	17	0

Sixty-one percent of those on motor trips and 1 percent of those on oar trips prefer motorized travel. Experimental trips were conducted in the summer of 1975 to further define the motor-oar differences. The procedure involved a combination trip in which one group of passengers spent the first half of their trip in oar-powered boats, while another group traveled in motorboats. The oar-powered boats left two days ahead, and were met by the motorboats about halfway through the canyon; passengers then switched boats. This provided data from a group of people with both motor and oar experience. This procedure was carried out twice, once in July and once in August. Passengers on combination trips, who had experience with both motor and oar travel in the canyon, preferred the oar trip. In response to four different items, 79 to 91 percent chose oar travel and 4 to 6 percent chose motor travel (Shelby and Nielsen, 1976).

The most frequently expressed explanations for preferring the non-motorized trip involved the slower, more relaxed pace; the opportunity to become aware of the natural sounds and water movements without the drive of the engine; the smaller, more comfortable social groupings; and the feeling of a more sensitive, esthetic experience. People described the motorized trip as speedy, hurried, rushed, noisy, loud, crowded, big, and wet, but also as fun and exciting. By contrast, non-motorized travel was described as leisurely, slow, lazy, relaxing, peaceful, quiet, silent, natural, friendly, individualized, intimate, and again fun and exciting.

Additionally, it has been determined that passengers on non-motorized trips know more about the canyon; i.e., natural history, geography, special attraction sites, etc., than do passengers on motorized trips. This may be due to increased learning opportunities related to mode of travel (motor noise is detrimental to normal relaxed communication between the guide and passengers), length or speed of the trip, or a difference in knowledge before the trip.

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b. Crowding

The vast majority (91 percent) of river travelers define their river trip as a wilderness experience and most do not perceive the canyon as crowded.

> "Thirty percent of the visitors see the canyon as crowded, but this is unrelated to the number of people they saw during their trip. The lack of relationship between contacts, perceived crowding, and satisfaction is attributed to the lack of agreement about how crowded the canyon 'should' be. Most river runners are making the trip for the first time; over half didn't know what to expect in terms of contacts with other groups, and there was little consensus among those who had some expectations." (Shelby and Nielsen, 1976)

Most people (65 percent) prefer two or less contacts per day and 90 percent prefer to camp away from others. Small travel groups are considered most appropriate, with 57 percent preferring groups of 20 or less and another 29 percent favoring groups of 20 to 30 persons (Shelby and Nielsen, 1976).

The noncommercial river runners differed from the commercial river runners in their preference for meeting other parties. They preferred fewer contacts each day and they were more likely to perceive the canyon as crowded and more impacted by the presence of man. They were also more likely to complain that they met too many people during their river experience (Shelby and Nielsen, 1976).

The combination of unregulated upstream and downstream use in the Lower Gorge area often creates congestion. This area is immediately adjacent to Lake Mead National Recreation Area and many lake travelers do not know they are in Grand Canyon National Park. Thus, the atmosphere of a recreation area is accepted and complaints of crowding are not frequent. The nature of the use of high-speed motorboats makes contacts with other groups insignificant because it is an accepted part of this type of recreation.

c. Visitor Safety

The rapids of the Colorado River are a potential safety hazard to the park visitor. Safety regulations and boat operator qualification standards have minimized accidents. In 1974, 20 accidents occurred; in 1975, 21. Of this total of 41, 15 occurred on boats, the remaining 26 occurred on hiking trips or during camp activities. The injury rate on boats is, then, one in every 2,000 passengers. The injury rate was not significantly different on oar, motor, commercial or noncommercial river trips.

The following table shows the comparative differences for on-river injury rates for both motor and non-motorized trips from 1971 to 1978.

Table 22
ON-RIVER INJURIES WHICH RESULTED IN HELICOPTER EVACUATION

Type of Craft*	Year								Total Injuries
	1971	1972	1973	1974	1975	1976	1977	1978	
Motorized	6	6	5	6	5	8	5	5	46
Non-Motorized	1	0	1	1	3	1	2	0	9

*The number of passengers carried on motorized and non-motorized craft during this period was about 80 and 20 percent, respectively. Motorized trips with 80 percent of the passengers had 83 percent of the injuries whereas the non-motorized trips with 20 percent of the passengers had 17 percent of the injuries. Although these data tend to indicate that non-motorized trips are safer, the difference is not statistically significant.

The motor and oar trips were perceived as equally safe by combination trip passengers (those who experienced the river trip by both motor and oar). Twenty-five percent considered the oar trip safer, 25 percent the motor, and 46 percent felt there was no difference (Shelby and Nielsen, 1976).

Accidents do occur as uninformed users attempt to run the rapids in the Lower Gorge. Though accident rates are not exceptionally high, a potential for serious problems exists if use increases and visitors are not informed of river trip hazards.

O. ECONOMIC FACTORS

1. Local and Regional Economy

The float trip concessions in Grand Canyon National Park represent a multi-million dollar industry.

The annual gross income for the 21 concessioners in recent years was:

1976	4,961,239.00
1977	4,585,455.00
1978	5,643,849.00

The effect that the river-running industry has on the local and regional economies of the Grand Canyon region has been summarized by Parent and Robeson (1976). The 22 concessioners represent 16 different base locations in four states. Data for the Parent report was taken from concessioner annual financial reports as to total taxes paid in their respective states. Letters of input to the draft environmental statement from a few concessioners indicate that the total amount paid in taxes of various kinds in the states from which they operate was actually higher than reported by Parent. Even if the amount paid were double or more it would not represent a significant proportion of the total economy of those respective states involved.

Table 23
TAXES PAID BY TYPE AND CONCESSIONER LOCATION (PARENT, 1976)

	Location by State			
Taxes	Arizona	California	Nevada	Utah
Real:				
State	0	423	0	0
Local	0	16	0	422
Sales:				
State	8,772	1,306	4,389	12,627
Local	0	1,275	0	0
Personal Property:				
State	1,263	119	45	0
County	368	1,363	0	7,839
Amusement Tax	0	0	0	0
License Fees	603	4,410	53	1,730
No. of Concessioners Reporting	5	6	1	9

Kane County, Utah is the base for 40 percent of the concessioners, and in Kane County the float trip concessions account for 7.4 percent of the retail sales. Although the total float trip contribution to the economy of this county is less than 1 percent of the receipts in the county, the monetary benefits could be important to that small community.

In 1975, the Hualapai Tribal river runners received revenues from transporting paying passengers from Diamond Creek to Pierce Ferry.

Visitors exiting at one of the marinas on Lake Mead contribute to the incomes of local small businesses in that area. It is assumed that persons who stay on Lake Mead make up the majority of the business for these firms, thus river travel does not significantly affect the regional or local economy centered around upper Lake Mead.

The river-running industry employs a limited number of people on a full-time basis (other than officers and managers). The majority of the employees are seasonal guides, hired to escort the paying passengers down the river. The normal river-running season is about four months long (May to August), and the majority of guides are either students or employed in other occupations during the off-season. An average river guide does not earn a total wage equal to or greater than the equivalent of a minimum yearly poverty level wage as suggested by the Arizona Department of Economic Security.

There are approximately 200 regular seasonal guides. Most of them live in other locations during the winter season. During the summer when they are on the river, they do not live predominately on the local economy (Parent and Robeson, 1976).

As a hypothetical situation, the economic impact of eliminating all commercial river trips in Grand Canyon was explored. The research results indicate that the elimination of all commercial river trips would not have a major economic impact on most communities in which these companies are based.

2. Concessioner Services, Visitor Satisfaction

Concessioners offer a wide variety of trips in terms of services offered, trip length and cost. For the 1979 season, river trips are available from 1 day at $120 to 22 days at $1,075. The highest priced trip is an 18-day oar trip at $1,350. The average cost of a full-length 13-day oar-powered trip to at least Diamond Creek for 1979 is $649 compared to an 8-day motor-powered trip to at least Diamond Creek is $571. The difference between these two average costs is $78 with the oar trip providing 4 more days on the river for this price. A wide variety of trip services are included in some of these prices in terms of food, extra equipment, special interpretation, shuttle service, motel rooms before and/or after the trip, etc. However, some of the trip prices listed do not include some of these services making direct comparison difficult.

The overwhelming majority of commercial passengers on Grand Canyon river trips feel they are getting their money's worth (Shelby and Nielsen, 1976). This is further substantiated when the average daily rate of Grand Canyon river trip concessions is compared with that charged for other recreation oriented activities at destination recreation resort areas (Parent and Robeson, 1976). The average daily rate for Grand Canyon river trips is generally less than that of other similar type activities elsewhere.

There is, however, evidence of some dissatisfaction in that 32 percent of the respondents surveyed by Shelby and Nielsen said they were willing

to pay $100 more for a trip which made fewer contacts with other trips. There is also an indication that the demand for higher priced trips appears to be greater than for lower priced trips. The company offering the highest priced trip used nearly 96 percent of its allotment. In general, passengers are able to choose from among several different products and prices, and since "values" are individually and personally perceived, there is a greater likelihood that they are being met than dictated when there is such diversity (Parent and Robeson, 1976).

P. PROBABLE FUTURE OF THE ENVIRONMENT WITHOUT THE PROPOSAL

Without the proposed plan, management of the river would continue under the present allotment and scheduling system. River recreationists would continue to float the river and experience the canyon. Negative impacts would also continue to occur on the natural, cultural, and sociological resources of the river environment.

Further deterioration of the riparian resources can be expected due to present use activities. Based on research and previous examples of misuse or unguided use, many adverse changes could eventually alter the character of the river corridor. Some of these changes are summarized below.

- Impacts related to human waste problems of the past are mitigated for the most part since the proposed carry out method has already been implemented.

- Impacts related to improper use of fires have been mitigated through the fact that the proposed fire use restrictions have been implemented.

- Impacts from multiple trailing will be partially resolved since single trail alignment has been initiated. However, full mitigation requires rescheduling of launches to reduce crowding and congestion and social trailing tendencies. Without the proposed action, crowding and congestion will continue.

- Demand for quality wilderness, the search for solitude, and the popularity of river running is expected to increase. All potential users cannot be accommodated within the river corridor, and restrictions on user allocation and numbers of visitors will continue. However, disappointment on the part of the noncommercial river runners would intensify under the past allotment ratios.

- Impacts related to operation of Glen Canyon Dam will continue and human use will accelerate some of those impacts. According to Dolan (1976), rapids are becoming more severe, beaches are eroding and human activity accelerating that erosion. Beaches are eroding more rapidly in the upper reaches of the canyon than in the lower portion, and while tributaries below the dam mitigate this process by replacing lost sediments, the long-term trend is toward loss of camping beaches.

III. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

A. IMPACT ON SOILS AND VEGETATION

Several elements of the plan will directly reduce existing impacts on the soils and vegetation of the river corridor. The portion of the riparian community most affected by camping and mooring boats are the dam-dependent Zones 3 and 4. Zone 3 contains short-lived invasion of species such as red brome, tansy mustard, fescue, Russian thistle, and camelthorn. Zone 4 is composed mainly of saltcedar, arrowweed, coyote willow, and many herbaceous plants. Zones 1 and 2 are affected by off-river use (hiking, attraction sites) and represent the original pre-dam communities (desert and woody vegetation). Refer to Section II. C. and H. for the description of soils and vegetation and to Section II. M. for visitor use activities.

Until recently, both beach soils and vegetation had been severely damaged by the practice of digging waste disposal holes. Twenty tons of human fecal material were buried in the beach sands annually, requiring 5,000 disposal holes on less than 100 beaches. Each dumpsite contributed to further destruction of the soil profile and the microbiology of the beaches. Vegetation was trampled or uprooted, and disturbance of the soil profile inhibited natural germination processes. The practice of burning toilet paper had resulted in brush fires, which caused accelerated erosion on unstable slopes.

The proposal to require all river runners to haul out solid human wastes was implemented in 1978. This requirement has already significantly improved cleanliness of the beaches. The digging activities and subsequent soil and vegetation disturbance on some 250 acres of beaches has been halted. The deposition of human wastes on beaches has been reduced to occasional itinerant cases of people who refuse to adhere to the requirements. The haul out system is not fully effective since the units are not set up at lunch stops and attraction sites. This impact is fairly minimal and will be the point of further experimentation with methods and procedures to resolve the situation. Natural decomposition and cleansing processes of the river ecosystem will require several years to restore beach areas to an acceptable condition that have been impacted by past burial activities. The past use of wood fires for warmth, cooking, and recreation and the practice of collecting driftwood have contributed to soil and vegetation disturbance. Charcoal and ash have been incorporated into beaches at rates that exceed the purging capacities of the river systems. The disposal of waste charcoal and ash in the main current of the Colorado River causes further deterioration of beach soils. The charcoal residue is carried downstream to the next beach area, where it is re-deposited on the beach face and transported by wind onto campsites.

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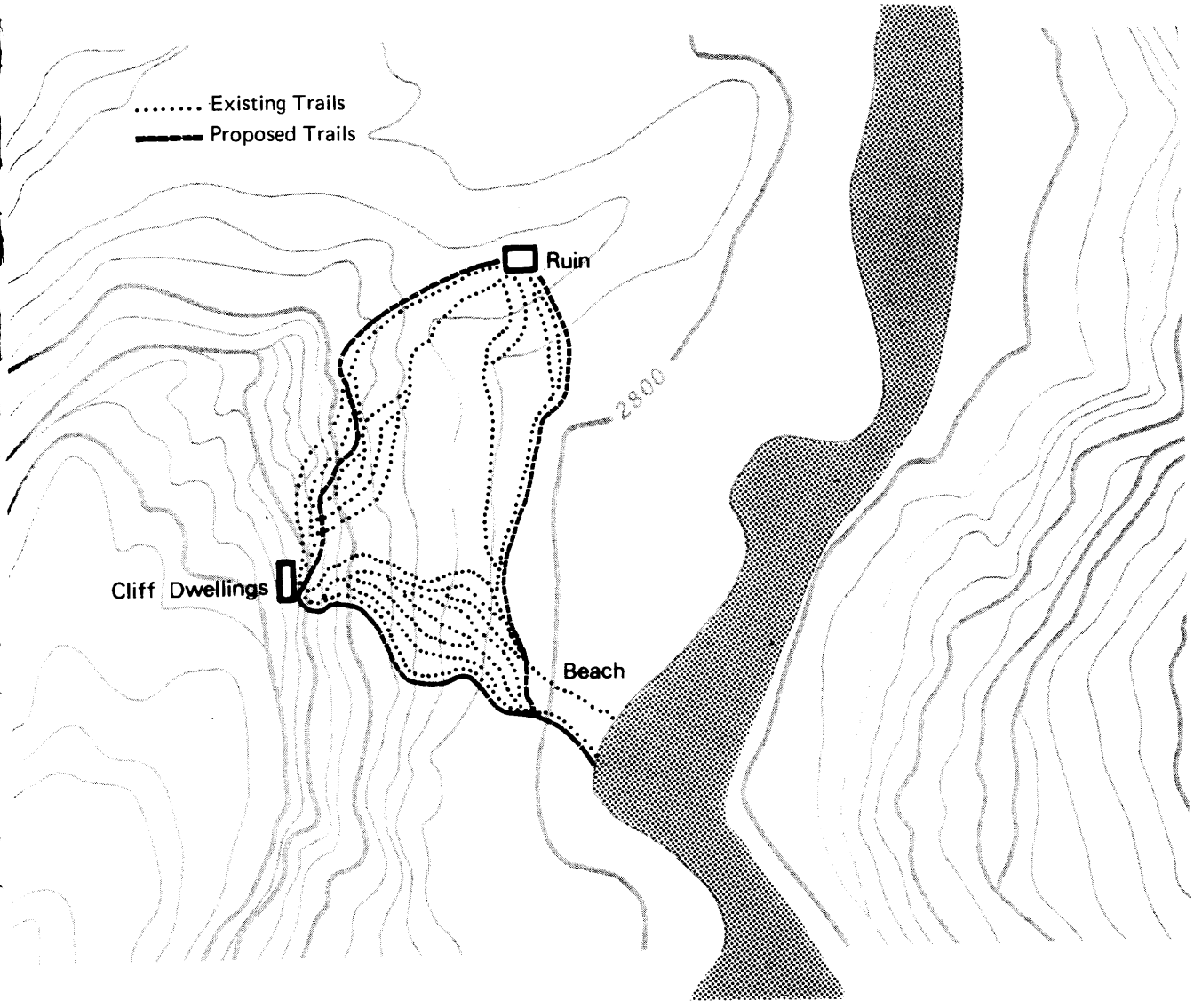
The gathering of wood for fires has in some parts of the canyon led to the denuding of standing trees both alive and dead. Driftwood is a by-product of vegetative growth that originates primarily outside the Grand Canyon. From the late 1960's through mid-1970's, there was a sharp decline in the available driftwood supply. Use of driftwood during that time exceeded the capacity of the system to replenish itself.

The proposal to eliminate wood fires (except for those built with imported firewood for esthetic purposes and supplemental cooking), and driftwood collecting during the summer season (April 1st to September 31st) and the requirement to haul out charcoal and ash was implemented in the 1978 season. The amount of charcoal and ash incorporated into beach sands was perceptably reduced in the 1978 season and is expected to be minimal in the future. Wood fires will be allowed from October 1st to March 31st using natural driftwood supplies, with the requirement to haul out residue charcoal and ash. It is expected that the incorporation of charcoal and ash into beach sands during the winter season will be reduced to an acceptable level with the requirement that these materials be hauled out. Reducing the use of fires will allow natural replenishment of driftwood which should meet the demand for firewood during the winter river-running season. Minor soil and vegetation impacts will continue due to minor spillage of charcoal and ash from fire pans and failure to properly deposit and carry out fire residues. Minor trampling of soils and vegetation will occur due to driftwood collection during the winter season.

Other activities and patterns of use that result in natural resource impacts are overuse of popular beaches and crowding and congestion at attraction sites. Soils and vegetation have been severely impacted at both beach and attraction sites, due largely to foot traffic and subsequent trailing and trampling of vegetation. Soil disturbance, accelerated erosion, and changes in vegetation are apparent in heavily used areas where multiple trails, all with the same beginning and same end, are maintained by large numbers of people. For example, at Nankoweap (see following illustration), more than fifteen trails have developed between three points. Much of the native streambank growth in the larger tributaries such as Clear Creek, Hermit Creek, Tapeats Creek, and Havasu Canyon, also shows heavy damage because of foot traffic.

The proposal to establish single trails (a total of 12.1 miles) at thirteen attraction sites will serve to delineate an appropriate walkway to each site and discourage uncontrolled access to areas of interest. The number of areas with multiple trails will be reduced and approximately 4,700 acres of disturbed soil and vegetation will be allowed to recover (see Table 24). Trail construction itself will result in short-term effects.



Some minor cut and fill will be required and ground disturbance can be expected within four feet of the trail alignments. Due to construction in sedimentary deposits and on unstable slopes minor erosion will occur. However, the rate of erosion from wind and water is expected to be far less after trail development than under present conditions. Trail alignment work was initiated in the 1978 season and has proven to be substantially successful.

Table 24
MULTIPLE TRAIL IMPACT AND RESTORATION

Existing* Disturbance	Approximate Acreage	Estimated Acreage Improved** Through Trail Designation or Construction
South Canyon	160	75
Saddle Canyon	1200	300
Nankoweap	1000	600
Little Colorado	200	50
Cardenas Creek	320	160
Unkar	1200	700
Hermit Creek	1200	600
Shinumo Creek	1200	300
Elves Chasm	640	160
Stone Creek	640	160
Tapeats Creek	1000	550
Deer Creek	640	350
Havasu	1200	700
Total	10,600	4,705

* Existing disturbance encompasses both direct impact and radiating effects within a given area. Direct impact (multiple trails, gullying, erosion, compaction) affects approximately 25 to 40 percent of each area. Marginal impact entails occasional trailing, soil disturbance, and vegetation damage. Some areas, such as Nankoweap, contain beaches, ridge overlooks, cultural sites and tributary streams, which are included in total acreage of disturbance.

** It is estimated that 25 to 60 percent of each site will be improved through trail construction. Until trail designs are developed and recovery rates monitored, exact acreages for restored areas cannot be given.

Other actions that will indirectly serve to prevent further visitor impact at beach and attraction sites involve daily, weekly and seasonal scheduling, as well as the more uniform rate of travel through the canyon due to the elimination of motors. At present, more than 150 persons per day and as many as 940 per week leave Lees Ferry. Trip length through the canyon varies from 5 to 11 days by motor and from 12 to 18 days by oar power. The uneven dispersal of use and varying rates of travel, especially during the months of May, June, July, and August, cause overuse of certain beaches, and crowding and high density at attraction sites.

Proposed scheduling of trips will reduce the total number of persons leaving Lees Ferry per day by 50 percent. Use will be more uniformly dispersed throughout the summer season and extended into the winter season. With fewer people on the river at any given time, the probability of congestion and crowding at attraction sites will be reduced, thereby alleviating resource impacts.

Beach use will also be more evenly dispersed throughout the season which will eliminate the heavy three-month impact.

It is probable that the most heavily used beaches will continue to be the most popular throughout the year, and soils and vegetation will continue to receive impact. Furthermore, the longer trips require each person to camp more nights in the canyon. This, coupled with the proposed increase in user days (from 122,600 to 209,150) will increase beach use. However, oar trips generally carry fewer persons per party than do motor trips, 24 persons as opposed to 30 persons. With fewer people camping per night at each beach and total use spread more evenly throughout the canyon, overall resource impacts per beach are expected to be less than at present. Rotation, restriction, or scheduling of campable beach areas will not be attempted unless future monitoring indicates an impact level that is unacceptable.

The increased allocation to noncommercial users (from 7,600 to 54,450 user days) may result in greater impact on beach and off-river resources. Although there is no concrete evidence, it has been suggested that noncommercial river runners may be more damaging to the natural resources than commercial parties despite the fact that the noncommercial people were more knowledgeable about natural features and geography in the canyon at the end of a trip. This observation is generally shared by researchers (Carothers and Aitchison, 1976) and National Park Service patrol personnel. This is not to say that noncommercial river runners cause all the damage, but that they may be less inclined to follow the requirements or less knowledgeable of the special techniques for protection of the natural resources. Adverse impacts could include soil and vegetation disturbance caused by using or creating multiple trails, burial of garbage of human waste, and improper use of fires.

The above probable effects, however, are expected to be reduced under the proposed plan. All noncommercial river trip leaders will be required to have adequate knowledge of the regulations and to attend an education/orientation program before running the river. All noncommercial river runners will be afforded the opportunity to gain the knowledge necessary to prevent resource damage. The possibility that commercial or non-commercial river runners may inadvertently or purposely disregard resource protection measures will continue to exist to some minor degree.

The selection of concessioners at the time of permit renewal will allow park managers to consider all responses from any company desiring to operate river-running services through Grand Canyon. Companies with the proper background and knowledge in resource protection will be chosen. This will serve to aid in control of visitor patterns of use, lessening impact on natural resources.

Until very recently, the Lower Gorge section of the river has not had sufficient management attention to properly protect the resources or provide adequate visitor services. This has resulted in deterioration of natural resources, esthetic qualities, sanitation and safety. There are clear and definable differences in attitudes, equipment, experience, and resource conservation consciousness between the commercial and noncommercial river runners and lake recreationists. Clearly, the commercial river-running interests are more prepared to take proper care of the natural resources in that they are continually exposed to National Park Service resource protection indoctrination. The lake recreationists are at the opposite end of the scale. This is evidenced by the fact that below the Diamond Creek area, accumulated litter on beach areas dramatically increases. Strictly enforced and publicized regulations geared to the needs of the lake recreationists will reduce resource impacts along the lakeshore. The new plan requires all downstream river runners to have a National Park Service permit with requirements for environmental protection. This will improve the above problems considerably.

However, since the requirement to carry out all solid human wastes will not apply to lake recreationists using powerboats, unavoidable adverse impacts resulting from human waste disposal in beach areas and attraction sites would continue.

Although off-river hiking and camping is not a significant use of the lake and river in the Lower Gorge, several sites show high use. These areas include: Travertine Grotto, Spencer Canyon, Quartermaster Canyon, Bat Cave, Rampart Cave, and Emory Falls. Use impacts, such as uncontrolled foot traffic, erosion, and vandalism would continue. Misuse of these and other areas can be correlated to two main factors: lack of patrol and lack of education. Increased interpretation and education, as well as added patrols should reduce overall resource impacts to an acceptable level

The known candidate threatened or endangered plant species, for the most part, are found above the current high water line in Zones 1 and 2, and to some degree in Zone 3. Primary impacts on these species would occur through trampling related to camp activities and hiking to attraction sites. Some impact will occur to individual plants, but it is not expected to significantly affect the overall population of any species because the plants are fairly well distributed throughout the canyon.

In summary, the overall effects of the plan will significantly reduce disturbance to soils and vegetation in the riparian zones of the river corridor, and to some extent in the lake area below Separation Canyon. Direct actions, such as elimination of human waste dumpsites, the reduction in wood fires, and trail construction, will have a positive effect on 250 acres of beach area and approximately 4,700 acres of soils and vegetation at the 13 major attraction sites. Moderate visitor use impacts will continue at popular beaches and in areas of off-river camping, hiking, and special interest sites. Visitor related impacts on the resource are caused largely by existing practices, patterns, and activities rather than by the total number of persons allowed on the river (Carothers and Aitchison, 1976). Therefore, with certain practices changed or eliminated, and patterns and activities modified, the riparian ecosystems are expected to receive less impact and remain relatively unimpaired.

B. IMPACT ON WILDLIFE

In general, no serious adverse effects on terrestrial fauna are evident under present use levels. Visitor use activities can, however, cause shifts in animal behavior patterns and populations. Actions that presently disrupt animal or fish species include intentional or unintentional feeding, improper human waste and garbage disposal, habitat destruction through trampling, pruning, or collection of vegetation, and use of soap in side streams or tributaries.

At heavily used campsites intentional feeding and improper garbage disposal encourage high concentrations of campsite scavengers such as the ringtail cat, spotted skunk, and common raven. The harvester ant has become a problem, and increases in the densities of flesh flies and blow flies has been associated with the improper disposal of fecal materials. The digging of waste disposal holes may also interfere with the normal activities of ground dwelling and burrowing animals. A reduction in lizard populations has been noted due largely to the decrease of driftwood on which lizards rely for shelter, displaying, and foraging.

Plan actions that will alleviate wildlife disruptions include proper disposal of human wastes and garbage outside the canyon, reduction of driftwood collection, increased education of all river travelers regarding wildlife, and the continued regulation against use of soap in the tributaries. The numbers of scavengers and campsite pest insects will be

reduced, and the adverse effect of digging on ground burrowing animals would be eliminated. Impacts on wildlife (especially lizards) that are associated with removal of driftwood piles, will be reduced.

Three species of endangered birds, the bald eagle, the peregrine falcon, and the brown pelican (occasional to this area) are known to utilize the Grand Canyon environs. The present use levels have no apparent effect on these birds and no adverse impacts are foreseen due to proposed use levels and allocations.

The endangered Humpback Chub, largely restricted in distribution and breeding population to the mouth of the Little Colorado River, is occasionally caught by visitors on hook and line. To protect this species, restricted use at the mouth of the Little Colorado will remain in effect. No camping or fishing will be allowed within one-half mile of the stream's confluence with the Colorado River. Although there will be increased use during the spring and fall months, no significant disturbance of wildlife populations is anticipated.

The obsolete viceroy (Limenitis archippus) is a butterfly considered for inclusion on the endangered species list. Because of its widespread distribution, this species' habitat in Grand Canyon is not considered critical or determined to be affected by these management proposals.

C. IMPACT ON WATER QUALITY

The present use levels and patterns have minimal effect on the quality of water in the Colorado River and its associated tributaries in Grand Canyon. The existing impacts come from the production of hydrocarbons from outboard motors, seepage from human waste dumpsites, the incorporation of camp waste water, and the use of detergents.

The current use of outboard motors results in the consumption of approximately 25,000 gallons of gasoline per year during float trips on the Colorado River. Pollutants added to the river as a result of motorized travel include approximately 5,750 pounds of petroleum residue annually, as well as gasoline from leaking tanks and oil spills. The elimination of motor use on the river will prevent incorporation of oil and gasoline products and generally enhance water quality of the river.

The potential for localized pollution adjacent to campsites or along tributaries will be eliminated when all human fecal material is removed from the canyon. In the event of an accidental spill of containerized waste into the river, other downstream trips will be notified. If an accidental spill occurs on a beach, the material will be cleaned up.

Waste water from cooking and washing activities in camping situations will continue to be disposed of in the river. The use of soaps and other detergents in the river will continue to be permitted; however, using soaps in the tributaries is and will not be permitted. The amount

of phosphates released to the main stream are probably insignificant. Nevertheless, use of low phosphate soaps is required (CFR 40, Section 120).

The amount of all pollutants added to the river by visitor activities will probably be insignificant due primarily to the high dilution factor related to the volume of water in the river.

Therefore, the above actions will slightly improve, but not significantly change the overall water quality of the river and its tributaries.

D. IMPACT ON AIR QUALITY

The present use patterns have a minimal effect on the quality of the air in the Inner Canyon area. The existing impacts result from the production of outboard motor exhaust pollutants and the particulates generated from cooking and recreation fires.

The current use of outboard motors results in the consumption of approximately 25,000 gallons of gasoline per year during the float trips on the Colorado River. The hydrocarbons generated by gasoline combustion will no longer enter the atmosphere when motorized travel is eliminated.

The combustion of wood at present levels has only a slight local and temporary effect on overall air quality along the Colorado River. Reducing the number of fires will improve on this situation.

Local impacts due to odors caused by motor exhaust and gasoline while on the river or at mooring sites will be eliminated when motorized travel is eliminated. Also the noxious odors associated with improperly buried fecal material will no longer impair air quality in beach camping areas.

Pollutants added to the air through river-running activities are local and temporary. Actions of the proposed plan will have a positive effect on air quality of these localized areas, but no measurable effect on overall quality of the air within the Inner Canyon.

E. IMPACT ON CULTURAL RESOURCES

The gathering of firewood and the disposal of human waste along the river corridor are two activities that can cause direct destruction of cultural resources. Firewood collecting has become particularly damaging to some of the archeological and historical resources in the canyon. The present use patterns have resulted in such a shortage of firewood at heavy use campsites that the river runners are frequently forced to halt other activities in the early afternoon and specifically gather firewood wherever it is available and haul it by boat to that night's campsite. None of the heavily used campsites have an adequate supply of firewood now. During their firewood foraging activities, the river runners occasionally come in contact with the remains of some previous occupation

(e.g., Hance Cabin, Bert Loper's boat, etc.). The result has been that these structural resources are disappearing. In addition, the gathering of firewood on some of the beach terraces may cause the disturbance of surface archeological remains. The digging of waste disposal holes can also cause serious disturbances to the irreplaceable archeological resources in areas of the canyon where sites are known to be abundant, such as Nankoweap and Unkar, and other locations.

The reduction of and limitations on use of wood fires and the removal of all human waste from the canyon will serve to protect the remaining cultural resources. The deterioration of historic structures due to firewood gathering practices and the potential for digging into an archeological site for a waste dump hole will be eliminated.

Although vandalism results in a certain amount of destruction under existing use patterns, the principal impacts result simply from visitation to the historic and archeological sites. The proposed plan will lengthen the visitor's stay on the river and, therefore, increase day-use visitation of the cultural sites. However, the high-density use patterns and related congestion at attraction sites will be modified, serving to lessen the deterioration of sites caused by crowding and uncontrolled use. Increased annual visitation could accelerate the rate of deterioration of these areas and, without mitigation, could result in the loss of valuable non-renewable resources.

To ensure preservation of cultural resources at the proposed use level, all archeological sites within the river corridor will be evaluated and will receive protective treatment, if needed (stabilization, testing, or excavation). There will be a minor loss of scientific data due to stabilization, testing, or excavation, in that any removal of material from its cultural context reduces the amount of information available for future archeological research (see I. C. 5 for specific sites).

Historic remains within the river corridor will be evaluated for historic significance, and those meeting the criteria for the National Register of Historic Places will be nominated. Eleven historic sites will be preserved through protective devices for stabilization.

Other sites, not immediately adjacent to the Colorado River but easily accessible to river runners and backcountry users that will be investigated include: Hermit Camp, Boucher Camp, and Bat Cave Guano Mine.

Another action that will serve to offset visitor use impacts and reduce deterioration of cultural resources includes the implementation of education/orientation programs for commercial trip leaders and guides and noncommercial river runners.

In summary, both direct and indirect adverse impacts on cultural resources will be reduced through the reduction of firewood collecting, the removal of human waste from the canyon, and the modification of high-density

user levels. Inadvertent harm and deterioration due to greater visitation will be reduced through direct preservation or protection, and interpretation and education. No serious impacts on cultural resources are expected to occur as a result of the proposed actions.

F. IMPACT ON VISITOR GROUP CHARACTERISTICS

Under the present use levels, the river-running public represents a select socioeconomic/demographic group. A change in total use levels would not be expected to have any effect on this overall pattern. Similarly, the removal of motorized craft would not significantly affect any one socioeconomic/demographic group utilizing the river between Lees Ferry and Separation canyon (see Section II. N. for discussion). Since both oar and motor trip passengers possess essentially the same education, economic and urban backgrounds plus such characteristics as age, marital status and number of children, the shift from motors to oars will not alter the overall composition of the commercial river-running group.

Motorized traffic and upriver travel will be eliminated from Diamond Creek (Mile 225.6) to Separation Canyon (Mile 239.5), but will be allowed to continue on downstream from Separation Canyon to Grand Wash Cliffs (Mile 227). This will adversely impact those boaters who now make upriver runs in the rapids above Separation Canyon. This will also impact the Hualapai Tribe commercial river-running operation. The Tribe has not run motorized trips between Diamond Creek and Separation for the last two seasons (1977, 1978). They did run motor trips in prior years, and any plan to run motorized trips in future years would be precluded by this decision.

No change is expected in characteristics of the visitor who participates in a recreational activity in the Lower Gorge section of the canyon below Separation Canyon. The people in this part of the canyon come for different experiences than the participants in the upper 240-mile river trip. Present visitors are primarily interested in water-based recreation, the use of powerboats, and the scenery, for short weekends or one-day experiences. It can be assumed that these people will continue to visit the backwaters of Lake Mead and will not be affected by proposed management actions above Separation Canyon.

The proposed allocation of use between commercial and noncommercial parties could change the socioeconomic/demographic characteristics of the total river-running population. The research results, summarized below, indicate the potential shift under present use conditions.

The private and commercial groups differ in demographic characteristics, so alterations in the percentage of use allocated to each group would affect the demographic composition of the overall river-running population. If the percentage of private use were increased, more people who are young, male, of slightly lower income, and from less urbanized areas would be running the river. If total number of people remained constant,

an increase in private use would mean a decrease in commercial use, and consequently a decrease in the number of persons with "commercial" characteristics (e.g., older persons, women, etc.). The magnitude of these shifts are not expected to be large, since correlations of trip type with demographic variables are fairly low. For example, a change to 50 percent private, 50 percent commercial would be expected to change the average age of river runners from 32.4 to 30.3. Private users also have more outdoor and river-running experience, so an increase in private use would probably cause an increase in the number of river runners with such experience (Shelby and Nielsen, 1976).

Under the proposed plan, approximately one of every four river runners will be a noncommercial user as compared to one of every 20 under status quo or one of every two as indicated in the above example. Commercial use will increase by a few thousand persons (including those taking partial trips) and noncommercial use will increase by approximately 2,900 persons; overall visitor characteristics are expected to shift slightly, but not to a significant degree.

In summary, the proposed elimination of motors above Separation Canyon and the allocation of use will not alter the overall composition of the river-running groups to any great degree.

G. IMPACT ON VISITOR OPTIONS

The removal of motors, the allocation of use, increased use throughout the year, and scheduling will have an effect on the range of options available to the river recreationist.

With the elimination of motorized float trips, park visitors who prefer only motorized travel may forego the river-running experience through the Grand Canyon. Research data obtained during the sociological studies indicates that 98 percent of those on commercial oar trips and 15 percent of those on commercial motor trips prefer to run the river on an oar trip. Of those who had the opportunity to experience both types of travel, approximately 5 percent preferred motorized craft. Assuming this group represents the river-running population, only 566 of the 11,335 people who ran the river in 1979 would be adversely affected by the change from motors to oars. It would have been desirable to repeat the combination trip experiment to strengthen the statistic reliability of the data. However, the information from this research is sufficiently reliable to indicate that when people have had the opportunity to experience both modes of travel the majority will choose oar-powered trips.

There is strong indication that almost all those who have had the opportunity to experience both motor and oar trips prefer oar trips over motor trips. However, most river runners are on their first river trip and do not have the experience of either type of trip. For these people, the choice is limited by what information they can obtain from the concessioner as to relative merits of the two modes of travel. Concessioners

will naturally sponsor the type of watercraft best suited to their operation. People with time constraints and money limitations will generally choose the shorter, less expensive trip. The shorter, less expensive trip at present is the motorized trip. There was some public input to the effect that shorter, less expensive full-length motorized trips should be retained. Those who want this type of trip will be impacted due to its loss under the proposed action. Those who do choose the shorter, less costly trips will not experience a full-length trip.

The elimination of motors in the Lower Gorge from Diamond Creek to Separation Canyon (15 miles) will reduce visitor options, in that motor-boat trips down river with the Hualapai will be eliminated, and visitors will have to make that distance in rowing craft. Also visitors will lose the option of up-river runs in the rapids of the Colorado River in Grand Canyon.

However, most of those canyon visitors who come by boat from Lake Mead National Recreation Area will be relatively unaffected by this action. Most of the lake boating occurs well below Separation Canyon. Some boaters do go up the canyon as far as the first rapids usually (Mile 237), and their option to do so will be restricted by this action, to only going as far as Separation Canyon (Mile 239.5).

Those users continuing a trip from Lees Ferry past Diamond Creek, or beginning a trip from Diamond Creek, would still have the option of motoring across the lake slackwater below Separation Canyon.

Options involving length of trip and off-season use will differ to some extent from the opportunities available under existing conditions.

The exclusion of motorized craft would lengthen the minimum amount of time required to traverse the Grand Canyon by river from 6 to 11 or 12 days. Motorized trips average 8 days in length, non-motorized trips average 12.5 days in length. The option of a short 6- to 10-day trip through the entire canyon will no longer be available. However, there will be partial trips available beginning or ending at Phantom Ranch. In addition, trips ranging from 1 day to 12 or more days will be possible, but will involve hiking into or out of the canyon or both. Examples are provided below:

Trail In	On River	Trail Out
Hance	1 day	Bright Angel
Kaibab	1 day	Hermit
Kaibab	2-3 days	Tapeats-Thunder River
Tanner	3-4 days	Havasu
Little Colorado	6-8 days	Whitmore Wash
Kaibab	8-10 days	Pierce Ferry

The maximum length of trip will be limited to 18 days in the summer season and 21 days in the winter season. Visitor options in terms of maximum length of stay will remain about the same. Noncommercial parties will forego the opportunity to spend an unlimited amount of time in the canyon during both summer and winter seasons.

Noncommercial passengers will have greatly increased options due to both the increase in user days (from 8 to 30 percent), and the more even dispersal of commercial use during the peak summer months. Some commercial users, on the other hand, will be inconvenienced due to reduced numbers of float trips during the peak months of June, July, and August. However, oar-powered trips allow more time for the visitor to experience the various points of interest within the canyon. Trips of up to 18 days in the summer season and 21 days in the winter season will provide a variety of options for off-river use, including the opportunity to visit more attraction sites or unique canyon features, to hike, and to camp. Average trips of 12 days would provide 5 to 6 additional days for off-river hiking or scenic viewing in the summer. In the winter, up to 10 additional days would be available for off-river use.

Within the portion of the public desirous of a river trip a variety of user interests exist. These segments exist in unequal sizes, and their satisfaction is a function of the type of trip and options offered. Not all people want a long trip, or want to do extensive hiking. Amount and length of stays off river and on river would be factors considered in selection of concessioners. Concessioners will be granted flexibility in adjusting trip length to meet public demand. By choosing companies offering a variety of trips, a wide range of visitor options would be made available.

In summary, the proposed changes will not significantly alter the range of options presently available to the river-running public. Commercial passengers may choose trip lengths ranging from 1 to 18 days, and opportunities for off-river use will be greater. Options for the noncommercial passengers will increase, providing a wider variety of choice. Those river recreationists preferring motorized travel will be adversely affected. The option of a short, speedy trip through the canyon will be denied a small percentage of the river-running public.

H. IMPACT ON THE VISITOR EXPERIENCE

Providing a high quality river-running experience is a concern of both concessioners and National Park Service managers. Although the quality of experience is hard to define, there is some general agreement that two major factors have an important effect on the visitor's river trip experience: the amount of use encountered on the river and the kind of trip taken (whether motor or oar). Other important aspects include interpretation and education.

1. Contact and Crowding

Elements of the plan that serve to reduce the resource impacts that result from crowding and congestion at attraction sites will also operate to reduce contacts while on the river, and contact and congestion at off-river areas of interest. These include less variable rates of speed due to the removal of motors, the smaller trip size, coupled with restricted launch scheduling.

At present, commercial trips leaving Lees Ferry travel at different speeds and take 6 to 18 days to traverse the canyon. Fast trips, then, may encounter people who left several days before them, while slower trips are passed by those leaving later. A typical river trip during the 1975 or 1976 season met between three or four other trips on the river each day and spent about 40 minutes per day in sight of other parties. By eliminating the use of motors, the speed variable is reduced considerably. This coupled with daily and weekly launch restrictions, is expected to reduce on-river encounters below present contact levels. Trips would also be scheduled in such a manner as to allow an average of approximately 6.25 miles between groups. Overall, contacts on the river and at attraction sites would be within the range preferred by the majority of the river-running public, which is lower than at present (see Section II. N. 4 for visitor preferences). The variables of trip length, time spent at attraction sites, and length of off-river hiking will continue to influence the probability of contact. Although more total boats will be on the river at any one time fewer groups will be involved. Since trips generally travel in groups, there will be fewer intergroup contacts.

Two elements of the proposed plan could increase the probability of higher contact levels--the allocation of noncommercial use and the short trip to or from Phantom Ranch.

Noncommercial river trips spend more time off river and in the canyon than do commercial trips. The average length for noncommercial trips in 1978 was 19 days. The increased number of noncommercial users staying longer within the canyon could influence contact levels. This potential effect is not, however, considered significant. Noncommercial users prefer even less contact than do commercial users, and will tend to avoid crowded areas.

The more even dispersal of use will also offset the contact or crowding potential of increased noncommercial use.

Because non-motorized craft take longer to traverse a given section of the river, the demand for partial trips to or from Phantom Ranch is very likely to increase. Partial trips would increase the overall number of people who are to take river trips. The amount of increased numbers would be difficult to predict at this time. It might seem at first glance that this activity would increase disproportionately, causing

river congestion and greater use of hiking and camping facilities in this major passenger transfer area. However, there are certain built-in and natural limiting factors. Those factors are:

- There is a campground limit of 75 people at the Bright Angel Camp at Phantom Ranch. This will limit the number of people who would hike down to the river or out with an overnight stay.

- The commercial accommodations at Phantom Ranch have a limited capacity of about 75 people per night which also limits the number of people who could hike in and stay overnight or stay overnight and then hike out.

- There is a limit on the number of mules allowed on the Bright Angel Trail which limits the number of people who could ride a mule in or out. This limit will include the additional mules to be provided for river travelers who cannot hike in or out of the canyon.

Most people hiking into or out from a river trip do so under present conditions in less than a day. In 1978, 3,900 people took partial river trips involving a hike into or out of the canyon. It is expected that the number of people who choose this type of trip will increase in the future by at least 3,000 annually. This increase is not expected to adversely affect contact levels nor create undue congestion or crowding in the Phantom Ranch area. An increase of this amount is not significant when compared to the some 250,000 to 300,000 people who each year hike the South Kaibab and Bright Angel Trails. Also, not all partial trip participants would ingress or egress at Phantom Ranch.

Finally, the reduced party size and the smaller number of persons per boat on the oar-powered river trip will decrease off-river congestion and more nearly approximate visitor preferences. The majority of commercial users favored a small party size of 20 persons or less, and 80 percent preferred to run the river with a party of 30 or less. Most visitors also preferred to meet smaller parties on the river and at attraction sites.

In summary, with the more even dispersal of use during a longer season, daily and weekly launch schedules and small party size, the number of contacts per day and the number of persons encountered off river should be reduced. The visitors' river-running experience, in terms of the amount of use encountered on the river, is expected to increase in quality.

The combination of upstream and downstream use in the remaining 37 miles of river corridor would continue, as would the probabilities of contact and congestion. Because the Lower Gorge is adjacent to a recreation area, the use of high-speed motorboats and greater contact levels are accepted as part of the lake experience. However, the transition from the quiet oar trip to the motorized crossing of the lake will adversely

affect the quality of the visitors experience, in that the feeling of wilderness will abruptly end at Separation Canyon.

2. Trip Character

The proposal to convert from motorized to oar-powered river craft will significantly affect the type and character of the river trip available to the visitor. Each of the following changes will, to a lesser or greater degree, affect the overall quality of the visitor's experience.

- Large motorized craft will be replaced by smaller craft.
- There will be more craft per party and fewer people per boat
- River guides per party will increase
- River parties will spend more time in the canyon
- River parties will visit more sites and stay longer off river
- Motor noise will be eliminated
- The fast, short trip will be eliminated

Research has indicated that non-motorized trips are more pleasing to the visitor (see Section II. N. 4 for discussion). Reasons given suggest that oar travel is seen as more consistent with a natural or wilderness experience. Passengers who had experience with both motor and oar trips preferred the oar trip. They enjoyed the slower pace, could relax; they became more aware of natural sounds in the canyon; and they were able to observe more closely the unique features along the river and more easily ask questions of their guide. Smaller social groupings appear to influence feelings of comfort, friendliness, and comraderie. On oar trips, the passengers could gain a greater knowledge and appreciation of the canyon.

Other factors that may alter trip character and thereby affect the visitor's experience to a minor degree are season of use and new regulations. The slower oar trip allowed more time at a site, visits to a greater number of attractions, and provided passengers an opportunity to see and explore features of interest at their own pace. Oar passengers showed greater knowledge of the canyon and gained a fuller appreciation of canyon resources.

Clearly, the mode of travel, smaller parties, length of time spent in the canyon and lack of noise contribute to the character of the river trip. This type of trip, in turn, influences the overall human experience which includes social interaction, the learning process, satisfaction, and awareness.

In summary, because the oar trip appears to contribute substantially to the quality of the river-running experience, no significant adverse effects on the visitor experience are anticipated due to the proposed change in trip character. However, disappointment and minor inconveniences may be felt by a small percentage of people due to their preference for a faster more active motorized experience. Also, those visitors who cannot spend the amount of time required to travel the entire river by oar, may choose the half-canyon or other less than full-length trip, but experience disappointment in not seeing the whole canyon. Although the quality of the river trip to or from Phantom Ranch would remain the same, the time restraint felt by the individual could adversely affect his or her river-running experience.

Other factors that may alter trip character and thereby affect the visitor's experience to a minor degree are season of use and new regulations.

Climate and temperature impose varying constraints on river runners throughout the year. For instance, cooler temperatures during the winter months require additional clothing for warmth, and summer thunderstorms on many afternoons during July and August can either bring relief from high temperatures or discomfort if caught in the rain.

The extended river-running season will have both advantages and disadvantages depending upon the month of year and the expectations of individual visitors. The spring and fall months, now underutilized, potentially provide the better trip experience; the temperatures are not extreme, rainfall is rare, and natural elements are of more interest. Spring and fall are the times of natural change: bird migrations, nesting activities, desert floral displays, and bighorn lambing. Adverse effects on the visitor experience can occur when the individual prefers the character of a summer trip, but must choose either late spring or early fall to run the river, due to proposed regulation of trip launches affecting the peak summer months.

Fall and winter river trips will provide excellent opportunities for fishing in connection with river running. Rainbow trout in the 6 to 8 lb range are commonly caught,with larger catches up to 18 lbs. Rainbow trout spawning begins in late September and continues through December during which time fishing is excellent. Fishing remains good through most of the winter.

The winter river trip requires a "hardier outlook" on the part of river travelers choosing this season. Winter trips offer more solitude but colder temperatures. River running in the winter presents additional preparation requirements. Where minimal clothing for summer includes cut-off trousers, bathing suits, and light weight shirts, winter travel will require warm, waterproof clothing and, possibly, wet suits. Additional preparations for warmer sleeping gear are also needed. Constant awareness and remedial action to prevent or correct hypothermia is

necessary. If preparations are made and proper precautions taken, winter trips can be very rewarding and are no more difficult or dangerous than other winter sport activities. Night temperatures are usually below freezing during only December and January and daytime temperatures are usually pleasant.

The total river-running experience for most visitors will not be adversely affected by the character of the trip during any particular season. In general, those preferring the summer season trip would be accommodated as would those favoring the winter trip. The overwhelming experience of the canyon itself usually far outweighs the minor inconveniences brought about by climate or temperature.

Similarly, new regulations and restrictions could cause minor inconvenience, but not to the degree that the visitor's experience would be adversely affected. As implied in the previous discussion, the regulation of daily and weekly trip launches reduces the number of persons allowed on the river during the months of highest demand. Some adjustment in terms of selecting a day of the week or month in the season for trip departure will be unavoidable (see Section II, Tables 17 and 18). In 1978, approximately 2,700 persons per month leave Lees Ferry during June, July, and August. The proposed trip scheduling will permit only about 2,000 per month during these 3 months; therefore, 2,100 persons or 18 percent of the total number of visitors leaving Lees Ferry (11,895) during the summer season must choose other months for their trip departure.

The inconvenience of carrying in summer firewood and the carryout of ash could affect some people, however, allowing fires for esthetic purposes should mitigate this inconvenience.

The regulation that human solid waste material is taken from the canyon will affect noncommercial users more than commercial passengers, since waste disposal is already an accepted part of the commercial operation. Private river parties must make their own arrangements for proper waste disposal equipment. Although technically simple, carrying and hauling out wastes could be considered a hindrance by some river runners.

3. Interpretation and Education

As indicated previously, the length of trip, party size, and motor noise influence the type and amount of knowledge gained by the visitor. The interpretive value of the river trip was increased significantly for the people who took oar trips over those who took motorized trips. Communication between 1 guide and 5 people in the relative quiet of the canyon is significantly improved over communication between 1 guide and 15 people masked by motor noise.

The average trip length of 12 days and reduced speed, as well as reduced party size, and an average passenger to guide ration of 1 to 5 will serve to increase interpretive potential. The removal of motor noise

should increase the information available to visitors, and will foster guide/passenger relations and communications, an important factor in their perception of the canyon.

The interpretive value of the river trip has a direct bearing on the quality of the visitor's experience. Interpretation not only fulfills the desire of people to know about various geological, natural, or historical features, but serves to educate an individual unfamiliar with river-running conditions within the canyon. The reason for safety regulations or visitor restrictions must be understood before they can be readily accepted. Visitors who feel they have learned a great deal about the canyon and have gained an understanding of river-running procedures in relation to safety, sanitation and resource protection, tend to give their trip experience a high rating.

Pre-trip education of commercial trip leaders and guides and noncommercial trip leaders is one of the most important factors influencing the interpretive value of the river trip for both commercial and noncommercial passengers. The proposal to expand the orientation/information/ interpretive training program for commercial guides, and to develop a pre-trip program of a similar nature for all noncommercial trip leaders, is viewed as a positive measure that can only increase the quality of the river-running experience. Some noncommercial trip leaders may, at first, feel inconvenienced having to attend a program before floating the river, but the requirement should enhance rather than impair the quality of their trip.

4. Esthetics

The plan contains elements that will improve the esthetic aspects of the canyon. Disposal of human wastes outside the canyon improve the quality of the visitor's experience by removing a current source of esthetic displeasure, the noxious visual and olfactory impacts associated with improper waste burial sites. In addition, potential health hazards are removed by discontinuing the burial of wastes in the beaches.

Restrictions on the use of fire and proper disposal of charcoal residues prevent the "bathtub" effect on beach areas. Darkened patches of beach sand or rings of charcoal created by wave action will no longer impair the visual quality of the beaches.

Elimination of motorized watercraft will reduce noise throughout the river corridor. Motor noise is primarily disturbing to the river-running visitors, but also adversely impacts other backcountry users hiking or camping in areas adjacent to the river. Research has shown that a large portion of river users (44 percent) felt their wilderness experience would improve if motors were banned.

The only development proposed by the plan that could impair the esthetic quality of the canyon or that of lands adjacent to the river for the

visitor is trail construction. New trail alignments that require minor cut and fill, erosion control measures, and other devices to direct run-off could be considered intrusions in natural areas. The proposed single trails to attraction sites will replace 12 to 15 multiple trails in some areas. After obliteration of old trail scars and restoration, the appearance of such areas will be considerably improved.

5. Safety

There are no actions in the plan that would adversely affect the health and safety of the river-running public. The removal of motorized craft will not affect the safety of the river trip. Table 22, (Section II.N. 4. c.) indicates that non-motorized craft have fewer accidents requiring NPS evacuation, but this difference is not statistically significant.

Research indicates that noise levels of motors near boat pilots (83 to 89 dba) approach the national health standard's maximum allowable limits (90 dba). There exists the potential for permanent hearing loss for guides on motorized craft. Motor noise levels may also adversely affect the operator's performance, resulting in potential safety hazards. The removal of motorized craft will eliminate the possibility of hearing injuries and provide a potentially safer trip for the visitor. However, during the motor phaseout period, concessioners and boatmen involved with motorized craft should be aware of and take steps to mitigate impacts of motor noise on boatmen hearing and passenger safety.

The elimination of wood fires during the summer season reduces the number of injuries (burns) associated with improper use or supervision of fires.

Existing regulations concerning sanitation, food preparation, water use, and boating safety will continue to be in effect, with increased emphasis.

Other than cold weather from mid-November to mid-February, there are no added safety problems during the winter months. Water flow during winter is sometimes lower than summer, but is adequate for oar trips.

Powerboating accidents will continue in the Lower Gorge area due to the retention of powerboating and up-river travel from Lake Mead.

I. ECONOMIC IMPACT

1. Visitors

Overall trip costs are not expected to increase significantly due to the implementation of the river management plan. The range of prices offered the visitor will probably remain the same except for inflationary increases, although some increases depending upon the commercial company may be expected, due to changes in the type of trip offered and status of the economy at any given time.

At present, there is little difference between the average cost of an oar-powered trip and a motorized trip. For the 1979 season, river trips are available from 1 day at $125 to 22 days at $1,075. The highest priced trip is an 18-day oar trip at $1,350. The average cost of a full-length 12-day oar-powered trip to at least Diamond Creek for 1979 is $649 compared to an 8-day motor-powered trip to at least Diamond Creek is $571. The difference between these two average costs is $78 with the oar trip providing 4 more days on the river for this price. It is expected that costs for oar powered trips could increase from $100 to $150 for full length trips.

Not all visitors want the same experience, nor do all people want to pay the same for their canyon experience. The allocation of user days among concessioners will provide for a variety of prices from which the visitor may choose. Based upon the average socioeconomic background of the commercial user and the demand for higher priced trips, increased trip costs would not significantly affect this segment of the river-running population.

The noncommercial river runner will be affected by the new regulations. The cost of the private trip will increase due to equipment required for sanitation and cooking. These costs are not expected to cause undue financial hardship for this river-running group.

2. River Guides

Most of the current concessioners could accommodate an increase in use by simply extending their river-running season. This would affect the guides by providing approximately 6 to 7 months work rather than 4 to 5.

River guides operating and preferring motorized float trips may forego job opportunities when concessioners convert to oar-powered craft. The extended season and longer oar trips may increase income for some river guides. Opportunities for employment should be greater due to the increased passenger/guide ratio.

3. Other interests

The Hualapai Tribe operates river-running trips from Diamond Creek to Pierce Ferry. During the past couple of years (1977, 1978) their trips have been rowing to Separation Canyon and motor from Separation Canyon to Pierce Ferry. For their own commercial operation, they will have to continue using oar-powered equipment as far as Separation Canyon as they have done for the past couple of years. They then would have the option to continue rowing across Lake Mead or carry a motor to be put on and used from Separation Canyon to Pierce Ferry. The cost is not expected to create significant economic problems for this operation, since rowing craft is already used from Diamond Creek to Separation Canyon.

A positive economic effect, on the other hand, will likely occur at Diamond Creek. Removal of motors is expected to increase the revenues being paid to the Hualapai Tribe for the use of their road from Diamond Creek to Peach Springs because more companies will likely choose to take their boats out at that point. However, future use may be affected by the fees set by the Tribe and could drop if the fee increases significantly. Some concessioners have indicated that they would take out at Pierce Ferry rather than Diamond Creek if the fees are too high.

4. Regional Economy and Concessioners

The river-running industry makes up such a small portion of the local and regional economies that increasing the total visitor use levels and allowing increased commercial allotments would not have any appreciable effect. The one exception to this would be Kane County, Utah (Kanab), where the river-running industry contributes measurably to the local economy. But, even in this case it is not a significant factor.

5. Park Management

Management costs will increase considerably due to personnel needed for additional patrols, monitoring, and orientation/education/training programs. If additional personnel, equipment, and funding are not provided to properly execute the management plan, negative effects can be expected due to lack of effective orientation provided at Lees Ferry and lack of resource protection, regulation, and training to be provided by the Grand Canyon staff.

J. OUTSIDE INFLUENCES

1. Noise

Unnatural sounds will continue to intrude upon the quiet of the canyon and create a disturbance for many users. Noises from low-flying aircraft, helicopters, and subsonic and supersonic airplanes are superimposed upon and mask the natural sounds. The noise and general intrusion of helicopters being used for takeouts in the Lava Falls area from the Hualapai Tribal lands side of the river will continue. However, location and scheduling of this intrusive activity should minimize its impact on other river runners. Existing noise intrusions from other aircraft overflights which adversely affect the visitor experience will continue until research is completed and the control or scheduling plan is implemented. Further study and intensive coordination with commercial and noncommercial aircraft operators on this complex parkwide problem will be necessary before noise impact can be reduced.

2. Water Flow

The release of water from Glen Canyon Dam will continue to affect river-running activities in the canyon. Water flow fluctuates daily depending

largely upon power demands in the region. When power demands are low, generally minimum flows are released to conserve as much water as possible; when power is needed, high volumes of water are usually released into the canyon (refer to Section II. A. 2 for previous discussions). Low flows are a serious problem. For example, in April 1977, approximately 90 boaters on eight float trips were stranded in the Marble Canyon section due to low water flows of about 1,000 cubic feet per second. The National Park Service and the Bureau of Reclamation worked together for additional water releases (approximately 6,000 cfs) to allow the stranded boaters to move down river to Phantom Ranch. Food had to be flown to passengers of one trip that had been stranded for 4 days. One boat, a 22-foot row boat, was not able to travel the low water flows and was helicoptered from the canyon at Phantom Ranch. Extremely low water flows make river running virtually impossible, except for trips with small rowing boats (18' or smaller). The April incident caused 31 commercial trips to be cancelled, and approximately 135 additional trips to be eliminated on the basis of low water flow for May and early June 1977.

During times of low precipitation, and especially during periods of drought, the following effects can be anticipated:

- River passengers may become stranded, depending upon their location in the canyon, the amount of water released during the week, and size of water craft.

- Oar-powered boats will encounter less problems during low water releases than do larger motorized trips at present.

- During minimal flows, only the small oar craft can be expected to negotiate the canyon.

- Trip cancellations and subsequent economic loss to the concessioners can be expected, but will be less when large motor trips are eliminated.

- Potential visitors will be disappointed if their trips are cancelled.

During periods of high precipitation or peak power demand, excess water may be released, resulting in the following effects:

- High flows that will not adversely affect the river-running industry.

- High flows that will allow the large boats to negotiate the canyon.

- Rapids can become hazardous, especially for inexperienced river runners, and accidents can increase.

. High flows that, coupled with daily fluctuation, will continue to erode beach sands more rapidly than more stable or consistent flows.

Adjustments in scheduling and management of river trips will probably continue for both the National Park Service and river runners due to the regulation of Glen Canyon Dam. Efforts will be made to coordinate water releases for the benefit of the river-running public, but it is understood that the purpose of Glen Canyon Dam is to satisfy water and power demands of the region's growing population.

IV. MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

A. MITIGATION OF IMPACTS ON NATURAL AND CULTURAL RESOURCES

To continue human use of the river corridor will cause resource impacts. Under the existing use levels of 96,600 user days (commercial passengers and noncommercial participants), irreversible impacts are being inflicted on the natural and cultural resources of the Inner Canyon area. The proposed action allows for an increase to 175,950 user days annually. (This figure does not include crew user days.)

Although the research findings demonstrate no clear correlation with absolute numbers of visitors and the rate and magnitude of resource damage, it is evident that unless the resource impacts are mitigated, an increase in the total user days would lead to an acceleration of the adverse impacts.

The direct measures included in the proposed action to alleviate this human impact on the natural and cultural resources are presented below.

Reduce Congestion at Attraction Sites: Congestion of visitors at attraction sites has been found to be a principal cause of resource impact. Too many people in an area at the same time accelerates impacts on resources. Limiting to 65 the maximum number of river runners that may launch daily at Lees Ferry will mitigate these potential impacts.

Impacts resulting from congestion will also be mitigated by more uniform rates of travel along the river. Full-length summer trips currently vary from 6 to 18 days. Under the proposal the majority of summer trips will vary from 8 to 18 days. This should reduce the potential for trips to overlap at attraction sites by about 25 percent.

Reduced Congestion On The River: The conversion of all the boats on the river to oars will increase the number of watercraft on the river. The reason for this is that the average oar boat holds less passengers than does the average motor craft. The factor contributing most to the visitors' perception of crowding is the numbers of trips they see on the river and not the number of boats they see. The increased boats will be in the visitors' own party and the perception of crowding should not increas: The overall contacts on the river between different groups will decrease from the current average level, thus maintaining or improving the visitors' experience. These contacts will be mitigated by the reduced launches at Lees Ferry and the spreading out of use over the season.

Establish Trail Systems at Attraction Sites: There are several attraction sites and side canyons along the Colorado River where multiple trail systems have evolved. The impacts that result include vegetation trampling, destruction of cultural resources and increased rates of erosion. These impacts will be minimized by constructing and maintaining trails.

In most cases an existing trail will be designated and made obvious. New trail construction will be minimal, generally limited to short sections of an existing trail. Topography, slope, unstable soils, and appropriate access will be analyzed before trails are developed. Special care will be taken to avoid visually obtrusive alignments. Each trail alignment will be designed to avoid unsightly cut and fill, excessive erosion, and impact on cultural resources. All alignments will be cleared by an archeologist prior to construction and will be altered to avoid impact or disturbance of cultural resources.

Restrict Use Of Unique Resource and/or Ecologically And Culturally Sensitive Areas: Because of their unique features and/or sensitivity, the restricted areas shown on the maps on pages I-4 - 6, will be closed to visitation and/or camping. Other areas or sites, including those proposed for archeological or historical evaluation and the ecologically sensitive areas, will be subject to closure or restriction should monitoring show unacceptable impact resulting from visitor use. Camping beaches may be closed on a rotational basis if resource impacts are not significantly reduced under the proposed actions.

Carry out Solid Human Waste: Human fecal and related wastes will be carried out of the canyon. This action has already been implemented successfully in 1978, resulting in significant improvement in the condition of beaches.

Cans, rubbish, wet garbage, cooking greases, and other refuse of any kind may not be discarded in the canyon. All refuse must be carried out of the canyon and placed in an acceptable disposal area. Any solids such as coffee grounds or food particles from dishwater must be strained and put in garbage containers before such liquid wastes are drained into the main river current. No waste liquids may be dumped on beaches or in eddy currents.

Restrict Soaps and Detergents: The use of detergents, soaps or any other form of cleansing agent is specifically prohibited in any side stream or spring or within 100 yards upstream or downstream of any live side stream. The use of soap is restricted to the Colorado River and low phosphate soap is required by 40 CFR, Section 120. It is the responsibility of the commercial guide or the noncommercial trip leader to ensure that members of his or her group follow the National Park Service guidelines on resource protection. It is the responsibility of the National Park Service that these guidelines are clearly and precisely stated and that each guide/trip leader is well versed in these regulations. These guidelines will have no protective import if they are not adequately communicated to the user.

Educate Guides, Trip Leaders and Visitors: Commercial guides and noncommercial trip leaders will be trained in minimum impact techniques and practices. The National Park Service will provide:

- Copies of the operating requirements to every guide and trip leader prior to launching.

- Audiovisual education programs on minimum impact practices to all commercial and noncommercial passengers prior to departure.

- Guide/trip leader training programs in resource protection/safety/sanitation/interpretation. The importance and necessity of a program of this design has been stressed by various research investigators (Johnson, 1977). This program will be the framework for a future guide/trip leader licensing program. Training sessions for commercial operators held twice yearly, spring and fall, for five days each, will include instruction on resource protection, review of operating requirements, safety and sanitiation procedures, first aid and rescue, and natural history interpretation.

Increase National Park Service Patrols of the River Corridor: National Park Service patrols of the river corridor are imperative. Patrol duties include interpretation, first aid, rescue, trail patrol and maintenance, and enforcement of regulations. Approximately two patrol trips each month will be made from April 1 to September 30 and one trip each month the remaining months.

B. MITIGATION OF IMPACTS ON SOCIOECONOMIC FACTORS

Accommodate visitors who desire a shorter, less expensive Grand Canyon River trip: Commercial trip concessioners will be encouraged to provide partial canyon trips to and from various locations along the river corridor. The primary partial trip ingress and egress location is expected to be Phantom Ranch. Egress at Lava Falls and Whitmore Wash is expected to increase. The primary mode of access to and from Phantom Ranch is by foot, but arrangements can be made for mule transport. Mule and/or horse transport in and out of the Canyon will also be available at Whitmore Wash, for those who desire this type of service. Helicopter takeouts in the Lava Falls area will likely continue. Helicopter services will operate outside the park boundary. Location and timing will be arranged with concessioners and owners of the adjacent lands being used for this purpose, to minimize helicopter impact on other river runners and canyon visitors.

Partial river trips will provide the opportunity for less expensive river trips for those who want them.

The provision of trips beginning at Phantom Ranch will also allow concessioners to increase the numbers of passengers taken down the river in a year. This will mitigate the impacts of the reduced commercial passenger launch from Lees Ferry during the midsummer months.

Motorized River Trips Provided On Other Western Whitewater Rivers: Motorized whitewater river trips are currently available on other sections of the Colorado River system, as well as on other western whitewater rivers. Sections of the Colorado River and its tributaries on which motorized trips are available include Cataract Canyon (4 to 5 days), Desolation-Gray Canyon on the Green River (4 to 5 days), Westwater Canyon (1 to 2 days), San Juan River (3 to 5 days). It cannot be guaranteed that motorized trips will remain on all these whitewater river sections; however, draft river management plans are published for Cataract Canyon and Desolation-Gray Canyon that indicate motorized craft will be allowed to continue. Thus, shorter motorized trips are available within the region.

Continue Health and Safety Standards: Health and safety standards have been designed to reduce accidents, injuries, and health hazards. Continuing emphasis will be placed on adhering to these standards to further reduce incidents. (See Appendix C)

Commercial concessioners will be required to comply with the Health and Sanitation Section of the annual operating requirements.

Assess the River Management Plan: This plan will be assessed annually to evaluate the adequacy of launching schedules in relation to contact, crowding, and resource impact, to determine whether or not an equitable distribution of user days is being achieved; to determine if total numbers of people are within the resource capabilities of the river system; and to determine adjustments, if needed, in user days, types of trips, and service to the public.

Phase Out Motorized Trips: To mitigate economic impacts on motorized trip concessioners, motors will be phased out over a 5-year period. During this 5-year period a minimum of 50 percent of the summer season will be allocated to both motorized and non-motorized travel. This will allow concessioners to phase out the use of their motorized craft, amortize them, and train guides in the operation of oar-powered craft.

C. MONITORING AND RESEARCH REQUIRED

Present research projects on the Colorado River have delineated the status of the river system, as well as providing information on possible future biological and sociological trends. The physical and biotic

inventories have aided in pointing out areas in which future research and monitoring is desirable. Future research and monitoring will be instrumental in indicating the ecological responses brought about by changing management procedures or environmental conditions, as well as needs to monitor visitor satisfaction and shifting demands of interest groups and economic changes.

The monitoring of sociological trends regarding contacts, crowding, and, particularly, relative demand for commercial and noncommercial river trips is essential. The proposed action significantly modifies use patterns. Contact and crowding data provided from recent research was based on current use levels and patterns. Therefore, as this plan is implemented, there will be a critical need to monitor use patterns under changed conditions.

Also, there is very intense concern about the relative demand for commercial trips versus noncommercial trips. This is evidenced by two law suits that have been filed and are still pending (Wilderness Public Rights Funds vs. Kleppe et al., 1976; and Eiseman et al. vs. Andrus et al., 1977). Additional research is needed to aid in determining the relative demand. Monitoring of demand fluctuations is needed as well.

The various research projects have determined that severe impact is being inflicted on the natural system of the Colorado River corridor. These impacts will be alleviated, for the most part, by the mitigating measures that are included in the proposed action. However, the resource monitoring program must be continued to detect deterioration in the resource. The resource alterations that will or could take place over a period of sustained use (15 to 20 years) are unknown and can only be determined by careful continued monitoring of the system.

Of highest priority is a monitoring program that is designed to provide an annual assessment of the environmental health of the campsites. This program will consist largely of study areas consolidated in a single series of research sites along the river. These areas will have a high biotic resource rating, thus lending themselves to multidisciplinary investigations of fishes, terrestrial vertebrates, water quality, algae, vascular plants, beach erosion, etc. This would have the advantage of providing resonably complete biological information on several areas as they undergo changes, enabling analysis of the complete system rather than individual aspects.

A great need exists for additional baseline data concerning the physical substrate. This would be provided by high resolution verticle color aerial photography. Field surveying in geomorphological, macrofloral and human impact studies is essential to establish detailed calibration data to correlate with photographic information. Aerial photography should be reflown at least once between 1980 and 1985 to provide a

documentation of all major changes taking place along the river. Resurvey of all beach profiles on the benchmark beaches should be undertaken sometime in the period of 1978 to 1981 to allow an accurate assessment of erosion and deposition rates.

Water quality monitoring will continue to assess any future changes in water quality in both the river and tributaries. This will provide human impact and habitat data regarding aquatic life, especially endangered fish species affected by alterations brought about by Glen Canyon Dam.

Further studies will be initiated to better define the relationships, both intra- and interspecific, of fish occurring in the region. This would include surveys of the river in addition to systematic surveys of selected tributaries and the collection of fish for analysis of food habits, general health and reproductive conditions. Benthic samples should be taken at each tributary to aid in identification of fish stomach contents, to help define key tributaries and to determine why they are utilized by certain fish. This will provide information concerning endangered fish species, particularly the genus Gila. Restoration of habitat is essential to the survival of Gila in the Grand Canyon area. Monitoring studies of both chub species should be carried on to determine population trends and spawning success.

D. COMPLIANCE WITH THE NATIONAL HISTORIC PRESERVATION ACT AND THE ENDANGERED SPECIES ACT

1. National Historic Preservation Act

All actions in the proposed plan will comply with the Procedures of the Advisory Council on Historic Preservation (36 CFR 800) and National Park Service historic preservation policies.

In compliance with Executive Order 11593, a complete cultural resource inventory has been undertaken (Euler, 1978). Both pre-historic and historic sites will be evaluated for significance and those meeting the criteria will be nominated to the National Register of Historic Places in consultation with the Arizona State Historic Preservation Officer.

Repair or stabilization of cultural sites will be accomplished in accordance with Historic Structures Handbook, Part II, Ruins Stabilization, the National Park Service Administrative Policies (1978), the Act to Provide for the Preservation of Historic American Sites (49 Stat. 666), and the Act for Preservation of American Antiquities (34 Stat. 225).

The Advisory Council on Historic Preservation and the State Historic Preservation Officer have commented on the plan actions. Their comments are incorporated in Section IX. D.1. of this statement.

2. The Endangered Species Act

In compliance with the Endangered Species Act, measures are being initiated to protect the endangered humpback chub. The mitigating measures necessary to protect this species include continued enforcement of the existing regulations regarding the use of detergents in side streams, and closing this area to angling and seining. To effect maximum protection of this species, angling and seining has been prohibited for .5 miles above and below the confluence of the Little Colorado River and the Colorado and all of the Little Colorado River above the confluence, within the park.

The bonytail chub is believed to be decreasing in numbers and is currently being considered for status as a threatened species. The National Park Service has contacted the Fish and Wildlife Service and has completed the consultation process under Sec. 7 of the Endangered Species Act. Their evaluations are included in Section IX. D.1. of this document.

V. ANY ADVERSE IMPACTS THAT CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

The total number of river runners that annually traverse the canyon will increase by approximately 2,000 persons (from 11,730 to 13,455). The plan will result in an estimated 79,680 additional user days (from 96,600 to 175,950; crew, research and patrol trips not included). Although mitigation of resource impacts resulting from visitor use patterns is provided for in the proposed action, accommodating visitors in the system at all results in a certain amount of unavoidable resource impact. Foot traffic on beaches, side canyons, and attraction sites will continue to accelerate soil erosion and impact vegetation.

Minor soil and vegetation impacts will occur during the winter season due to driftwood collection and wood fires. Trail construction will result in short-term minor erosion until the affected areas are naturally stabilized.

Normal visitation to cultural sites will result in minor, but unavoidable deterioration. Vandalism or carelessness will also remain as potential unavoidable impacts.

An unavoidable adverse impact resulting from the proposed removal of motors will be that those persons favoring the use of motorboats will be disappointed. The loss of a fast, motorized trip from Lees Ferry to Diamond Creek cannot be completely mitigated.

There will be a slight shift in the overall visitor characteristics of the river-running population due to the greater allocation proposed for noncommercial river runners.

The elimination of all wood fires, except for esthetic purposes or supplemental cooking during the high use period, will result in impacts that cannot be avoided. All wood for summer season fires must be carried in and ashes carried out, causing the user to suffer some inconvenience. The use of wood for esthetic fires and charcoal briquets for cooking and use of driftwood for fires during winter will continue to be a small source of unavoidable beach pollution in that ashes will be occasionally incorporated into the beach soils due to spillage from fire pans.

Human waste carry out systems are set up at camp sites but are not set up during the day at attraction sites. As a result, there will be the unavoidable impact of a small amount of human body waste accumulation at attraction sites. Further work on method and equipment to resolve this problem is underway.

Approximately 3,000 persons will be adversely affected during the months of June, July, and August due to fewer trip launches and lower authorized

passenger departures. Rescheduling of trip launches from weekends to mid-week periods will require some people to adjust vacation schedules during the summer season. This is an unavoidable impact necessary to mitigate impacts of crowding and congestion caused by past heavy weekend launches.

Inconvenience due to time spent meeting specific regulations or attending an orientation program may prove adverse for some noncommercial river runners. Trip leaders will have to commit an extra day for training and orientation before running the river.

The noise from helicopters taking out passengers from river trips will be an unavoidable impact.

VI. THE RELATIONSHIP BETWEEN LOCAL, SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The unique combination of scenic, biotic, geological, archeological, and historic values within the river corridor of Grand Canyon will be perpetuated over the long term. However, use by 13,455 people each year will unavoidably alter or disrupt some elements of the riverine environment. Even though the process of natural biotic response to unnatural change has occurred within the riverine environment due to Glen Canyon Dam, human use should not adversely accelerate the process nor impair the new systems to the point of decreased productivity. Erosional forces of the river and other natural processes are intensified by human activities, such as camping and hiking. Short-term visitor enjoyment must be weighed against the relatively long-term adverse effects of use on the river environment.

Increased use proposed by the plan will continue to cause erosion and vegetative disturbance in some beach areas (250 acres). The removal of human wastes, kitchen debris, and ash and charcoal from the canyon will enhance the beach environment over the long term.

Multiple trailing at prime attraction and side canyon sites will be reduced. The proposal to construct or designate trails to prime sites will reduce high impacts such as compaction, gullying, and erosion. Approximately 5,000 acres will be maintained and enhanced over the long term. However, short-term visitor use and activities will continue to cause soil disturbance and some inadvertent loss of cultural materials, but the overall health of the ecosystems and the integrity of cultural resources are expected to be maintained.

Short-term adverse effects will be experienced by both the river-running public and the commercial operators. Restrictions, rules, regulations, and requirements are the adjustments that must be accepted if use is to be increased and a quality wilderness experience maintained. Rules, restrictions, and regulations may also be considered adverse over the long term. An added burden will be placed on managers, operators, and visitors alike. Some visitors resent regulations and feel they should not be restricted in any way.

However, the required training, orientation and minimum impact regulations will provide both immediate and long-term benefits. The prohibition of human waste burial in beach sands will remove both esthetic and environmental disturbance. The elimination of wood fires during the summer season will disappoint many river travelers, but the restriction mitigates the impact of dwindling supplies of driftwood in the river corridor. The natural and cultural resource impacts associated with this overuse will be significantly reduced. Both short-term and long-term resource protection gains are realized. Orienting river runners in minimum impact techniques will benefit the canyon environment in the long term.

Visitors may not always be able to run the river at times they prefer. Scheduling may become a short-term inconvenience. Regulation of river trips to achieve less contact and prevent congestion within the river corridor will allow more users to experience the canyon under conditions approaching wilderness solitude. Short-term visitor inconveniences were weighed against the short- and long-term benefits of maintaining a high quality river trip experience.

The elimination of motorized craft will disappoint and inconvenience a relatively small percentage of visitors and operators who prefer short, fast, river trips through the canyon. This loss was balanced against the higher quality oar trip experience that could be provided for the majority of present river users and perpetuated for future generations. The preservation of this quality experience seems imperative as the availability of "wilderness areas" dwindles before the demands of an expanding population.

The long-term productivity of the canyon in terms of maintaining environmental quality, social appreciation, and enjoyment of the visitor will be enhanced by the plan actions.

VII. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The proposals in the Colorado River Management Plan result in few irrevocable effects on the canyon's resources. The plan actions and the proposed mitigating measures are designed to lessen current detrimental trends and keep resource impacts at an acceptable level.

Any use of the resource will result in some loss of soils and vegetation in beach areas and at attraction sites. The proposed actions include the building of trails to minimize this impact; ironically, the trails themselves are commitments of the landscape over the long term. However, the area committed to random access will be reduced by approximately 5,000 acres by the plan.

Some loss of archeological and historical materials will occur due to visitor use, but if ruins are monitored, protected and stabilized this impact should be minimal.

There are no natural or cultural resources irreversibly or irretrievably committed to destruction or consumptive use by this proposal. There are no actions in the plan that would cause direct loss of historic or archeological sites, the elimination of wildlife habitat, or impairment of any threatened or endangered species.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION (STATUS QUO)

Under the no action alternative, total use would be approximately 13,000 to 14,000 persons per year or 122,600 user days. This would include 89,000 commercial, 7,600 noncommercial, 25,000 crew, and 1,000 administrative user days. Length of trip would range from 7 to an unlimited number of days. Persons launched each day from Lees Ferry would continue to be 150 and higher, with up to 15 noncommercial passengers each day.

Use of motors would continue to be left to the discretion of each commercial operator or noncommercial river runner.

Allocation of use between commercial and noncommercial parties would remain 92 and 8 percent, respectively, and allocations among commercial concessioners would remain the same.

Subsequent to publishing the draft environmental statement, the requirement for human waste haul out and changes in requirements or use of fires have been implemented. These changes now represent the status quo. The changes have essentially mitigated the problems previously associated with human waste disposal and use of fires. Current regulations would continue to be in effect, except that patrols would be increased to monitor natural and cultural resources.

1. Impacts on Natural Resources

Irreversible physical and ecological changes would continue to occur in the riparian zones of the river corridor as a result of present visitor use patterns and activities. Soils and vegetation at beach and attraction sites would receive heavy impact from visitor congestion and trampling and clearing of vegetation. Twenty-five percent of the beaches suitable for camping areas (250 acres) would continue to receive heavy impact from camping.

Existing resource impacts are discussed in Section II. M. The following recapitulation of research findings indicates the kinds of resource impacts that can be expected to continue under this alternative:

> The physically and biologically fragile desert ecosystem cannot withstand the current uncontrolled patterns of off-river use. Therefore, the present chaotic patterns of foot traffic to side canyons, attraction sites, and beach terraces must be controlled (Carothers and Aitchison, 1976).
>
> The interrelationship between trampling, impacted vegetation and aeolian erosion is evident at attraction sites and some heavily used camps (Carothers and Aitchison, 1976; Howard and Dolan, 1976).

The impact associated with multiple trails changes the plant community structure in the immediate vicinity of the trail (Carothers and Aitchison, 1976).

2. Impacts on Cultural Resources

Visitor congestion at archeological or historical attraction sites would continue to cause deterioration due to uncontrolled foot traffic, dislocation of cultural materials, and heavy use. Increased patrols, protective devices, educational programs or prohibiting visitation to most of these areas could prevent further resource deterioration in compliance with Executive Order 11593.

3. Socioeconomic Factors

The impact on the visitor under the no action alternative would be moderately beneficial for most commercial passengers, but adverse for noncommercial river runners in that use allocations for the two groups would remain at the present ratio.

Generally, most visitors are satisfied with their Grand Canyon river trip. Opportunities for the majority would remain the same under the status quo. However, the character of the river trip and the quality of the experience would continue to be impaired for some and certainly not improved for the majority under the no action alternative. Motor noise, high contact levels, crowding at attraction sites, inadequate interpretation and education, and unsatisfactory esthetic conditions would persist. The following research conclusions are indicative of continuing and future effects:

The present use patterns of the river result in visitor satisfaction, with 85 percent of the visitors' rating their experience as "excellent" or "perfect" (Shelby and Nielsen, 1976).

The research findings show that the highest quality wilderness river experience is attained on non-motorized craft (Shelby and Nielsen, 1976; Thompson et al., 1975).

Most river travelers (80 percent) accompany large groups on motorized trips. Boatmen on these trips are less accessible either generally or for specific information (Shelby and Nielsen, 1976).

On motorized craft, pilot to passenger communication is possible, but the reverse is difficult or impossible when the motor is operating (Thompson et al., 1974).

Motor noise is detrimental to normal relaxed conversation and frequently affects interpretaion of park resources (Thompson et al., 1974; Shelby and Nielsen, 1976; NPS).

Passengers on motorized trips are almost entirely denied the aural dimension of a wilderness during their on-river exposure to the resource (Borden, 1976).

Significant temporary hearing losses occur for pilots and some passengers on motorized craft (Thompson et al., 1974).

Oar trip passengers knew more names of places and features in the canyon than did motor trip passengers. There were no differences between the motor and oar passengers, however, in the percent who carried guide books or the number of books and articles they read about the canyon (Shelby and Nielsen, 1976).

A typical trip during the 1975 or 1976 season met between 3 and 4 other trips on the river each day and spent about 40 minutes per day in sight of them. The number of people on the trips seen each day amounted to about 70 people (Shelby and Nielsen, 1976).

A majority of users, 57 percent, said they would rather run the river with a small (20 persons or less) party (Shelby and Nielsen, 1976).

It can be assumed from the above that motor noise, large party sizes, and high contact levels would continue to affect a majority of the visitors. Eighty percent of those running the river would have a significantly reduced opportunity for interpretive and educational experiences due to motor noise and the size of the group. On the other hand, oar passengers (20 percent) seeking the wilderness-type trip would continue to be affected by noise intrusions, crowding, and high on- and off-river contacts. Education/interpretation programs would be unavailable to noncommercial river guides and passengers under this alternative.

Under the status quo management of the river, no significant adverse economic impact is anticipated.

The river trip concessions in Grand Canyon National Park represent a multimillion dollar industry. Most float trip concessions are earning healthy profits. This situation is expected to continue. Although the profitability of a concession is not significantly related to size (in sale of user days) of river trip concessions, the larger companies have a greater potential to maintain economic stability than do the smaller companies. The concessioner allocations would remain the same; therefore, some small companies that might require additional user days to remain economically viable would be adversely affected under the no action alternative.

B. INCREASE THE VISITOR USE LEVEL

This alternative would increase the visitor use level to the absolute physical carrying capacity of the system. It is important to emphasize, however, that the quality of the visitor experience provided by this alternative is not as high as that anticipated under the proposed action.

The physical capacity of the river system is limited mainly by the availability of camp space within reasonable traveling distance each day. Reasonable spacing between groups is also a limiting factor. Within the above constraints and allowing for five groups per day to be launched (one group of 8, one of 20, and three groups of 40), the daily launch capacity would be 148. Assuming a 182-day season and 12 days to complete the trip, the annual capacity for this alternative is calculated as follows: 148 people/day x 182 days = 26,936 visitors per year x 11 user days per trip = 296,296 user days (Borden et al., 1976). Borden's study of carrying capacity uses 12 days as the basic trip length. However, since only 11 nights are spent in the canyon, he assumed that 11 user days are utilized on a standard trip, to arrive at total annual capacity of 296,296 user days. This is contrary to NPS assumption that a passenger day is counted for any passenger for any part of one day in the system and therefore capacity by this assumption is 323,232 user days, almost 2-1/2 times the present use level. Present use levels, however, appear to be moderate to high for a wilderness experience (Shelby and Nielsen, 1976).

Under a very tight scheduling system of launch days and times, campsite space assignments, structured river travel restrictions, time and area limitations at attraction sites, and a standardized trip length of 12 days, this alternative could increase the total visitor use level to approximately 27,000 visitors and the total number of user days to 323,232. This is an 85 percent increase in total visitors and a 242 percent increase in total number of user days over the status quo.

1. Impact on Natural and Cultural Resources

Section II. M. and the no action alternative address impacts on natural resources that are and will continue to result under current use levels and patterns. A pervading fact of the discussion on visitor related impacts is that the total number of visitors does not effect impacts as much as their activities and patterns of use.

By increasing the total use level by 85 percent, there will be no change in the kinds of impacts; however, the rate these impacts are inflicted on the resource is expected to increase, even with the mitigating measures in the proposed action, leading to an overall rapid deterioration of the natural resources. With this magnitude of use, crowding and

congestion will increase resulting in increased resource impacts. Unless campsite assignments were made, especially in the bottleneck areas of the canyon, overloading of camps would occur. The Park Service would have to increase staffing several times over to handle the noncommercial permit processing, commercial trip scheduling and evaluation, patrols, information and education programs, and monitoring.

This alternative would also increase visitation of the cultural sites in the canyon, unless limitations were placed on site visitation. Increased visitation would accelerate the rate of deterioration of these resources and, without mitigation, could result in the loss of nonrenewable resources.

Without intensive mitigation of the impacts associated with disposal of wastes, this alternative would increase the deterioration of the environmental and esthetic quality of the riparian corridor, as well as creating a greater potential for serious health hazards.

2. Impact on the Visitor

The visitor would be affected by trip length, strict regimentation, and amount of time allowed off river.

The length of both the private and commercial trips would be affected. Only 12-day trips would be possible. Currently, commercial trips average 8.7 days in length and noncommercial trips average 17.5 days in length. This would affect both the noncommercial and commercial river runners' maximum and minimum trip length and significantly reduce options for trip variety and experiences. The option of taking 6-day trips to or from Phantom Ranch would continue to offer the visitor a river-running experience in a short period.

Under this alternative strict scheduling would be employed to reduce on- and off-river contacts. At this level of use with outlined travel constraints, contacts would be at or above current numbers. Trips would be staggered to allow an average of 1.5 to 3 miles between. However, trips would overlap resulting in contacts, as they stopped at different places along the river. Selection of this alternative would also require regimentation and scheduling of all aspects of the visitor experience in order to provide for resource protection.

Due to the scheduling necessary to accommodate the increased number of visitors, off-river use would be limited to no more than 3 to 4 hours at a time. This alternative would eliminate virtually all overnight off-river camping. Ultimately, more off-river use would be concentrated at the attraction sites that are easily and quickly available from the river. Regimentation, scheduling and lack of options would detract from the quality of the visitor's experience.

This alternative would increase the need for interpretation and education of the visitor in minimum impact techniques. Some of the resource impact caused by increased use could be mitigated by teaching the visitor minimum impact techniques. In addition, the standard trip length of 12 days would increase interpretive services.

3. Economic Factors

Economic effects, under this alternative, would be beneficial to concessioners.

The river-running industry makes up such a small part of the local and regional economies that increasing the total use levels by 85 percent would not have a significant impact on these economies. The only exception to this would be Kane County, Utah, where the industry makes up a sufficiently important part of the local economy that such an increase would have a noticeable effect.

The river-running industry employs a limited number of full-time people. The majority of guides are seasonal due to the seasonal nature of the business. Most of the current concessioners could accommodate an increase in use by simply extending their running season with existing equipment and personnel. Significant additional employment, however, is possible under this alternative.

This increase in visitor use levels would have a considerable effect on park management. A detailed schedule of launch dates and times would have to be developed. An intricate scheduling of campsite assignments and times at camps and attraction sites would be necessary. All river runners, including commercial, noncommercial, and administrative trips would have to be intensively scheduled. This would require additional manpower and time, planning both pre-season and during the season for education and training. Additional patrols would be necessary to ensure that assigned campsites are being used at the right location by the correct party, requiring additional personnel and river-running equipment.

In summary, impacts on natural and cultural resources would increase. A greater number of visitors would be accommodated in the river corridor, but options would be severely limited and the river-running wilderness experience degraded due to regimentation and strict scheduling. Economic benefits would be accrued to the concessioners, but costs would increase considerably for park management.

C. REDUCE VISITOR USE LEVEL BY APPROXIMATELY 50 PERCENT

Reducing the use levels by 50 percent would result in a total of approximately 55,000 annual user days and, under patterns of current use, approximately 7,000 visitors. The 55,000 user day level is the original

use level as proposed in the final environmental statement of the 1973 wilderness recommendation for the Grand Canyon Complex. This proposal was not adopted due to the Grand Canyon Enlargement Act and restudy of the proposed wilderness areas.

1. Impacts on Natural and Cultural Resources

With a 50-percent reduction in user days and total visitors, the rate of irreversible impacts may slow down, but the simple reduction in visitor use levels will not affect the magnitude of change nor stop impacts on the natural resources.

Off-river hikes to side canyons and other areas of historical, archeological, and scenic interest are an integral part of the river trip experience. A reduction in visitor use levels would not necessarily change the existing patterns of off-river use for the visitors. Again, patterns of use are more impacting than actual use levels.

The present impact on the cultural resources results from vandalism and direct visitation to the historical and archeological resources of the Inner Canyon that are neither stabilized nor protected. Reducing the visitor use levels by 50 percent will possibly slow down the rate of deterioration, but will not affect the magnitude of change nor solve or stop the problems of visitor-related impacts.

If, however, the reduction of visitor levels under this alternative were combined with the protective, regulatory and scheduling actions described in the proposal, natural and cultural resource impacts would be reduced far below those anticipated under the proposed plan. The natural purging capacity of the river system probably would not be exceeded and the potential for natural restoration would be greatest under this action.

2. Impacts on the Visitor

The major adverse impact of this alternative is the reduction in the number of persons who could experience a river trip through the canyon. Approximately 7,000 persons per year would be denied the opportunity to visit a unique canyon wilderness; and the non-commercial visitor, under present allotments, would be severely restricted.

The issue of crowding as used in this document, partially reflects the ability of the visitor to perceive his or her experience along the Colorado River as a wilderness or recreation experience. The parameters that will affect the visitor's perception of the experience are as follows: (1) frequency of on-river encounters with other groups; (2) frequency of encounters at attraction sites; and (3) frequency of encounters at camping areas, mode of travel, and length of stay. At present use levels, 91 percent of the river runners define their river

trip as a wilderness experience (Shelby and Nielsen, 1976). Reducing the visitor use level by 50 percent would simply improve upon a situation that is generally satisfying. But such a reduction of user day levels will not, by itself, necessarily improve the character of the river trip or the quality of the wilderness river-running experience.

At present use levels, interpretation of the natural resources has been evaluated as less than desirable (Thompson, et al., 1975; Shelby and Nielsen, 1976). Reasons given for the "less than desirable" rating for current interpretive practices are (1) motor noise, (2) length of trip and (3) size of group. Reducing the current visitor use level by 50 percent would have no effect on the above items and thus have no effect on changing the interpretive experience of the visitor.

Substandard quality experiences that now result from visitor use patterns and activities can be mitigated by a combination of revised river-running regulations and/or education programs and scheduling, as well as conversion to oar-powered travel. The 7,000 persons who would be afforded the opportunity to run the river under this modified alternative would then have the fewest contacts, little or no esthetic intrusions, and a purer wilderness experience.

3. Economic Factors

Depending upon how allocation of this reduced use was made, especially among commercial concessioners, it could conceivably eliminate up to half or more of the existing 22 companies. Obviously this would cause financial hardship to those companies that are eliminated.

However, mergers or combinations could enable them to survive in a new form. The primary issue with 50 percent reduction is whether prices would increase. The cost of a trip would probably go up by as much as 30 to 40 percent, even 100 percent to clear the market. From data presented by Parent, 1976, it is hypothesized that the reduced level of use and a shift to higher priced trips (reduced commodity) would, therefore, narrow the availabilty of trips to visitors with higher income.

Employment would be affected to a moderate degree since there are currently about 200 river guides. The reduction of visitor use levels by 50 percent would result in fewer than 100 part-time jobs being lost.

Management of the river corridor under this alternative would be less costly than under the proposed action. Staffing needs would be reduced due to reduced river patrols and educational services. Informing passengers and guides of river-running procedures and regulations would be easier and less costly.

In summary, a simple reduction in visitor numbers would not necessarily improve existing environmental conditions, nor improve the quality of the visitor experience. Combining reduced visitor use levels with trip scheduling, resource protection requirements, and the elimination of motors would benefit both the visitor experience and the resources of the river corridor. However, a significant number of persons would be denied the river-running experience and approximately half of the concessioners would suffer economic hardships.

D. PROVIDE EXCLUSIVE PERIODS (JANUARY 1 THROUGH JUNE 30) FOR NON-MOTORIZED USE

This alternative would provide periods of time when only oar-powered trips would be available to all river runners traversing the canyon. During the periods wherein motorized use was allowed, the status quo would be maintained. The period of use split from January 1 to June 30, with a 10-day transition period from motors to non-motors, would result in a 50-50 user day split at present use levels.

1. Impacts on Natural and Cultural Resources

Natural or cultural resources would not be affected to any significant extent by this alternative. Oar trips, due to less variable speeds and fewer people could, however, serve to lessen crowding and congestion at attraction sites and, thereby, reduce resource impacts during the first half of the year. Scheduling of daily and weekly trip launches, similar to that of the proposal, as well as waste disposal regulations would have to be implemented.

2. Socioeconomic Factors

The effects on the visitor would vary depending upon the season of choice. During the motorized periods, this alternative would maintain the status quo in terms of a variety of trip lengths (5 days to 18 days). During the non-motorized periods, the short 5-day trip through the entire river corridor would not be available.

It has been demonstrated that non-motorized trips are esthetically more pleasing to the park visitor. This alternative would provide half the year with maximized esthetic satisfaction. During the period in which motorized craft were allowed, the lower quality esthetic potential (status quo) would be maintained.

This alternative would probably have the greatest effect upon the commercial operator and the consumer. The January 1 to June 30 season could cause firms to invest in two types of equipment--oar and motor. The added investment could adversely affect profitability and increase the price to the consumer.

The impact of this alternative on the park management would be to require additional on-river monitoring to ensure that the motorized/ non-motorized periods of use were being maintained.

E. ELIMINATE MOTORIZED USE IN THE LOWER GORGE FROM DIAMOND CREEK (MILE 225.6) TO GRAND WASH CLIFFS (MILE 277)

This alternative would remove all motorized traffic from Diamond Creek to Grand Wash Cliffs. Powerboating, including upriver runs in the Lower Gorge, would not be allowed.

1. Impacts on Natural and Cultural Resources

The elimination of motorized craft and subsequent reduction in the numbers of persons engaging in lake recreation will significantly reduce overall resource impacts. The vegetation in the riparian zone below Diamond Creek is primarily dense stands of exotic saltcedar on silt deposits which were laid down during the periods when the level of Lake Mead was substantially higher. Certain beach areas show extremely heavy impacts from visitor use and, generally, the problems of litter and waste disposal increase between Diamond Creek and Lake Mead. With a reduction in both recreational activities and relatively heavy visitor use, impacts on beach soil (erosion) and exotic vegetation (removal and trampling) will be minimal. A reduction in wood gathering, boat mooring, foot traffic, and deposition of fecal material and food scraps into the soils would occur. However, due to the fact that a completely unnatural habitat has replaced the native and ephemeral riparian vegetation in the lake zones, the reduction of use impacts may not be considered as important as improvement of the riparian zones above Diamond Creek.

The reduction in lake recreation activities would also serve to diminish disturbance to archeological and historic sites. Off-river use and camping are not major activities in the Lower Gorge at present. These activities would be further reduced, thereby, lessening impact on sites such as Bat Cave and Rampart Cave, as well as important archeological sites adjacent to the river and the lake.

2. Socioeconomic Factors

The elimination of motors would significantly reduce visitor options in the Lower Gorge area. A minimum of 12,000 visitors, other than river runners, would be affected. An estimated one-half of these visitors use powerboats to fish, either incidentally or primarily, in the Lower Gorge-Lake Mead area. Very few, if any, would continue to do so if motor boats were eliminated. The option of motorboat travel from Grand Wash Cliffs upstream into the park would be eliminated. There is no indication that any of the visitors currently traveling upstream would still make the trip if motors were eliminated. An additional portion of

the users who are continuing their river trip from Lees Ferry or who launched at Diamond Creek would not choose to travel by oar the 40 miles of lake backwater to Pierce Ferry. Total use could be reduced by as much as 75 percent in this zone under these restrictions.

The elimination of motors will change the characteristics of the visitor who participated in a recreational activity in the Lower Gorge section of the canyon. The people in this part of the canyon come for different experiences than the participants in the upper 225.6-mile river trip. Present visitors are primarily interested in water-based recreation, through the use of powerboats, and the scenery for short weekends or one-day visits. It can be assumed that these people would be replaced by a different socioeconomic group interested in a more natural, non-motorized experience and willing to spend the extra time necessary to travel the lake. It can also be assumed that use levels would drop if powerboats are eliminated.

The elimination of motors would increase the time necessary to float the river from Diamond Creek to Grand Wash Cliffs by at least 1 day. It would increase the time necessary to travel from Grand Wash Cliffs upriver to Separation Canyon from 2 to 3 hours to 2 to 3 days. The option of traveling the 40 miles of slackwater in a short period of time would be precluded for both river runners and lake recreationists.

Those visitors wishing to travel beyond Diamond Creek to Lake Mead can expect increased trip fees due to removal of motors from the Lower Gorge area. The cost of a commercial river trip taking out on Lake Mead could be increased as much as $35 to $70 to meet the increased cost of the extra day necessary to make the trip across the backwaters of Lake Mead.

Elimination of motors would also affect about 50 percent of the trips now launching from Lees Ferry that end their trip on Lake Mead. This includes several companies who at this time travel the upper 240 miles by oar or paddle boat and use motors to propel them from Separation Canyon to Pierce Ferry (Mile 280). These companies would have to end their trip at Diamond Creek or spend at least 1 day longer traveling the lake. This would mean an added expense to the company for additional wages to travel to Pierce Ferry or for the use of the Diamond Creek Road.

The Hualapai Tribe presently benefits from the operation of motorized float trips. Conversion from motor to oar will adversely affect their trips, all of which launch at Diamond Creek. The economy of the operation could be affected since at least one extra day would be needed to travel the backwater to Lake Mead by oar. The extra cost may discourage commercial passengers. The income of this commercial operation could be significantly reduced.

A positive economic effect, on the other hand, would probably occur at Diamond Creek. Removal of motors could potentially increase the revenues being paid to the Hualapai Tribe for the use of their road from Diamond Creek to Peach Springs because few companies would choose to spend the extra day on the lake and would take their boats out at Diamond Creek.

Some minor impact on the economy of the marinas on the east side of Lake Mead might occur. This would be due to the reduction in the purchasing of gasoline and other supplies for trips upriver.

F. ALLOCATION OPTIONS

None of the following options would result in environmental or cultural impacts significantly different from those discussed under the proposal in Section III. These options will, however, affect the river-running public to varying degrees.

1. Individual Application

This would provide that all persons or groups interested in a river trip would apply to the National Park Service for a river-running permit. Permittees would be selected by the National Park Service through a procedure such as a lottery or on a first-come, first-served basis. The successful applicants would then determine whether to book passage with a commercial concessioner or to purchase equipment and run the river as a noncommercial party.

At first glance, this appears to be a very fair method of allocation. This alternative is strongly proposed by many who are interested in noncommercial permits. The basic premise is that allocation would be set by the relative number of applications that come in from non-commercial applicants compared to those for commercial trips, thereby eliminating the need for the National Park Service to impose pre-set allocations.

This proposal while appearing to be more fair than current allocation methods may in fact result in being less equitable.

Commercial companies desire to maintain a sufficient number of user days to remain economically viable. Case studies have shown under very comparable situations that commercial companies artifically increase the number of applicants desiring concessioner guided trips through heavy advertising. Noncommercial applicants could not realistically compete with this sort of advertising and, therefore, would have less opportunity for a trip than persons applying for commercially guided trips.

A person or group desiring a commercially guided trip would not be assured of such a trip even if successful in obtaining a permit. There is no way to ensure that a commercial trip would be available on the

specific day and for the specific group size authorized by permit. Also, the specific type of trip, in terms of length, cost, type of boat, and other amenities may or may not be available.

Management of this system by the National Park Service would be very difficult. This is particularly so in reference to matching commercial trip permit holders with a trip.

Noncommercial applicants would have less opportunity for a river trip than commercial applicants and even less opportunity than under the present system. Commercial passengers who have obtained a permit could not be assured of a trip.

2. Equal Commercial Allocations

This option would provide an equal allotment of user days among the approved concessioners. If the number of concessioners remained at 21, this alternative would result in each concessioner receiving 4.76 percent of the total available user days, 5,526 user days or 18 trips per company. Therefore, some companies would have a smaller allotment than at present and others would receive an increase.

Not all companies would necessarily want as much use as would be available under this proposal. It is doubtful that the larger companies want to be reduced.

The variety of trip experiences available to the public would be reduced under this proposal as equal allocations are likely to result in stereotyped trips. This could result in narrowing the availability of trips to only a certain segment of the public.

3. Educational and Organized Group Allocation

This option would provide a special allocation of use to educational and other organized groups. Some of these groups believe they should have special standing due to their educational or social service attributes.

An exact definition of "educational trips" has never been established and, in fact, Shelby and Nielsen (1976) showed that all trips result in meaningful educational experiences.

The flow of money to trip organizations and leaders must be assessed, as many such organizations are commercial. By law and regulation, any commercial operation must obtain a commercial permit.

Educational and underprivileged youth groups have pressed for special allocations. They do not want to be considered as commercial even though some must be viewed as such due to their financial arrangements.

If educational and underprivileged youth groups are entitled to a special allocation, then any other organized group would have to be given equal opportunity. This could include religious, civic, Boy Scout, civil rights, conservation, and other organizations. In each instance of awarding special allocations for such groups, a determination of commercial or noncommercial status would have to be made and permits authorized accordingly.

Such an allocation would have a positive impact on those groups involved who would gain direct access to river trips. There appear to be more groups interested than could logically be permitted; therefore, selection of groups to gain permits would adversely affect those not selected.

Use allocation for the educational or organized groups would have to be taken from commercial and/or noncommercial allocations, thereby, adversely impacting those groups.

IX. CONSULTATION AND COORDINATION WITH OTHERS

A. CONSULTATION AND COORDINATION IN THE DEVELOPMENT OF THE PROPOSAL AND IN THE PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

1. Public Input

Public hearings on the preliminary wilderness proposal for lands within Grand Canyon began in May 1971. The most recent public review of a revised wilderness classification for the expanded park entailed both pre-planning public meetings in September and October 1975, and the distribution of the draft environmental statement (DES 76-28) in July 1976. The river corridor was an important issue during the 1971 hearings and the 1975 workshops, as well as in letters of comment responding to the draft statement. Over this 5-year period, there was no significant fluctuation in public sentiment. Their input strongly favored the inclusion of the river and the surrounding land into a wilderness system, and included the elimination of motorized river craft, control of aircraft noise, and preservation of the canyon's natural ecosystems.

Six river management workshops were held in March 1976 in the following cities; Phoenix, Arizona; Grand Canyon, Arizona; Los Angeles, California; San Francisco, California; Salt Lake City, Utah; and Denver, Colorado. The workshops were attended by 365 participants. Over 100 clubs and organizations were represented as well as many concerned individuals. About 27 percent each came from Arizona, California, and Colorado; 14 percent from Utah; and 5 percent from eight other states. Ages of the participants ranged from 12 to 69, of which 43 percent were between 20 and 29, and another 23 percent were between 30 and 34.

The following is a list of issues raised and primary points of view taken in order of mentioning:

Allocation of Use. Most people were concerned with establishing a fair ratio or balance between private, commercial, and educational groups, basing it on demand figures. Most people recommended increasing private allocations.

Environment. Protection and conservation were the key words here. Issues included the necessity of fires, the impact of people on the environment, stopping aircraft flights over the canyon, sanitation, and maintaining the water quality in the canyon.

Motors vs. Oars. This concerned many people, and while views were mixed, the majority of input favored oar trips.

Permit Systems. Exactly how permits were to be issued brought varying responses. Some ideas were: issue all permits to individuals, then the permittee could decide whether to go privately or commercially, this was termed "hunting system;" keep the lottery system for private permittees as it is; do away with the lottery system and give priority to experienced private people.

Wilderness Designation. The majority were for designation of the river and surrounding areas into the wilderness system. The use of motors on boats in this designated wilderness was controversial. Some were for and some were against this use.

Disposal of Human Waste. If disposal of human waste is determined to be a health hazard, dumping stations and carrying waste out of the canyon was suggested.

Total Use. The ceiling on use was again controversial. Most agreed to limit use to protect the canyon and "wilderness experience." It was suggested that by encouraging off-season use, less overall feeling of crowding might occur, with even a possibility of increasing the overall use ceilings.

Commercial Use. Concern was expressed about the amount of commercial advertising. Many people were concerned that advertising may be creating an unnecessary demand. The desire was also voiced to increase boatman standards and interpretive programs.

Limitations. Smaller maximum limits on group size for commercial parties and longer minimum lengths for commercial parties were suggested. Equality of limits for private and commercial use was also discussed.

Regulations. More enforcement of existing regulations and education of all users, rather than establishing more regulations, seemed to be a consensus.

Dams. Some would like to get rid of the dams now on the river. Almost all were against additional dams.

Noncommercial Trips. Increased group size, the definition of noncommercial user, equipment criteria, criteria for noncommercial trip leaders, the necessity of support boats for kayaks, policy on equipment rental, and posting monetary bonds to insure compliance with rules were all discussed.

Education. A need for better and more interpretation and training programs was discussed.

Wildlife. Control of feral burros was a dominant concern. The protection of all other wildlife was also stressed.

Resource Monitoring. The establishment of a monitoring program was considered important to detect changes or problems as they occur.

2. Coordination With Other Organizations

Hualapai representatives meet regularly with park officials at river-running meetings held each year at Grand Canyon National Park. Close cooperation with the tribe is necessary since they maintain the only road access to the river between Lees Ferry and Pierce Ferry (Diamond Creek, Mile 225.6). Helicopter takeouts also operate from Hualapai Tribal land. The River Unit Manager met with the Hualapai Tribal Council at their regular monthly meeting in September of 1978, March of 1978, August of 1977, and August of 1976. At the annual fall meeting on October 16, 1978, the Hualapai Tribal Chairman was given time to discuss with river concessioners matters pertinent to takeouts at Diamond Creek. Routine telephone contact is made annually by the River Unit with the Hualapai to keep them informed of those river trips taking out at Diamond Creek and other related matters. Park officials will continue to maintain close relations with the Hualapai to ensure mutual understanding of the canyon and river-running procedures.

During the fall of 1975, park personnel met with the chairman, members of the Havasupai Planning Committee and the Bureau of Indian Affairs Planning Group. A workshop was also conducted by the Havasupai Tribal Council to discuss preliminary planning proposals for the Havasupai Land Use Plan. Discussions concerned backcountry use in the traditional use lands, trails crossing the reservation lands which may be needed by hikers to gain access to various portions of the national park, and a cooperative system for management of backcountry use in areas that border the Havasupai Reservation.

During the development of river policies, the concessioners have played an active role and have been contacted through several different avenues. Twice yearly, the Western River Guides Association meets, and representatives from Grand Canyon attend to include information on the current management of the Colorado River. Grand Canyon National Park sponsors an annual boatman training session to discuss operating requirements and to solicit ideas from those who run the river commercially. In March of 1978, a specific session was held to discuss the plan and river management.

The park also hosts an annual meeting, held in October, for all concessioners operating on the river. This year's meeting included discussions of the River Management Plan.

Other agencies have been involved in the process of developing river management. Grand Canyon Park Service representatives attend biannual meetings of the Interagency Whitewater Committee to gain insight into the river management situations confronting other Park Service areas,

the Bureau of Land Management, the U.S. Forest Service, the Coast Guard and other agencies involved in rivers with whitewater status.

3. Consultation During Development of the Plan

Individuals who were contacted in person or by telephone during the fall of 1976:

Biology and Ecology - Dr. Stephen Carothers, Museum of Northern Arizona provided direct input into the draft environmental statement.

Beach Erosion and Pollution - Dr. Robert Dolan, University of Virginia.

Economic Data - Dr. Michael Parent, Utah State University

Sociological Data - Dr. Joyce Nielsen and Dr. Bo Shelby, Human Ecology Research Service, Inc.

River Running Management - Middle Fork District Ranger, Challis National Forest, Forest Service, USDA

River Management Specialist, Utah State Office, Bureau of Land Management, USDI

Members of the Western River Guides Association. At the semi-annual meetings of WRGA of 1976 and 1977, concessioners and other interested river runners were invited to provide input to the river management plan.

Members of the Sierra Club, Tucson, Arizona

Grand Canyon River Concessioners. At the annual fall concessioner meetings of 1976 and 1977, concessioners were encouraged to provide input to the development of the draft river management plan.

B. COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

A copy of the Draft Environmental Statement (DES) was sent to each of the following for review and comment. Those who provided comment are indicated by an asterisk.

Advisory Council on Historic Preservation*
Department of Agriculture
U.S. Forest Service*
Department of the Interior
Bureau of Indian Affairs*
Bureau of Land Management*
Bureau of Outdoor Recreation*

Bureau of Reclamation*
United States Fish and Wildlife Service*
United States Geological Survey*
Department of Transportation
U.S. Coast Guard*
Federal Aviation Administration*
Environmental Protection Agency*
Arizona State Clearinghouse*
Arizona State Historic Preservation Officer*
Northern Arizona Council of Governments*
Havasupai Tribal Council
Hopi Tribal Council*
Hualapai Tribal Council*
Navajo Tribal Council

Others receiving informational copies of the draft include:

Coconino County Board of Supervisors*
Coconino County Planner and Director
Mohave County Planning and Zoning Commission
Cocopai Resource Conservation Development Project
City Manager, Kingman, Arizona
City Manager, Williams, Arizona
Mayor, Flagstaff, Arizona
Mayor, Kanab, Utah
Mayor, St. George, Utah
Arizona Academy of Science
Governor's Commission on Arizona Environment
Aircraft Owners and Pilots Association
Arizona Conservation Council
Arizona Desert Bighorn Sheep Society, Inc.
Arizona Friends of the Earth*
Arizona Mountaineering Club
Arizona Parks and Recreation Association
Arizona Wilderness Coalition*
Arizona Wildlife Federation
Arizona Wildlife Society
Arizona-New Mexico Wildlife Society
Arizonans for Quality Environment
Citizens for a Best Environment
Colorado Plateau Environmental Advisory Board
Colorado River Wildlife Council
Conservation Foundation
Desert Protection Council
DNA-People's Legal Services
Environmental Conscience Corporation
Federation of Western Outdoor Clubs*
Lord's Earth Committee
Maricopa Audubon Society

Michigan Botanical Club
Museum of Northern Arizona*
National Audubon Society*
National Parks and Conservation Association*
National Recreation and Parks Association*
National Wildlife Federation*
Nature Conservancy
Navajo Tribal Museum
Nevada Open Spaces Council
Saguaro Conservation and Ecology Club
S.A.V.E.
Save the Grand Canyon Committee
School of American Research
Sierra Club, Palo Verde Group*
Southern Arizona Hiking Club
Southern Nevada Resources Action Council
Tucson Environment Center
University of Colorado Environmental Center*
Wilderness Society*
American River Touring Association*
Arizona Cattle Growers Association
Arizona Daily Star
Arizona Daily Sun
Arizona Public Service Co.
Arizona River Runners, Inc.*
Babbitt Brothers Trading Co.
Canyon Food Mart
Canyon Squire Motel
Canyoneers, Inc.
Colorado River and Trail Expeditions, Inc.
Cross Tours and Explorations, Inc.*
Flagstaff Chamber of Commerce*
Fort Lee Company*
Four Corners Regional Commission
Fred Harvey Company
Georgie's Royal River Rats*
Grand Canyon Airlines
Grand Canyon Dories*
Grand Canyon Expeditions*
Grand Canyon Gas Company
Grand Canyon Scenic Rides
Grand Canyon Schools
Grand Canyon-Tusayan Chamber of Commerce
Grand Canyon Youth Expeditions, Inc.*
Harris Boat Trips
Hatch River Expeditions*
Hughes Air West
Kane County Record
Moki Mac River Expeditions*

Moqui Lodge
O.A.R.S., Inc.*
Outdoors Unlimited*
Recreation Equipment, Inc.
Red Feather Lodge
Sanderson River Expeditions*
Scenic Airlines, Inc.*
Tour West, Inc.*
Tri-State Flight Operations
Verkamps
Western River Expeditions, Inc.*
White Water River Expeditions*
Wilderness World*
Williams Chamber of Commerce Williams News
Wonderland Expeditions

C. PUBLIC COMMENT ON THE PLAN AND DRAFT ENVIRONMENTAL STATEMENT

The Draft Colorado River Management Plan and its accompanying draft environmental statement were released on January 8, 1978. In mid-February, six public meetings were held regarding the proposals, with one additional meeting held in Washington, D.C. in late March. The record for additional written or verbal input was held open until May 1, 1978.

In weighing public input, the primary consideration was the supporting rationale for the position taken by a person or group. It was very clearly stated at each of the public meetings that decisions would not be made on a vote count. However, the proportion of people either in favor of, or in opposition to, a particular proposal must be given some consideration along with their rationale. Much of the public input was a result of mass mailings and publicity and not based on actual review of the draft plan or DES.

Public interest in the Draft Colorado River Management Plan ran very high. Proposals in the plan were well publicized, both by environmental and recreational groups, mostly in favor of the plan, and commercial outfitters with motorized rafts, generally opposed to removal of motors. In all, 2,716 responses were received by the May 1 deadline. These included 215 persons who presented oral testimony at one or more of seven hearings held throughout the country and 2,442 persons who presented written comments. Additionally, 17 petitions were received with 739 signatures.

The proposal which illicited the most response was phasing out the use of motors on the Colorado River from Lees Ferry to Separation Canyon over a 3-year period.

Table 25 below summarizes the overall response to the question of motors and oars, by the combination of letters and testimony at public meetings,

letters alone, and testimony alone. The percentages in this table are reflective of only those who provided input on the question of motors and oars and not total input.

TABLE 25 SUMMARY OF MOTOR AND OAR INPUT

	% Respondents	# Respondents	Type Input
For non-motorized trips	56	1476	Letters/Testimony
For motorized trips	44	1181	Letters/Testimony
For non-motorized trips	57	1388	Letters
For motorized trips	43	1054	Letters
For non-motorized trips	41	88	Testimony
For motorized trips	59	127	Testimony
Other		59	Letters

There were 27 people who wrote in protest only of a motor ban below Diamond Creek because they wish to continue upriver runs from Lake Mead to Diamond Creek in motorized craft. There were 59 people who commented on other aspects of the plan but did not state a preference for motor or oar trips. This accounts for the total letter and testimony input of 2,716 including 1,476 for oars, 1,181 for motors, (27 of these were for motors below Diamond Creek), and 59 with no comment on this point. Table 26 indicates the number of times particular reasons were given for support of phasing out the use of motors. These figures do not have any relationship to the number of letters or testimony received. A particular letter or testimony may have mentioned only one, perhaps 3, or possibly all of the items listed.

TABLE 26 REASONS FOR SUPPORT OF OAR TRIPS

	Number of Times Commented On	Type Response
Motors/wilderness incompatible	426	Letters & Testimony
Ban motors, would improve resources	219	Letters & Testimony
Eliminate noxious fumes	119	Letters & Testimony
Canyon too commercialized	91	Letters & Testimony

Table 27 shows the primary reasons given by those who prefer to see motorized trips retained. Again these figures are the number of times a particular point was mentioned.

TABLE 27 REASONS FOR SUPPORT OF MOTOR TRIPS

	Number of Times Commented On	Type of Response
Oar trips too long	693	Letters/Testimony
Hiking too strenuous	191	Letters/Testimony
Eliminate the old, infirm	497	Letters/Testimony
Too expensive by oars	371	Letters/Testimony
Motors Safer	360	Letters/Testimony
Motor trips provide wilderness experience	221	Letters/Testimony
Noise no problem	88	

There was general support expressed for total use as proposed, provided that resource impacts could be kept within acceptable limits. Table 28 gives a summary of comments on the total use proposal. Again a letter or testimony may have mentioned only one or possibly several of the items listed. Therefore, there is no correlation between the number of letters or testimony received and the number of times a particular issue may have been raised.

TABLE 28 TOTAL USE PROPOSAL RESPONSE

	Number of Times Commented On	Type of Response
General support of the proposal	1110	Letters/Testimony
Specific support of this issue	29	Letters/Testimony
Against increased use	39	Letters/Testimony
For decreased use	18	Letters/Testimony
For status quo	15	Letters/Testimony
For winter use	20	Letters/Testimony
Against winter use	28	Letters/Testimony
For longer summer season	20	Letters/Testimony
For per day launch decrease	13	Letters/Testimony
Against per day launch decrease	13	Letters/Testimony
Self scheduling commercial trips (status quo)	14	Letters/Testimony
Give more days to small companies	8	Letters/Testimony

The proposed use allocation was generally supported by those who commented on it. Only about half of those who provided input commented on this issue. The majority of those commenting on the allocation issue that were in support of increased allocation for privates were either private river runners or generally interested persons. The majority of those for the present allocation system were commercial outfitters or previous passengers on motorized trips. Table 29 is a summary of the input on the allocation proposal. The 1110 people listed as generally supporting the proposed allocation system did not specifically mention allocation. They simply stated that they supported the entire plan. The number of comments on a particular point listed does not correspond directly with the number of letters received. A letter or testimony may have listed only one point or it may have listed more than one.

TABLE 29 ALLOCATION OF USE RESPONSE

	Number of Times Commented On	Type Response
General support of proposals	1110	Letters/Testimony
Specific support of allocation proposal	171	Letters/Testimony
For a lottery system	111	Letters Testimony
For a 50/50 split	64	Letters/Testimony
Continue status quo	65	Letters/Testimony

Overwhelming support was expressed for measures proposed to protect the canyon resources. Some specific comments opposed particular methods or procedures required and others suggested alternate ideas for protecting resources. Table 30 shows a summary of input on the protection of the canyon.

TABLE 30 RESPONSES TO RESOURCE PROTECTION PROPOSAL

	Number of Times Commented On	Type Response
General support of proposals	1110	Letters/Testimony
Specific for waste removal	133	Letters/Testimony
Against proposals waste	8	Letters/Testimony
Against fires being banned	19	Letters/Testimony
For proposed fire regulations	92	Letters/Testimony
For trail alignment	67	Letters/Testimony
Opposed to trail alignment	8	Letters/Testimony

Comments were also made about the adequacy of the plan and draft environmental statement. A few (32) questioned the combined trip study, saying that the sample size was too small, that people were preselected in that those favoring an exclusively motorized trip would not go, and that the motorized trip portion was crowded and rushed. The Parent economic study was also criticized by some people who said that the concessioners and local Northern Arizona Government units were not consulted and that the plan would be damaging to local economies. It

should be noted that some people mentioned these same studies as rationale for their support of the plan (the number of responses was not counted).

A few suggestions for changing the plan were also included in the responses. Some of the suggestions regarding allocation of commercial versus private trips are mentioned above. Several elaborate allocation schemes were proposed. Another suggestion was to include a motorless season. Several suggestions were made regarding waste disposal: the National Park Service should construct outhouses at frequently used sites and waste disposal sites should be located at the end of the trip. While not specifically related to this plan, several people commented on the burros in the canyon, stating that burros should be eliminated and one stating that some should be allowed to remain.

It is significant that only four people making comment on the proposed plan were opposed to wilderness designation for the Colorado River corridor through the Grand Canyon.

An additional study was contracted with Dr. Bo Shelby to gather information on the question of wilderness from people attending the several public meetings held in February and March on the draft River Management Plan and DES. Dr. Shelby devised a questionnaire to gather this additional information. The questionnaire was handed out to people attending the public meetings and they were requested to fill it out and return it to those in charge at the end of the meeting. Filling out the form was announced as being strictly voluntary.

The questionnaire asked people to think of Grand Canyon in three different ways: wilderness--a place generally unaffected by the presence of man; semi-wilderness--the kind of place where complete solitude is not expected; and undeveloped recreation area -- the kind of place where a natural setting is provided but meeting other people is part of the experience. Most people (54%) think that river trips currently provide a semi-wilderness experience (see Table 31). However, 60% feel that river trips should provide a wilderness experience. It appears that people who attended the meetings, like people on the river, generally endorse the goal of providing wilderness.

TABLE 31 RIVER EXPERIENCES IN GRAND CANYON
(ALL RESPONDENTS)

	Wilderness	Semi-wilderness	Undeveloped recreation
Which experience does a river trip provide now?	20% (80)	54% (215)	26% (103)
Which do you think a river trip should provide?	60% (243)	34% (136)	6% (23)
What are appropriate encounter levels in terms of:			
River encounters per day	1	3	5
Hours in sight of others while on river	.5	1.5	3
Number of stops (out of 10) with encounters	1	3	5
Chances of meeting 10-30 people at places like Havasu	15%	30%	50%
Number of nights (out of 10) camped near others	0	2	4

While most people endorse the wilderness concept, there were different definitions of what wilderness consists of in terms of encounters per day, time in sight of others, meeting other people at attraction sites and number of nights camped near others. The lower part of Table 31 shows how people defined their experiences in terms of encounter levels. Wilderness was defined as: 1 or fewer river encounters per day, less than one-half hour in sight of others on the river, meeting other parties at no more than 1 out of 10 attraction sites, a 15 percent chance of meeting others at the most popular stops, and camping away from other parties virtually all of the time. Appropriate contact levels are considerably higher for semi-wilderness and undeveloped recreation.

Are people willing to "pay a price" for wilderness? Results presented in Table 32 suggest that they are. Of all those responding (lefthand column), 56 percent say they would pay $100 more, 68 percent would wait a year longer to go on the trip, and 55 percent would take an off-season trip. Fifty-seven percent would rather do one of these things than settle for a "semi-wilderness" experience. Most private boaters, members of conservation groups and commercial oar passengers appear quite willing to pay more, wait longer, or take a winter trip in order to have a wilderness experience (see Table 32). Among these

WILLING TO "PAY A PRICE" FOR WILDERNESS

If you prefer wilderness, would you be willing to do any of the following things in order to accomplish this? Percent willing to:	All Respondents (n = 434)	Private boaters (n = 163)	Conservation group members (n = 143)	Commerical oar passengers (n = 10)	Commercial motor passengers (n = 82)	Commercial boatmen (n = 63)
Pay $100 more for the trip.	56	57	66	80	46	46
Wait a year longer to go on the trip.	68	75	82	80	43	63
Go during winter season (Oct. thru March)	55	71	72	70	17	53
If you had to choose, would you rather:						
Do one of these things	57	73	72	80	34	46
or						
Have a "semi-wilderness" experience.	43	27	28	20	66	54

groups, 70-80 percent would rather do one of these things than settle for a semi-wilderness experience. In contrast, a majority of commercial boatmen and two-thirds of commercial motor passengers would prefer a semi-wilderness experience rather than engage in such trade-offs. It appears that these two groups place less value on having a wilderness experience.

Several different interest groups were represented at the public meetings. Most groups feel river trips currently provide either semi-wilderness or undeveloped recreation (see Table 33). The only exception is commercial motor passengers, 45 percent of whom feel that trips offer a wilderness experience. A majority of all groups feel that river trips should provide a wilderness experience.

In summary, most respondents think the area should provide wilderness, most define the wilderness experience in terms of low numbers of encounters, and many are willing to "pay a price" for this experience. Data collected on the river (Shelby and Nielsen, 1976) suggest that the proposed 3 launches per day limit may result in contact rates higher than the wilderness norm outlined in the present report, but this conclusion is unclear because the proposed limit will also change the distribution of use, and further monitoring will be necessary. In terms of interest groups, it appears that the wilderness norms of commercial motor passengers are different from those of other groups and that boatmen and motor passengers place less of a premium on wilderness.

TABLE 33

HOW DIFFERENT GROUPS FEEL ABOUT RIVER EXPERIENCES

	All Respondents (n = 434)	Private boaters (n = 163)	Conservation group members (n = 143)	Commerical oar passengers (n = 10)	Commercial motor passengers (n = 82)	Commercial boatmen (n = 63)
Which experience does a river trip provide now?						
Percent responding:						
Wilderness	20	16	16	0	45	20
Semi-wilderness	54	52	52	56	48	48
Undeveloped recreation	26	33	32	44	7	33
Which do you think a river trip should provide?						
Percent responding:						
Wilderness	60	75	70	60	51	53
Semi-wilderness	34	21	27	40	38	44
Undeveloped recreation	6	5	3	0	11	3

D. RESPONSE TO COMMENT ON THE DRAFT ENVIRONMENTAL STATEMENT

A total of 2,716 comments were received during the public review period. Of these, approximately 400 comments were specifically in response to the draft environmental statement. Some agencies, groups, and individuals submitted more than one letter and some letters were signed by more than one individual. All written comments were analyzed and 72 representative letters are printed as part of this environmental statement.

All agency letters received have been included, and those organization or individual letters that best represent a range of issues or offer substantive comment on the draft statement have been selected for formal response.

The comments and responses for each letter are numbered in consecutive order. To facilitate this referral system, the letters are organized by category and placed in alphabetical order within each category.

1. Comments Received from Federal Agencies

Advisory Council on Historic Preservation
Council on Environmental Quality
Department of Agriculture
  Forest Services (2)
  Soil Conservation Service
Department of the Interior
  Bureau of Indian Affairs (2)
  Bureau of Land Management
  Bureau of Outdoor Recreation (Heritage Conservation and Recreation Service)
  Bureau of Reclamation
  Fish and Wildlife Service
  Geological Survey
Department of Transportation
  Federal Aviation Administration
  U.S. Coast Guard
Environmental Protection Agency

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

October 12, 1978

Mr. Howard H. Chapman
Regional Director, Western Region
National Park Service
430 Golden Gate Avenue, Box 36063
San Francisco, California 94102

Dear Mr. Chapman:

On September 15, 1978, the Council received a determination from the National Park Service that implementation of a Colorado River Management Plan, Grand Canyon National Park, Arizona, would not adversely affect over 50 cultural properties that may be eligible for inclusion in the National Register of Historic Places. The Executive Director does not object to your determination with respect to implementation of the Management Plan. Further, we look forward to working with the NPS in accordance with the "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800) in the future as applicable to specific actions generated by the Management Plan. In addition, we would suggest that wording in both the final environmental statement and Management Plan be strengthened to reflect the NPS commitment to comply with the Federal preservation authorities at the appropriate time. 1

A copy of your determination of no adverse effect, along with supporting documentation and this concurrence, should be included in any assessment or statement prepared for this undertaking in compliance with the National Environmental Policy Act and should be kept in your records as evidence of your compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f, as amended, 90 Stat. 1320).

Your continued cooperation is appreciated.

Sincerely yours,

Louis S. Wall
Assistant Director, Office of
Review and Compliance, Denver

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

Response to: Advisory Council on Historic Preservation

1. The National Park Service will continue in its attempts to evaluate these cultural properties in consulation with the Advisory Council on Historic Preservation. The wording in the final environmental statement reflects our commitment to the mandates of your agency and the National Historic Preservation Act of 1966.

IX-18

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, N. W.
WASHINGTON, D. C. 20006

June 13, 1973

Dear Mr. Whalen:

The Council on Environmental Quality has reviewed the draft environmental impact statement on the proposed Colorado River Management Plan -- Grand Canyon National Park. The Council strongly supports the National Park Service's proposal to reduce and eventually eliminate motorized boating on the Colorado River within the confines of the park, and at the same time to work towards upgrading the recreational experience available to boating visitors. The present permit system has allowed wide-spread abuse of the River and the Canyon, whose recreational and scenic qualities deserve strict protection if they are to be available for future generations of Americans.

The Grand Canyon is perhaps the most striking and well-known landmark in the United States. As an important element of our natural heritage, the Canyon should be protected from the damages which are currently degrading its parkland character.

The most obvious degradations can be divided into two categories stemming from human overuse. First, it has disturbed the ecological balance of the Canyon floor and secondly, it has overwhelmingly changed the wilderness and recreational qualities of the River and the Canyon. Among the biological disturbances has been unsupervised trail-making, resulting in heavy damage to the vegetation within the Canyon; the unsanitary condition of the campsites available to boating visitors, creating a potential health hazard; and the wide and uncontrolled disposal of human wastes within the Canyon, degrading air, soil, and water quality. These situations have altered the living conditions and habitats of many species of Canyon-dwelling flora and fauna, so that locating and observing sites still remaining in the Canyon's natural state has become more and more difficult.

The recreational value of the River and the Canyon has declined as the natural setting has deteriorated. Very few people are allowed to experience the Canyon in a primitive way, and no visitors can avoid the debris and noise coincidental with the present permit system.

Although increasing the recreation use of the River seem contradictory to the environmental needs of the Canyon, CEQ believes that a moderate increase in recreational use -- somewhat less than proposed by the Park Service -- is desirable, but only if the Park Service defines an effective River Management Plan. Some important conditions of an acceptable plan are as follows: a) elimination of motorized uses, to protect the recreational experiences of all visitors; b) reduction of the relative number of commercial to private river expeditions, to allow qualified private groups the opportunity to experience the River less expensively and on their own terms; c) management of campsites and waste materials, to decrease the biological impacts of human visitation; and d) development of trails and other protective measures to guard the vegetative, natural, and cultural resources of the Canyon.

1

The Park Service proposal approximates these goals but allows too great an increase in the recreational utilization of the River. Allowing such an increase (as proposed) will continue to degrade the Canyon, especially by increased trampling of the vegetation and soil. And if the stipulations within the management plan for waste disposal and camping and hiking are not strictly enforced, the Canyon will continue to deteriorate at a rapid rate.

2

Sincerely,

Larry Williams

Larry Williams
Staff Member for Land and
Natural Resources

Mr. William J. Whalen
Director
National Park Service
Washington, D.C. 20240

IX-20

Response to: Council on Environmental Quality

1. Total user day capacity in the final environmental statement (FES) is proposed at 209,150 compared to 225,320 in the draft. This amount of user days compared to the existing total user days of 122,600 is a moderate increase particularly when considering that the use season is now twelve months instead of four and that use is evenly distributed by week and season.

The conditions recommended by CEQ are included in the proposed action of the FES.

2. As described above, the proposed increase in user days has been moderated, and the use distributed more evenly over the full year. Also, the conditions suggested are included in the proposed action, and will be enforced.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
P.O. Box 2417
Washington, DC 20013

1950

Superintendent
Box 129
Grand Canyon National Park
Grand Canyon, AZ 86023

Dear Sir:

We have reviewed the Draft Environmental Statement for the Colorado River Management Plan and we have the following comments to offer:

1. Page III-2, third paragraph - "Due to construction in sedimentary deposits and on unstable slopes, minor erosion will occur." How many cm of soil loss represent minor erosion? It is not clear as to what is causing minor erosion. Is erosion minor because of stable soil, or because of very little soil present to erode?

2. Page III-8, fourth paragraph - "The use of soaps and other detergents in the river will continue to be permitted; however, using soaps in the tributaries is not and will not be permitted. The amount of phosphates released to the main stream are probably insignificant." True, the use is probably insignificant when compared to water volume dilution. Why not go to a bio-degradable detergent at the outset?

We appreciate the opportunity to review and comment on this Dratt Environmental Statement.

Sincerely,

R. MAX PETERSON
Deputy Chief

IX-21

Response to: U. S. Forest Service, Washington, D. C.

1. Foot traffic from the river to attraction sites has created multiple trails in many cases. There is obviously some increase in erosion along these trails. Designation of a single trail at a given attraction site will in some cases require minor cut and fill construction. The soil erosion losses have not been quantified for existing multiple trail situations nor estimated for construction situations. There is little doubt that one properly aligned and stabilized trail, even involving minor construction, will in the long run cause less erosion than several unstable social trails. Also refer to Section II. C. for a description of soils and Section III. A. as to impacts on soils from river-running activities.

2. Biodegradable (low phosphate) soaps are now required and will continued to be required.

No response required.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Kaibab National Forest
800 South 6th Street
Williams, Arizona 86046

1540

Mr. Merle E. Stitt
Superintendent, Grand Canyon National Park
Grand Canyon, AZ 86023

Dear Merle,

We have reviewed the Draft Environmental Statement for the Proposed Colorado River Management Plan. We forsee no direct impacts on the Kaibab National Forest if the proposed plan is implemented. Therefore, we have no comments to offer at this time.

We would like to add that Marv Jensen and Steve Martin did an excellent job in presenting the highlights and answering questions about the proposed plan at the March 21 Society of American Foresters meeting in Flagstaff.

Sincerely,

LEONARD A. LINDQUIST
Forest Supervisor

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

3008 Federal Building, Phoenix, Arizona 85025

March 16, 1978

Superintendent
Box 129
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Sir:

Your Draft Environmental Statement and the River Management Plan for the Colorado River through Grand Canyon National Park has been referred to the Soil Conservation Service for review and comment.

Our only comment is that the soils information presented on pages II-10-II-12 does not meet the minimum standards of the National Cooperative Soil Survey. It does look adequate for the needs of this statement however. No land within the Grand Canyon National Park qualifies as prime farmland.

Thank you for allowing us to review this statement.

Sincerely,

R S Swenson For

Thomas G. Rockenbaugh
State Conservationist

cc:
Administrator, Soil Conservation Service, Washington, D.C.
Director, Office of Federal Activities, EPA, Washington, D.C. (5 copies)

No response required.

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
WASHINGTON, D.C. 20245

IN REPLY REFER TO:
Trust Facilitation
EQ (DES 77/37)

Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Sir:

We have reviewed the Draft Environmental Statement and the River Management Plan for the Colorado River through Grand Canyon National Park.

1 Considering that Indian Reservations adjoin most of the South Rim of the Canyon, the treatment of Indian interests is very light. We are concerned that the tribes be consulted and involved in planning rather than merely informed of results. The DEIS is not clear about that.

2 The Navajo Tribe is not mentioned under "Coordination with Other Agencies," IX-3.

3 Our Navajo Area Office mentions that on page 31 of the Plan and II-5 of the DES, the Navajo Reservation is referred to as a 9 million acre area whereas the boundaries normally shown on maps include 12.5 million acres.

4 We question the detailing of charges for services by Indian tribes when there is not an equivalent detailing of other costs.

5 In view of the fact that the greatest controversy is around the proposal to eliminate motor boats and that the chief justification is their noise, the statement on "Outside Influences, Noise," III-23 is rather weak. The reader needs more assurance that, if sacrifices are required to eliminate on-river noise, other distracting noise will also be eliminated.

Sincerely yours,

Director, Office of Trust
Responsibilities

IX-24

Response to: Bureau of Indian Affairs, Washington, D.C.

1. Section IX.A.2. Coordination with Other Organizations outlines the past involvement with Indian tribes in planning for use of the Colorado River and implementation of the river plan. Any changes in amount or type of use that affect tribal lands will be discussed with the Havasupai, Hualapai, Hopi, and Navajo Tribal Councils and planning committees.

2. Coordination with the Navajo Tribe did not take place prior to drafting the environmental statement. However, the Navajo Tribe received a copy of the DES with a formal request that they comment on it. We received no comment from the Navajo Tribe on the DES.

3. The FES has been corrected to reflect that the Navajo Reservation covers 12.5 million acres rather than 9 million.

4. Information on fees for access or camping was included to inform river runners as to costs over and above regular operating costs. Only the Hualapai and Havasupai Tribes charge fees for camping or for crossing tribal lands. Costs have been deleted in the final environmental statement.

5. Motor noise is only part of the basis for phasing out the use of motors. Other distracting noise is primarily from aircraft overflights. The draft plan proposed to eliminate the use of helicopters. This has been modified in the FES to allow continued use of helicopters for river trip takeouts. At present, helicopter noise along with general aircraft overflight noise and related problems is being studied. The study will provide data from which a separate management plan can be developed to address this issue for the entire park. The data will also be used to prepare proposed regulation to the FAA as required by the Grand Canyon Enlargement Act of 1975 (Public Law 93-620), to mitigate impacts on visitor experience and/or safety.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
TRUXTON CANON AGENCY
Valentine, Arizona 86437

IN REPLY REFER TO:
Land Resource Development
602-769-2302

April 13, 1978

Memorandum

To: Superintendent, Grand Canyon National Park
Attention: Inner Canyon Unit

Through: Area Director, Bureau of Indian Affairs, Phoenix Area

From: Superintendent, Truxton Canon Agency

Subject: Comments on Draft Colorado River Management Plan and its Draft Environmental Impact Statement

The following statement is being submitted as the comments for this agency in regards to the above subject.

It is interesting to note in the opening paragraph of the Colorado River Management Plan that it is stated this is Indian Country--the home of the Havasupai and Hualapai as well as other Indians. In many ways, it seems that the Park Service considers this to be sufficient to deal with the problems of the tribes and from there on, the problems are ignored.

On pages 4 and 5, the maps labeled Great Thumb, Lower Lava, and Lower Gorge-Lake Mead show eleven different sites located on the Hualapai Reservation. These sites are as follows: National Canyon, Mohawk Canyon, Lava Falls, Granite Park, Three Springs Canyon, Diamond Creek, Travertine Canyon, Bridge Canyon, Spencer Canyon, Maxson Canyon, and Quartermaster Canyon.

1 With the exceptions of Travertine Canyon, Bridge Canyon, and Quartermaster Canyon, these areas are all shown as being Ecologically Sensitive Areas. The only mention made that any of these areas lie on the reservation is on page 32 of the Management Plan and page II-6 of the Environmental Statement, under the discussion of the Hualapai Indian Reservation. The only two points mentioned by name as being on the Hualapai Reservation are Diamond Creek and National Canyon (the latter only by inference).

CONSERVE AMERICA'S ENERGY

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Response to: Bureau of Indian Affairs, Truxton Agency

1. Section II.A.2. Adjacent Lands and Jurisdictions Section of the FES has been enlarged to further explain that the south side of the Grand Canyon from River Mile 165 to River Mile 273 is Hualapai Tribal Land, including the sensitive areas as well as the takeout at Diamond Creek.

The plan fails to state that nearly 20% of the shore line on the Colorado River from Lee's Ferry to Milepost 277 is Hualapai land and that it should not be used without proper arrangements being made with and approval obtained from the Hualapai Tribe. In fact, it appears that the Park Service has deliberately glossed this over. It is hard to understand how the Park Service can grant permits to concessionaires and private river runners which in effect condone trespassing activities upon tribal lands. To date, the Park Service has been unwilling to work with the Hualapai Tribe to work out an arrangement that would be satisfactory to both the Park Service and the tribe. The tribe does not have an effective way to deal with this problem and the Park Service states it is outside their jurisdiction. This alone has created a rift between the tribe and the Park Service which makes it hard for an effective relationship to be established and maintained.

2

On page 10 of the Colorado River Management Plan, it states that the river below Diamond Creek has a history of use and management that is substantically different than the river above Diamond Creek. On page 18 of the Plan, the Park Service states that only non-motorized watercraft will be allowed between Lee's Ferry and Separation Canyon. Again we feel the Hualapai Tribe is being imposed upon by the Park Service. Not only is the Reservation-National Park boundary line still undecided as to whether it is the middle of the river or the south bank but the Park Service is attempting to restrict the Tribe's access to their own lands by the use of non-motorized watercraft. We feel this restriction should not apply to the Hualapai Tribe in either their river running operation from Diamond Creek to Lake Mead or to deprive them from obtaining access to their land.

3

On page 12 of the Plan, the Park Service states that by the legislation of 1975 enlarging the Grand Canyon National Park all of the Colorado River in the Grand Canyon, except adjacent Indian Tribal land, is now within the national park. This has never been resolved and is still in question as to whether this is right or not. The tribe has always maintained that their boundary is the middle of the river and not the south bank as maintained by the Park Service. The legislation enlarging the Grand Canyon National Park P.L. 93-620, Section 5 states "... (2) no land or interest in land, which is held in trust for any Indian tribe or nation, may be transferred to the United States under this Act or for purposes of this Act except after approval by the governing body of the respective Indian tribe or nation." This approval has never been obtained from the Hualapai Tribe. Also, the map that was originally submitted with the Grand Canyon enlargement bill showed the boundary of the Park as the south bank of the Colorado River on the Hualapai Reservation subject to the concurrence of the Hualapai Tribe. This language was conveniently omitted from the map with the final bill even though the Tribe has been assured that this was not the intent of Congress.

4

2. The FES has been modified to inform all river runners that off-river activities such as hiking on the south side of the canyon from River Mile 165 to River Mile 273 is on Hualapai Tribal Land, and permission to use these lands is obtained from the Hualapai Tribal Council. The FES has also been enlarged to state that camping adjacent to the river on the south side from River Mile 165 to River Mile 273 may be on Hualapai Tribal Lands depending on where the boundary is determined to be if and when the question is resolved.

3. The restriction on motorized craft is consistent with Grand Canyon National Park Master Plan, Wilderness Recommendations, and the River Management Plan, which is based on research data and public input to the aforementioned plans. The Hualapai Tribe will retain reasonable access from the river to their lands by oar-powered craft. Their river-running operation is under permit from the National Park Service, and converting to oar-powered travel for their trips between Diamond Creek and Separation Canyon is essential in order to be consistent with the objectives of this plan and the requirements for all other river runners.

4. The question of where the exact boundary lies between the Hualapai Tribal Lands and the Grand Canyon National Park can only be resolved through Presidential order, Congressional action, or litigation. It is the purpose of this plan to allow continued river-running use on the Colorado River in Grand Canyon within limits that protect the canyon's natural resources.

The National Park Service recognizes that regardless of whether the boundary is at the middle of the river or at the south bank, there are some river-related activities occurring on Hualapai Tribal lands. These activities include off-river hiking, camping, and takeouts at Diamond Creek. The National Park Service seeks to work cooperatively with the Hualapai Tribe and the BIA to ensure that river-running use does not adversely affect park or tribal lands.

5 We question the validity of the last statement on page 13. We wonder what research was done and whether or not this is the answer. Could it not be that the Grand Canyon National Park Master Plan needs to be modified so that it is compatible to the use of motors?

6 Under Public Input on page 14, it states in the first paragraph that there was not a significant fluctuation in public sentiment from May, 1971 to July, 1976. We can find this to be true as the general public will not get into the act until it personally and directly affects them. As a result, the only input generally received is mainly from special interest groups and individuals directly affected by the proposals. For this reason, it is felt that it is impossible to get the average individual's thinking on this (and in many cases, he will be the one that will probably be affected the most by these proposals in the long run). To date, it seems that the wheel that squeaks the loudest on these hearings is the one that gets the grease, whether their issue is right or not.

7 On page 29 of the Plan, the Park Service intends to eliminate the use of helicopters from adjacent privately owned or tribal lands by making it a condition that commercial permits will terminate only through the use of livestock and hiking on trails designated for this purpose or through road access at Diamond Creek or Lake Mead. It appears to us that the Park Service is using some pretty high handed methods to get their way. The tribe has had a contract with a private company for helicopter take out on tribal lands at Lava Falls. We feel the tribe should be permitted to do as they see fit on their own lands without the Park Service dictating to them through methods such as this. It is felt that this could be resolved through negotiations between the Park Service and the tribe.

8 Under Coordination with the Hualapai Indian Reservation on Page 32, the plan speaks of the importance of maintaining a cooperative relationship with the tribes as to take outs at Diamond Creek. It is felt that the Park Service needs to extend this philosophy to some of the other phases of this plan as discussed.

9 On page E-1 of Appendix E, Resource Protection Standards under paragraph 2, it states that refuse deposits may not be made at Diamond Creek unless arrangements are made with the Hualapai Tribe. If the Park Service feels they can stipulate this and we feel they should, why can they not also regulate the use of tribal lands adjacent to the river for camping purposes? They feel they can regulate tribal lands for other purposes such as helicopter use, prohibiting trash deposits, etc. but they do not feel they want to cooperate with the tribe on a policy of camping on the reservation and enforcing this policy.

5. Research conducted is described in various sections of the FES, most notably it is listed in Appendix A. The Grand Canyon National Park Master Plan is the result of considerable study and public input and does not need to be modified.

6. There is no provision for mandatory public input. We can only provide the opportunity for public input. Ample opportunity for public input has been provided. Since 1971, public input has included workshops and hearings on the park master plan and wilderness proposals, workshops prior to drafting the Colorado River Management Plan and DES. In addition, two sets of public meetings have been held on the draft river plan. After the release of the draft river plan on January 8, 1978, the park received written input until May 1, 1978.

7. The proposal to eliminate the use of helicopters for river trip takeouts was not directed at limiting the use of Hualapai Tribal lands. Rather, the primary purpose was to achieve the objective of providing quality wilderness river-running experiences for visitors to Grand Canyon National Park. This proposal has been modified in the FES to allow river trip helicopter takeouts with limitations on timing and location to minimize impacts on other river runners. The location and timing will be coordinated with the Hualapai Tribal Council as suggested in the comment. Further study on all aircraft noise impact including helicopter is in progress (See Dept. of Interior, Bureau of Indian Affairs, Washington, D.C. response number 5).

8. The National Park Service does not have control or enforcement authority for regulations on Indian Reservations. However, the river management plan and the FES have been modified to inform river runners that the use of the south side of the canyon between River Mile 165 and River Mile 273 is on Hualapai Tribal Lands and subject to their control. The National Park Service has in the past few years discussed these possibilities with the Hualapai Tribes and is interested in continuing to pursue these and other matters with the Tribe in the interest of more effective management. In July of 1978, the River Unit Manager met with members of the Hualapai Tribal Council concerning river operations. In addition, tribal representatives have been present at several park management meetings. It is agreed that meetings should be held regularly in the interest of greater cooperation and coordination.

9. See Responses #2, #4, and #8.

10 It is our feeling that this plan should not be put into force until such time as these points are resolved with the Hualapai Tribe as the plan pertains to their lands. Under any circumstances, we do not feel this plan should be applicable below mile 165, the eastern boundary of the Hualapai Reservation until the boundary line between the Park Service and the tribe is settled and a definite policy established between yourselves and the tribe as to how the tribal lands are to be used by the river runners as to the various points brought up by this plan.

Superintendent

cc:
Earl Havatone, Chairman, Hualapai Tribe, Box 168, Peach Springs, AZ 86434

NOTED: _____ DATE: _____
ASSISTANT AREA DIRECTOR

10. See Response #4.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ARIZONA STATE OFFICE
2400 VALLEY BANK CENTER
PHOENIX, ARIZONA 85073

IN REPLY REFER TO
1793 (911)

No response required.

MAR 15 1978

Memorandum

To : Superintendent, Grand Canyon National Park, Box 129, Grand Canyon, Arizona 86023

From : State Director, BLM, Arizona

Subject: Draft Environmental Statement and River Management Plan for the Colorado River Through Grand Canyon National Park, Arizona

We have reviewed subject Draft Environmental Statement and River Management Plan.

We find the documents to be acceptable to BLM and have no comments to make pertaining to either document.

cc:
WO (260)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OUTDOOR RECREATION
PACIFIC SOUTHWEST REGIONAL OFFICE
BOX 36062
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

IN REPLY REFER TO:
E3035

JAN 25 1978

Memorandum

To: Superintendent, National Park Service,
Grand Canyon National Park

From: Regional Director

Subject: Draft Environmental Statement and the River Management Plan for the Colorado River through Grand Canyon National Park (DES 77/37)

We have reviewed the subject proposed management plan and accompanying draft environmental statement provided by your office.

Your management goals should help to resolve some of the critical issues identified regarding resource preservation and river running activities. We believe that the reports adequately address our concerns for recreation and your plans, if implemented, should amply provide for the needs and increased enjoyment of recreationists.

We appreciate the opportunity to review and comment on your planning effort.

Frank E. Sylvester

cc: BOR, WASO, OEA

No response required.

IX-30

United States Department of the Interior

BUREAU OF RECLAMATION
LOWER COLORADO REGIONAL OFFICE
P.O. BOX 427
BOULDER CITY, NEVADA 89005

IN REPLY
REFER TO: LC-150
120.1

MAR 23 1978

Memorandum

To: Superintendent, Grand Canyon National Park, Box 129, Grand Canyon, Arizona 86023

From: [redacted], Regional Environmental Officer

Subject: Review of Draft Environmental Statement and the River Management Plan for the Colorado River through Grand Canyon National Park (DES 77-37)

We have reviewed the subject document and have the following comments:

1. Page II-2, the sixth sentence in the last paragraph should be deleted and replaced with the following: "The Bureau of Reclamation has released approximately 8.23 million acre-feet of water annually from Lake Powell in recent years." 1

2. The section pertaining to the Bureau of Reclamation under "Adjacent Lands and Jurisdictions," Page II-2, should be expanded. The Colorado River Front Work and Levee System Act of March 3, 1925, as amended, provides authorization for Reclamation's investigations of and operation and maintenance of the Colorado River from Lee Ferry to the International Boundary between the United States and Mexico. In carrying out these responsibilities, in addition to water release activities mentioned in the draft Management Plan, Reclamation studies potential hydroelectric and water storage sites, investigates water quality and techniques of improvement, and carries out miscellaneous operational functions associated with river gaging, sedimentation, side wash inflow, and with the monitoring of rockslides. The restriction on River uses by the public as envisioned by the Management Plan should not prohibit Federal agencies in carrying out assigned responsibilities through any limitations on motorized or nonmotorized boats or use of aircraft. 2

3. Part 2, "Adjacent Lands and Jurisdictions," should also point out that there is a large area of riverfront land under Reclamation withdrawal in the Arizona Strip within the 1975

Response to: Bureau of Reclamation, Lower Colorado Regional Office

1. The FES has been corrected to read 8.23 million acre-feet annual release from Lake Powell in recent years.

2. The part of Section II pertaining to Bureau of Reclamation general responsibilities has been expanded as recommended. However, Bureau of Reclamation activities as described can be reasonably supported by oar-powered boats, after the phaseout of motor boats. During the phaseout motor boats may be used.

enlarged Grand Canyon National Park that is administered by the National Park Service. This land has been retained under Reclamation's jurisdiction for potential future uses in connection with hydroelectric or water storage projects as may ultimately be authorized in connection with development of the Nation's multiple resources.

4. Page II-13, first paragraph, the third and fourth sentences should be changed to read as follows: "Historical virgin flows have ranged from 4.4 to 21.9 million acre-feet annually. The 10-year mean of virgin flow has ranged from 11.6 to 18.8 million acre-feet on an annual basis."

5. Page II-13, second paragraph, in the first sentence, "Lee's Ferry," should be changed to "Lee Ferry," which is the Colorado River Compact division point between the Upper and lower Colorado River Basins.

6. Page II-13, second paragraph, the second sentence through the end of the paragraph, should be deleted and replaced with something similar to the following: "Current usage in the Upper Basin is projected by the Bureau of Reclamation to be 5.8 million acre-feet by the year 2000. Although the flow of the Colorado River through the Grand Canyon is assured by the Colorado River Compact, the daily and seasonal flows will fluctuate greatly as reservoir and energy commitments are met."

7. Page II-13, fifth paragraph, in the fifth sentence, "35,000 ft3/s," should be changed to read "32,000 ft3/s."

8. "Lee's" is misspelled throughout the Management Plan and the EIS. It should read "Lees" not "Lee's."

9. Page II-18, first paragraph, the third sentence should be changed to read as follows: "The salinity levels found in the Colorado River at Lees Ferry range from 480 to 760 mg/1." These values were computed from USGS monthly water quality samples taken at Lees Ferry for the period of 1968 to 1977.

10. The environmental statement did not discuss invertebrates, especially the obsolete viceroy (Limenitis archippus obsoleta) which is under review for status as an endangered species. Recent information indicates that this species should probably not be listed due to its wide distribution and occurrence.

3. Bureau of Reclamation withdrawal for hydroelectric and water storage projects within Grand Canyon's expanded boundary has been noted in the FES. Also noted is the fact that Congress must approve such projects.

4. FES changed as recommended.

5. The FES has been changed to read Lees Ferry rather than Lee or Lee's Ferry. This spelling is from the Board of Geographic Names.

6. FES Section II changed as recommended.

7. FES Section II changed as recommended.

8. See Response #5.

9. Salinity levels described in the plan are from research reports and were an average taken from the river at various points below Lees Ferry and not at Lees Ferry where levels may show a difference since they are not subject to inflow from side streams. Therefore, salinity levels in the FES are the same as those in the draft.

10. Invertebrates were considered (Carothers et al., 1976) and will continue to be in future river management planning. Endangered species are afforded protection. Should the obsolete viceroy (an American butterfly) be designated an endangered species, proper protection will be afforded.

11. We note that River Miles, where indicated, have been taken from obsolete sources. The enclosed River Mile Index has had interagency acceptance as the "official source" of such information for the past two years. References to River Miles on pp. 31-33 of the Plan and pp. II-5 and II-29 of the EIS should be corrected. There are probably other places in the report which need similar revision but no effort was made to identify all of them.

11

The Plan properly indicates that river running through the Grand Canyon National Park is subject to Reclamation's operation of the river and neither the Plan nor the DES propose any modification of that operation. Hence, it does not appear that the Plan would interfere, in any way, with Reclamation's river operating responsibilities.

In duplicate

11. For the purposes of recreational river running, the plan, and FES, river miles were taken from Buzz Belknap's "Grand Canyon River Guide" and are considered sufficient.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

POST OFFICE BOX 1306
ALBUQUERQUE, NEW MEXICO 87103
May 30, 1978

Mr. Merle E. Stitt, Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Mr. Stitt:

We have reviewed the National Park Service's Draft Colorado River Management Plan, dated October 1, 1977, and the Draft Environmental Statement (DES 77-37) of the proposed plan for Grand Canyon National Park, Arizona. We understand that response to date on this draft management plan and Environmental Statement has necessitated redrafting of the documents and that they will be re-entered into the formal review process in the near future. Prior to initiation of that review process, we offer the following comments.

1

The current draft Colorado River Management Plan primarily discusses public utilization of recreational river trips. However, among the management objectives, listed on pages 17-18 of the plan, three are within the context of fish and wildlife resource protection and we support their implementation. These objectives are: are (1) protection and preservation of the riparian environment, (2) preservation of water quality in side streams and the river; and (3) establishing a research monitoring program.

2

Review of the Draft Environmental Statement reveals several proposed actions that may affect a listed species of the 1973 Endangered Species Act.

Such actions presented in the draft include: (1) prohibiting angling and seining for a small portion of the Colorado River at the confluence with the Little Colorado River and a portion of the Little Colorado River in order to prevent taking of the humpback chub (Gila cypha), pages III-2, IV-7; (2) studies on intra- and inter-specific relationships of fish including surveys and collection of fish for analysis, page IV-6; (3) "the management of endangered fish species...programmed for 1977 and 1978 in the natural resources management plan now being prepared for the Grand Canyon."

Section 7 of the Endangered Species Act requires Federal agencies to review and identify any of their programs or activities that may affect

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Response to: Fish and Wildlife Service, Albuquerque, New Mexico

1. All of the issues raised by the public during the review period for the DES were addressed by that statement. Accordingly, modifications in the FES can be accommodated without a complete revision of the proposals.

2. No response required.

3 a listed species or habitat. If your agency identifies activities or programs that may affect listed species, a written communication to the Regional Director, U. S. Fish and Wildlife Service, Albuquerque, New Mexico, requesting consultation will be necessary.

Further details regarding the new Section 7 interagency cooperation regulations may be found in the January 4, 1978, Federal Register (p. 870-876). You are invited to discuss questions of the procedures with Jerry Burton of our Area Office in Phoenix, Arizona (FTS 261-6833), or Jack Woody of our Regional Office in Albuquerque, New Mexico (FTS 474-3974). We will provide comments on the redrafted management plan and environmental statement during the formal review process.

Sincerely yours,

Jerry L. Stigman

Deputy Regional Director

cc:
Regional Director, NPS, Santa Fe, N. M.
Director, FWS, Washington, D.C. (ES-EC)
Senior Staff Specialist, Endangered Species, Albuquerque, N.M.
Area Manager, Phoenix, Arizona (ES)

3. The National Park Service recognizes the requirements of the Endangered Species Act and has completed consultation with the Fish and Wildlife Service. As a result of the consultation process, a positive biological opinion has been received from Region 2 of the Fish and Wildlife Service (see following memorandum).

IN REPLY REFER TO:

SE

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

POST OFFICE BOX 1306
ALBUQUERQUE, NEW MEXICO 87103

May 24, 1979

MEMORANDUM

TO : Regional Director, Western Region, National Park Service, 450 Golden Gate Avenue, Box 36063, San Francisco, CA 94102

FROM : Deputy Regional Director, Region 2 (SE)

SUBJECT: Reply to Your Memorandum of May 8, 1979 re. Request for Formal Section 7 Consultation on the Colorado River Management Plan for Grand Canyon National Park, AZ

IX-36

The river management plan for the Colorado River within the boundaries of the Grand Canyon National Park proposes to: 1) eliminate motorized craft; 2) increase total use of the river; 3) increase non-commercial allocations; 4) increase winter season use of the river, and 5) provide measures for resource protection. Resource protection measures include prohibitions and restrictions on human waste disposal, cooking and recreation fires, soap usage, camping and visitation areas, trail construction and maintenance, historical and archeological resources, off-river use, education of trip leaders and visitors, and monitoring of use levels and patterns.

The bald eagle (Haliaeetus leucocephalus), one of the five listed species occurring in the action area, is a transient of the area. Historically, in the arid southwest portion of the United States, there were two main bald eagle nesting concentrations. One of these nesting areas occurred in the coastal counties and islands in southern California, while the other occurred along the Verde, Salt and Gila Rivers of Arizona. Currently, these nesting populations exist in reduced numbers. Wintering populations of bald eagles occur throughout the region and tend to be concentrated along major rivers, lakes, and reservoirs. The year-round major food source of the bald eagle is a variety of fish species. Causes for the decline of this species are related to chemical pollutants in its food, loss of nesting and wintering habitat, and various disturbance factors.

The brown pelican (Pelecanus occidentalis) occurs in the action area on an accidental basis. It frequents coastal areas, primarily the Gulf, Atlantic, and California coasts. Brown pelicans are rarely found away

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from salt water; however, as a result of storms, they are known to occur accidently at various locations throughout the southwest. Brown pelicans exhibit colonial nesting behavior which occurs primarily on small coastal islands. Pesticides, human interference, and habitat destruction are some of the factors contributing to the decline of this species.

Peregrine falcons (Falco peregrinus) are few in numbers, but occur as permanent residents of the Grand Canyon. The Park Service has acknowledged that this species uses the river corridor for hunting. Historically, about 180 pairs of falcons nested in the Rocky Mountain/ Southwest Region. Presently, 30 pairs are known to inhabit this region. The major reason for the decline of the peregrine falcon is related to it being contaminated by chlorinated hydrocarbon pesticides which drastically lowered its productivity.

Historically, the Colorado squawfish (Ptychocheilus lucius) was found only in the Colorado River Basin. At one time they were abundant throughout the mainstream and most of the major tributaries. Currently, they are probably present only in the upper reaches of the Colorado River system; since, three years of searching the river within the Grand Canyon National Park has not produced any specimens. The major cause of the species' demise is thought to be the construction of mainstream dams. Another detrimental factor has been the introduction of fish species which have become established in habitats formerly occupied only by endemic species.

The Humpback chub (Gila cypha) is endemic to the Colorado River in the Grand Canyon. To offer protection to the species, the National Park Service has prohibited fishing on part of the Little Colorado River and its confluence with the Colorado River. Currently, this species is considered to occur only at five locations within the Colorado River system, the most southerly location being within this proposed action area. The causes of its reduction in range and numbers is similar to that described for the Colorado squawfish.

Implementation of this management plan could be expected to have no effect upon the brown pelican which occurs in the project area only accidently, the Colorado squawfish which does not occur in the project area, and the bald eagle which is present only as a transient.

The peregrine falcon and humpback chub would be affected by this plan in a positive fashion. Control of human usage of certain camping and visitation areas, and off-river usage should improve habitat conditions for avian species, thus an increase in prey base for peregrine falcons would be expected. The humpback chub would be affected through control of pollutants such as soap, gas, and oil residue from motor boats and human waste.

Geological Survey, Reston, West Virgina

1. A copy of the DES and draft plan were sent to the Geological Survey in Washington. No response was received. On February 24, 1978, a telephone call was made to a Ms. Copeland to determine if the Geological Survey was going to comment on these documents. Ms. Copeland said the Geological Survey had no comment. Therefore, no response is required.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

WESTERN REGION
P O BOX 92007, WORLDWAY POSTAL CENTER
LOS ANGELES, CALIFORNIA 90009

February 28, 1978

Mr. Merle E. Stitt, Superintendent
U. S. Department of Interior
National Park Service
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Mr. Stitt:

As requested we have now completed the review of your Draft Envinromental Statement and the River Management Plan for the Colorado River through the Grand Canyon National Park.

Our findings indicate that your proposed plan will not present any problems to any existing or presently planned FAA facilities.

We appreciate the courtesy in bringing this matter to our attention.

Sincerely,

for W. BRUCE CHAMBERS
Regional Planning Officer

IX-40

No response required.

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
U.S. COAST GUARD (G-WS/73)
WASHINGTON, D.C. 20590
PHONE: (202) 426-2262

No response required.

Mr. Merle E. Stitt
Superintendent
Box 129
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Mr. Stitt:

This is in response to your letter of 5 January 1978 concerning the River Management Plan for the Colorado River through Grand Canyon National Park.

The concerned operating administrations and staff of the Department of Transportation have reviewed the material submitted. We have no comments to offer nor do we have any objection to this plan.

The opportunity to review the draft statement is appreciated.

Sincerely,

F. P. SCHUBERT
[illegible]
By direction of the Commandant

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Project #D-NPS-K61022-AZ

Merle E. Stitt
Superintendent
Box 129
Grand Canyon National Park
Grand Canyon AZ 86023

Dear Mr. Stitt:

The Environmental Protection Agency has received and reviewed the draft environmental statement for the Proposed Colorado River Management Plan Grand Canyon National Park Arizona.

EPA's comments on the draft environmental statement have been classified as Category LO-2. Definitions of the categories are provided on the enclosure. The classification and the date of EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

EPA appreciates the opportunity to comment on this draft environmental statement and requests three copies of the final environmental statement when available.

If you have any questions regarding our comments, please contact Betty Jankus, EIS Coordinator, at (415)556-6695.

Sincerely,

Paul De Falco, Jr.
Regional Administrator

Enclosure

cc: Council on Environmental Quality

IX-42

Water Comments

The Draft Environmental Impact Statement (DEIS) does not adequately evaluate the Colorado River water quality in Grand Canyon National Park. The following comments should be addressed in the FEIS.

1. (DEIS II, pp 12-18)

The DEIS does not address the water quality of the Colorado River in relation to Arizona Water Quality Standards. Within this context the FEIS should describe;

a) The quality of water presently flowing into Grand Canyon National Park (GCNP)

b) The current uses of Colorado River water by the GCNP.

2. (DEIS II, pp 12-18)

The DEIS does not address minimum flow requirements, and maximum rate in change of flow tolerable by GCNP.

3. (DEIS IV, p 2)

The DEIS indicates that waste will be containerized and removed from the canyon. The FEIS should address emergency mitigation procedures in the event of accidental spills of containerized solid human wastes.

Response to: Environmental Protection Agency, Region IX

1. The Arizona Department of Health Services has established "Water Quality Standards for Surface Waters" in Arizona. The designated primary uses applicable to Grand Canyon National Park are: full and partial body contact, domestic water supply, cold and warm water fisheries and aquatic life and wildlife uses. The quality of Colorado River water is sufficient for all uses excepting domestic supply as drinking water for river runners and hikers. Sommerfeld, et al. (1976) recommended chlorination of drinking water because of potential health hazards from high coliform content. Deacon and Baker (1976) state that visitors produce minimal overall effects on water quality. The quality of water flowing into the park is related to outside sources. This information has been incorporated into the FES, Section II-D. See also Arizona Department of Health Services response number 1.

2. Minimum flow requirements for whitewater boating on the Colorado River in Grand Canyon is 3,000 cfs. Oar boating can and does occur at flow levels below 3,000 cfs, but conditions are considerably less than desirable. Larger motor boats need 3,000 cfs as a bare minimum and, in fact, at flows of less than 5,000 cfs boating conditions are less than desirable. "Less than desirable" in both instances means that you can make it through but there is less room for error.

3. The possibility or a spill is highly unlikely as containers are clamped shut and tightly rigged to the boat in case of an accident. In the event of a spill in the river, the approximately five gallons of wastes in a container would be dispersed too quickly to allow treatment. The responsible boat party will make every effort to warn those immediately downstream to take extra precautions in regard to procuring water for drinking. In the event of a spill on the beach, every effort will be made to return wastes to the container, including contaminated sand. Instructions on handling human wastes have been enlarged in the FES to cover these points.

2. Comments Received from State and Associated Agencies

Arizona Clearinghouse
- Office of Economic Planning and Development
- Game and Fish Department
- Department of Health Services
- Historic Preservation Officer
- Mineral Resources Department
- Office of Tourism
- Department of Transportation
- Center for Environmental Studies
- Center for Public Affairs
- State Archeologist
- Museum of Northern Arizona
- Prescott Historical Society
- Northern Arizona Council of Governments

Utah State Planning Coordinator

Utah Boating Advisory Council

The following agencies of the State of Arizona stated that they had no comment to make on the Draft River Management Plan or DES:

- Bureau of Geology and Mineral Technology
- Civil Rights Division
- District IV Council of Governments
- Department of Transportation, Planning Division
- Department of Economic Security, Office of Planning
- Department of Public Safety
- State Fire Marshall
- State Parks Board
- Indian Affairs Commission
- State Water Commission

ARIZONA
OFFICE OF THE GOVERNOR
WESLEY BOLIN

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT
General Offices of OEPAD • 4th Floor

February 3, 1978

Mr. Merle E. Stitt
Superintendent
Grand Canyon National Park
Post Office Box 129
Grand Canyon, AZ 86023

Dear Mr. Stitt:

In reviewing the Colorado River Management Plan, the Community Affairs Division of OEPAD has identified one area of concern. Item II-0 Economic Factors does not appear to correctly assess the economic impact of the float trip business on the state of Arizona nor, more importantly, the affected communities.

1 This office takes a keen interest in the economic health of the state's smaller communities and our initial examination shows a greater impact of this industry on the communities and our initial examination shows a greater impact of this industry on the communities of Page and Flagstaff than shown by the Parent and Robeson Survey summary. In Page, for example, food, lodging and peripheral expenditures are collected from passengers prior to embarkation. While the number of trip passengers is but a portion of all Page visitors, the impact on local restaurants and motels is substantial since a majority of the Lake Powell visitors are generally self-sufficient and spend less per person on these categories.

2 Supplies for trips originated by Page or Flagstaff based firms can also be significant as can be the air or ground transportation for disembarkers. These expenditures were not cited nor were the impacts on indirect employment in the communities. Our office has determined that an overall basic/norbasic employment multiplier for Page is 1.55 with nearly 400 local jobs attributable to tourists and almost 60 full-time equivalent jobs in Transportation alone.

IX-45

Response to: Arizona Office of Ecomonic Planning and Development

1. The total number of commercial passengers launched from Lees Ferry during the summer will be reduced from 11,335 in 1978 to 9,150 under the proposed action. However, the number of partial trips taken is expected to at least offset and possibly increase the total number of people taking trips. Therefore, the number of commercial passengers purchasing rooms, meals, supplies, and transportation is expected to remain about the same. In addition, the number of noncommercial river runners allowed is being increased dramatically (from 395 in 1978 to 3,330). Page, Arizona, in particular, is likely to benefit considerably because it is the closest town of any size to the Lees Ferry launch site. Noncommercial river runners are expected to patronize the eating and motel establishments and purchase last minute supplies in the Page area. Those noncommercial river runners who come from great distances could well be expected to purchase at least all fresh produce and possibly all of their food at Page for a trip.

2. The number of commercial river passengers and increased number of noncommercial river runners indicated above are also potential air and ground transportation customers, as well as supply buyers. No significant change is expected on local economies from the proposals in the final environmental statement.

3 Seasonality is another factor that has been minimized. When looking at the overall state economy, the impacts of summer-time employment are important since a majority of the state experiences a winter season. Activities such as the float trips serve to balance the statewide economy.

All in all, we feel that the economic impacts of the proposal have been seriously underestimated. Furthermore, our office was not contacted in evaluating the community or state impacts and we would welcome consultation on such projects.

Sincerely,

Rich Wetzel

Rich Wetzel
Community Marketing Services

RW/cw

cc: Fred Burks
Joan Nevills Stavely

3. The river-running season is going to be approximately two months longer and more boatmen will be hired as the shift to oar trips takes place. This will increase the number of jobs and length of employment, thereby increasing employment and the general economic picture in northern Arizona.

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Mr. Robert Jantzen, Director
Game and Fish Dept.
2222 W. Greenway
Phoenix, Arizona 85023

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

Economic Sec.
Indian Affairs
Mineral Resources
Transportation
Game & Fish
Ag. & Hort.
Az. Mining Ass'n
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
DEPAD - R. Kingery
R. Crystal
D. Thompson
Tourism
Power
Health
Water
Land
Parks
ACRCC

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or Areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

Comments: (Use additional sheets if necessary)

1 The elimination of the use of motors through the Grand Canyon will result in longer periods necessary to make the trip. However, the very length of time required will eliminate those possible participants that cannot arrange to be away for the necessary length of time, but will make the trip more enjoyable for those who are able to go. A possible solution would be to schedule motorized trips only every 3rd month, for example.

2 Regulations requiring human waste to be carried out is commendable.

These comments apply only to the mangement of river trips, not to the Resources Management Plan.

Reviewer's Signature [signature] Date Feb 6 1978

Title Wildlife Specialist Telephone 942-3000

Response to: Arizona Game & Fish Department

1. Full-length oar trips are longer but will provide a high quality wilderness experience. Scheduling of motor trips is part of the proposed action during the phaseout period, also refer to Alternative VIII.D, which discusses the disadvantages of alternate periods of oar and motor use.

2. No response required.

TO:

Dr. Suzanne Dandoy, Director
Department of Health Services
1740 West Adams Street
Phoenix, Arizona 85007

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Dec.	Tourism
Indian Affairs	Power
Mineral Resources	Health
Transportation	Water
Game & Fish	Land
Ag. & Horm.	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Prescott Historical Society	
Museum of Northern Arizona	
Renewable Natural Resources	
Center for Public Affairs	
Public Safety	
Bu of Geology & Mineral Technology	
Fire Marshal	
Civil Rights	
OEPAO - R. Klingerf	
R. Crystal	
D. Thompson	

This project is referred to you for review and comment. Please evaluate as to:

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(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulations with which you are familiar
(4) additional considerations

Region III
Region IV

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Please contact the Clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

Comments (Use additional sheets if necessary)

General

1 The planning process should be coordinated with PL92-500, Section 208 planning being conducted by NACOG.

Specific

2 Pg II 14 - 18 -- Should discuss water quality relative to Arizona's Surface Water Quality Standards for the area, and Federal standards for phosphates promulgated in 40 CFR Part 120.

Reviewer's Signature R Bruce Scott
ASSISTANT DIRECTOR
ARIZONA DEPT OF HEALTH SERVICES

Date FEB 3 1978

Title

Telephone

IX-48

Response to: Arizona Department of Health Services

1. Planning for all waters within Grand Canyon National Park is coordinated with the 208 Water Quality Program through the park's Division of Resource Management. The program will involve a comprehensive wastewater and water quality management program for the park. The 208 Program funds have been requested. Further study and consideration of water quality is addressed in the natural resources management plan for the park. See also Environmental Protection Agency response number 1.

2. Water in Grand Canyon is subject to standards that protect the quality of that water and meet the intent of the Federal Water Pollution Control Act, as ameded, 33 U. S. C. 1160(c). These waters, which fall into the category of natural waters, may not meet minimal state requirements even though there is no man-caused pollution present. The National Park Service will make every effort to meet State standards for quality control in situations where man-caused pollutants are present. The collection of base data on coliform and chemical content will be an ongoing program to detect changes indicating possible pollutants. The information concerning Arizona's surface water quality standards is included in Section II.D.2. Also included is the requirement for use of biodegradable or low-phosphate soaps.

ARIZONA STATE PARKS

NATURAL AND CULTURAL RESOURCE CONSERVATION SECTION

1688 WEST ADAMS STREET
PHOENIX, ARIZONA 85007
TELEPHONE 602-271-4174

Wesley Bolin
GOVERNOR

MICHAEL A. RAMNES
DIRECTOR

DOROTHY H. HALL
SECTION CHIEF
STATE HISTORIC PRESERVATION OFFICER

MARJORIE H. WILSON
HISTORIAN

JAMES W. GARRISON
HISTORICAL ARCHITECT

PATRICIA BERGTHOLD
NATURAL AREAS AND TRAILS COORDINATOR

January 19, 1978

Mr. Howard Chapman
Western Regional Director
U.S. Department of the Interior
National Park Service
450 Golden Gate Avenue
Box 36063
San Francisco, California 94102

RE: Grand Canyon National Park
Draft Management Plan and
Environmental Statement
DOI-NPS

Dear Mr. Chapman:

I have reviewed the Draft Colorado River Management Plan and related Draft Environmental Statement for Grand Canyon National Park. I am in general agreement with the management objectives as set forth in the Plan and proposed programs.

I am also looking forward to receipt of National Register nomination forms for the prehistoric sites of the park, as well as further information on all other cultural resources in the Study Area.

Thank you for allowing me the opportunity to review these two documents.

Sincerely,

Dorothy H. Hall

Dorothy H. Hall
State Historic
Preservation Officer

DHH:sw

No response required.

IX-49

TO:

Mr. John Best, Director
Mineral Resources Department
Fairgrounds, Mineral Building
1826 West McDowell Road
Phoenix, Arizona 85007

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Dev. — Tourism
Indian Affairs — Power
Mineral Resources — Health
Transportation — Water
Game & Fish — Land
Ag. & Hort. — Parks
Az. Mining Ass'n — ACRCC
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
OEPAD - R. Kingery
R. Crystal
D. Thompson

This project is referred to you for review and comment. Please evaluate as to:

(1) the project's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any requirements law, order or regulation with which you are familiar
(4) additional considerations

Region III
Region IV

Please review THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

1 TOO MANY CITIZENS WILL BE DENIED ACCESS TO SOMETHING THEY OWN. EXTENDING AVAILABLE DAYS IS A GOOD MOVE. SHORTER TRIPS SHOULD BE PLANNED

2 AND MOTORIZED CRAFT MAINTAINED

Reviewer's Signature [signature] Date 1-27-78

Title [illegible] Telephone 271-3791

IX-50

Response to: Arizona Mineral Resources Department

1. The total number of people allowed to take river trips will be increased. See responses to Arizona Office of Economic Planning and Development.

2. No response required.

3. Shorter partial trips are provided for, but motorized craft will be phased out.

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Ms. Mona Smith
Office of Tourism
1700 W. Washington Room 501
Phoenix, Arizona 85007

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.
Indian Affairs
Mineral Resources
Transportation
Game & Fish
Ag. & Hort.
Az. Mining Ass'n
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
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Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
DEPAD - R. Kingery
R. Crystal
D. Thompson

Tourism
Power
Health
Water
Land
Parks
AORCC

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or crosswide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

The Arizona Office of Tourism cannot support this plan as written (see attached.)

In addition, the Arizona Office of Tourism feels that a plan such as this should never reach the publication and review stage without official input from all state agencies which could be affected. In view of the fact that tourism is a 2.6-billion dollar business in Arizona, the Grand Canyon is America's most popular tourist attraction, and Grand Canyon river trips are an attraction exclusive to Arizona, this office should have been provided ample opportunity for input before the fact.

Reviewer's Signature: Donald A. Hawkins

Date: 2-2-78

Title: Deputy Director

Telephone: 271-3682

ZONA OFFICE OF TOURISM

1700 WEST WASHINGTON PHOENIX, ARIZONA 85007
TELEPHONE (602) 271-3618

ICE OF THE GOVERNOR

February 1, 1978

Superintendent
Grand Canyon National Park
Grand Canyon, AZ 6023

Dear Mr. Stitt:

This office is in agreement with many of the objections to the Colorado River Management Plan (as presented in the draft dated October, 1977) as set forth in the attached critique paper by the Arizona Commercial Operators. As we do not have the research capability necessary to either prove or disapprove conclusions made in the Plan or by the Operators, we recommend that in the interest of fairness to taxpayers, the operators, and the general public as well as to the National Park Service, the objections and conclusions of both sides be carefully analyzed before any plan is finalized.

The operators are obviously in agreement with many parts of the Plan but feel that modifications can and should be made. In this, the Arizona Office of Tourism is in complete agreement.

We particularly want you to know:

1. It would deprive the State of Arizona of thousands of dollars in tax revenue. In 1976, the 5 Arizona-based operators (4 of whom are motorized operators) paid over $52,000 in state taxes on a gross of $1,302,081.00: all other operators paid the Arizona Department of Revenue $94,475.00 on a gross of $2,361,884.00 in 1976.

2. It would create an economic hardship on all motorized commercial operators and would, very likely, force some Arizona operators out of business.

3. It would force motorized trip operators to re-tool or buy new equipment and contact a totally different clientele.

4. It would completely destroy any residual benefits of past advertising and promotion efforts and word-to-mouth recommendations by past clients who were pleased and happy with their motorized trip.

IX-52

Response to: Arizona Office of Tourism

1. The proposed plan and environmental statement were published in draft form to allow comment by the public and others such as the Office of Tourism, before final decisions are made. All public input including that of concessioners and the Office of Tourism was considered in preparing the final statement.

2. All existing concessioners including those based in Arizona will have the opportunity to request renewals of their permits which expire December 31, 1979. If their permits are renewed they will have the opportunity to continue in the river-running business in Grand Canyon, with the opportunity for a reasonable rate of return on their investment. The number of people allowed to take commercial river trips will be reduced from present levels, however they will generally be on the river longer, therefore, the opportunity for continued operation and resulting taxes to Arizona and Utah should remain approximately the same.

3. Individual concessioners may choose to discontinue operating and/or sell out. However, concessioners who continue will have an opportunity to operate at a profitable level as mentioned in Response Number 2.

4. Those companies who operate motorized trips will have to shift from motorized to rowing boats. For most concessioners much of the attendant equipment can be used for rowing craft. In some cases, motorboats or their side tubes can be re-framed for rowing. In other cases, new boats will have to be purchased. Five years should be ample time to phase into rowing equipment and, thereby, minimize impacts on concessioners.

Research reports clearly show very little difference in background characteristics between motor and oar passengers. Advertising and word-of-mouth recommendations will have ample time during the five-year phaseout to keep clientele interest sufficiently high.

The plan will be implemented in 1980 and will allow continued motor trips for a period of five years, which will minimize cancellations.

For 1979, the first step in the motorized craft phase out, it will undoubtedly cause cancellation of many planned, and in some cases paid for, trips and cause a loss of 1979 river-use days.

4. Elimination of motorized trips discriminate against the aged insofar as few can stand the rigors of an oar-powered trip.

It will discriminate against the handicapped or otherwise physically inform who cannot stand the rigors of an oar-powered trip and/or a hike into the canyon to partake of a shorter hike-in trip.

5

It will discriminate against the person who cannot spend 12, 14 or 16 days on the river and extending the length of river trips will obviate spending time at other Arizona attractions including other National Parks and Monuments.

5. Apparently the recommendation for elimination of motorized trips is based on the National Park Service intrepretation of the world "wilderness" and not on that of those who completed the questionnaire during the test period. The questionnaire did not define the word as intrepreted by the NPS. Most of those taking part in the study, 91% of all river passengers, motorized and rowing, did consider that theirs was a wilderness experience.

6

6. Cost of 12, 14 and 16-day oar-powered trips will necessarily be greater which will restrict the number of persons/families able to afford the longer trips.

7

7. The Plan, by reducing the June, July and August commercial traffic, will discriminate against the family who cannot enjoy this experience at any other time other than during summer vacation. This office doubts the marketing feasibility of the winter portion of the plan (due in part to lack of fund availability).

8

8. The Plan, by reducing the summer use in favor of winter use, is diametrically opposed to the marketing experience of river operators.

9

The 30% reduction of commercial use during the peak selling period can only harm most operators.

5. Current experience shows that the aged, handicapped, infirm, etc., do take rowing trips with no more discomfort or difficulty than motor trips. Those people who cannot hike or ride a mule will have the alternatives of taking a full-length trip, one that ends with a helicopter takeout, going on another river, or not going at all. Those who cannot or do not want to take the time for a full-length trip may choose to hike in or out, or may select one of the above alternatives. For the first five years of this plan, shorter, eight-day full-length motor trips will remain available.

6. The management policies of the National Park Service state that use of motorized equipment is not allowed, as a general rule, in wilderness areas. The interpretation of the word 'wilderness' is a result of these policies. (Refer to Section IX.C.)

7. For the 1979 season, river trips are available from 1 day at $125 to 22 days at $1,075. The highest priced trip is an 18 day oar trip at $1,350. Most full-length oar trips from Lees Ferry to Diamond Creek average 12 days compared to 8 days for motor trips covering the same distance. For 1979 the average cost of a 12-day oar trip to Diamond Creek is $649 compared to $571 for an 8-day motor trip covering the same distance. The motor trip averages $78 less than the oar trip. However, oar trips provide 4 more days in the canyon for the cost of $78.

It is expected that the cost of full-length (to Diamond Creek) oar-powered trips could increase to as much as $100 to $150 more than the current cost of the same distance 8-day motor trip. For some that do not want to, or cannot afford the extra cost and yet prefer a full-length trip, there will be a loss of trip options. Trips at less cost will be available for those who are willing to take a partial trip. See response No. 5 above for details of partial trips. Cost per day of oar trips is generally less than motor trips.

8. The number of people taking concessioner guided trips during June, July and August will be reduced under the proposed action. The number of people taking concessioner-guided trips in 1978 during June, July and August was 7,974. Under the proposed action there would be 4,600 people allowed to take trips with concessioners during these same months. Compared to 1978, there would be 3,374 fewer people allowed to launch. However, it should be noted that there is an overall reduction in number of people taking river trips with concessioners during all summer months from 11,335 in 1978 to 9,150 (2,185 less) under the proposed action. Therefore, actual reduction attributed directly to redistribution of launches during these months is 1,189 people. This reduction, as well as the overall reduction, will be distributed among all the concessioners.

In order to accommodate families and those with summer vacation schedules, concessioners could arrange trips for them during mid-summer months and for others such as work groups, educational groups, etc., during the early and late summer.

Winter trips are being made available for those who want them. No one is required to take a winter trip. There has been sufficient interest from noncommercial river runners in winter river trips to indicate that all of the available trips could be used by them. In addition, there is

9. The Plan, by eliminating motorized craft, would deprive potential river travelers of their freedom of choice which is an inherent right and is provided for in the present system. The marketing experience of operators under the present system indicates that the public prefers the motorized trip.

10

10. This office knows from the personal experience of those who have taken Grand Canyon/Colorado River trips - both commercial and private and motorized and oar-powered - that the commercial operators do an excellent job of keeping the river and beaches clean, that they impress the necessity of this upon their clients, and that they adhere to NPS rules and regulations regarding safety, cleanliness, conservation and preservation. Is there any historic experience documentation that private parties would do as well or that most of the present litter and human waste disposal problems are not now caused primarily by private parties or inner-Canyon hikers?

11

Cordially,

Mona Smith

Mona Smith, Director
Arizona Office of Tourism

MS/clh

cc: Office of the Governor
Arizona Congressional Delegation
Four Corners Regional Commission
Four Corners Regional Tourism Organization, Inc.

growing interest in concessioner guided winter river trips for fishing and educational purposes as well as regular recreational boating.

9. See Response Number 8.

10. The proposed action will, after the 5-year phase out, eliminate visitor choice between motor and oar powered trips. However, based on research and public input, the objective of a quality wilderness river-running experience will be achieved. There is no evidence that passenger choice was more influential than concessioner economics in the present ratio of motor to oar trips. In fact, some concessioners have indicated a preference to offer oar trips but do not because it is not as profitable.

11. There is some indication from ranger patrol trips that noncommercial trips do not follow regulations as well as commercial trips. Through the information and education program in the plan, training in the procedures and equipment needed to prevent environmental impacts will be provided. In addition, increased ranger partols will ensure compliance. If unacceptable damage occurs from noncommercial groups, the monitoring program will document the nature and extent of impact and corresponding plan modifications will be made.

ARIZONA DEPARTMENT OF TRANSPORTATION

AERONAUTICS DIVISION
205 South 17th Avenue Phoenix, Arizona 85007
(602) 261-7778

BRUCE E. BABBITT
Governor

WILLIAM A. ORDWAY
Director

JOHN R. WALTERS
Assistant Director

April 28, 1978

U.S. Department of the Interior
National Park Service
Grand Canyon National Park
Grand Canyon, AZ 86023

Attention: Merle E. Stitt, Superintendent

Subject: Colorado River Management Plan for Grand Canyon National Park

Gentlemen:

I have recently learned from Arizona flight operators that a response is due May 1 from parties interested in the Colorado River Management Plan. The Arizona Department of Transportation submits the following comments for the record.

Review of the plan and related environmental statement reflects a significant impact on Arizona aviation. Although the Department did not participate in the series of public hearings, we now find that we have a very strong interest in the policies adopted as an outcome of this study. There are three main areas in which the study appears deficient.

1 First, the environmental statement fails to recognize the plan's economic impact on the aviation industry and related indirect impacts on those Arizona communities whose economies are tied to a great extent to aviation.

For example, in the Environmental Statement, Part II, the Economic Factors Section states that "elimination of all commercial river trips would not have a major economic impact on most

Response to: Arizona Department of Transportation
Aeronautics Division

1. The proposed action of the FES has been modified to allow river concessioners of Grand Canyon National Park to provide helicopter takeout service for their passengers. Conditions are that helicopters providing this service may not land within the park and that takeouts must be located and scheduled so that other river travellers are not impacted by the intrusion. See also Bureau of Indian Affairs, Washington D.C. response number 5, and Bureau of Indian Affairs, Truxton Agency response number 7. The economic situation of flight operators in northern Arizona and southern Utah should remain unchanged due to this modification.

communities in which these [river runners] companies are based." There was no mention of the economic impact on the Arizona communities of Page or Williams, whose aviation services are important parts of the local economic profile.

Should helicopter river pickups be eliminated, the indirect impact on commercial flight operators in some cases could be fatal. Without the revenues of river pickups, combined with other flight operations, flight operators at Page and Williams may not be able to survive. Should the local flight operator fail, aviation services to these communities will not be available. Aviation is an extremely important factor in the economic health and social welfare of those communities. These factors apparently were not explored.

I suggest that your study be modified to reflect the direct economic impact of the proposal on the aviation industry in the Grand Canyon region and its indirect impact on the communities that industry serves.

IX-56

2 A second area in which the study appears deficient concerns the sociological impact of the proposed plan which results from eliminating helicopter pickups. We did not find that the study assessed the physical abilities of river tourists to walk or ride a mule out of the Canyon.

We propose, subject to evidence to the contrary, that as many as 90% of those who are airlifted out of the River would be unable or unwilling to walk out of the Canyon after a river ride. We further propose that an important percentage would be unable to ride a mule. Until this aspect of the prohibition on helicopter pickups is studied, the sociological impact of the Management Plan is incomplete.

These first two considerations cause real harm to a lot of people. Some aviation firms would be put out of business, indirectly many people would lose aviation services which are vitally needed to their communities, many people would be prohibited from using the River who now enjoy that privilege -- all for the benefit of the healthy, young environmentalists who took such an active role during the public hearing process.

It also appears that barring motor trips and banning helicopter pickups will prohibit many people from enjoying the River who do not have the time to spend for prolonged recreation and leisurely

2. Helicopter use for takeouts is being continued. Therefore, there will be no change in the effect on those who may not be able or want to hike or ride a mule out of the canyon, or on those who may not have enough time for a full-length trip.

enjoyment of nature's beauty. The policy seems to favor only those such as federal government workers, teachers, students and others with substantial vacation or free time.

3 A third area which was inadequately addressed by the study concerns the undesirability of noise. Apparently the main concern with noise is that it disrupts the tranquility of the "nature" experience. Yet the study does not attempt to measure the trade-off between total tranquility for a few organized enthusiasts and denial of considerable pleasure to all others.

It appears that the study is strongly biased against the use of powered vehicles. For example, on page II-23 the study compares the noise measured at head level in the boatman's station with background noise of the natural environment. The use of this single statistical measure and its significance on the outcome is perplexing. A more realistic measure may have been the noise of a helicopter in the distance and the number of people who would be affected at a given moment by such noise. The decibel levels would be very much lower and the number of people offended would be very few compared to the total numbers of users who enjoy such helicopter pickups. The study itself indicates an 85% satisfaction rate of those who use the River (and the helicopter pickup). Yet there is no documentation on the percentage of River tourists who are willing to give up the helicopter pickups to save the noise.

In summary, we suggest there are alternatives which have not been explored and adversities which were overlooked. We strongly recommend eliminating the prohibition on helicopter pickups on the Colorado River.

Sincerely,

John R. Walters (per)

JOHN R. WALTERS
Assistant Director

JRW:pck

cc: W. A. Ordway

IX-57

3. There is no question that helicopter noise adversely impacts a quality wilderness river-running experience. It is also evident that some people desire to be helicoptered out of the canyon at the end of a river trip. Because of these conflicting views and the aircraft overflight problem over the entire park, further study is being conducted. See also Bureau of Indian Affairs, Washington, D.C., response number 5, and Bureau of Indian Affairs, Truxton Agency response number 7.

ARIZONA STATE
UNIVERSITY
TEMPE, ARIZONA 85281
DEPARTMENT OF ANTHROPOLOGY

January 25, 1978

1 The proposed plan of action has two components: (a) scheduling and regulatory actions and (b) actions requiring outlay of budgeted funds. Though one may assume that schedules and regulations can be formulated and policed by the Park Service with little difficulty and implemented very soon after the final EIS is accepted, there is little or no indication of the length of time Park Service expects to pass before funding will be made available to initiate and implement those actions requiring expenditures. This matter is critical, as it is impossible to evaluate the effectiveness of the proposed plan relative to alternatives unless a clear assessment can be made of the speed with which those actions requiring funding will be implemented.

2 A case in point is the action proposed for compliance with the National Historic Preservation Act. The draft EIS informs us that evaluation of cultural resources is planned in compliance with E.O. 11593, but not when funds will be available to insure that this plan is completely implemented. We are informed that a program of cultural resources repair or stabilization is planned, but not how long it is likely to be before the program is initiated or completed. As the draft EIS acknowledges, each visitor day results in a measure of irretrievable cultural resource loss so long as such plans remain uncompleted.

James Schoenwetter
Associate Professor

IX-58

Response to: Center for Environmental Studies
Arizona State University

1. Funding has been requested to implement this plan. However, the availability of funds depends on appropriations from Congress. Funding for implementing the plan appears favorable at this time although not guaranteed. See also Morley Hudson response number 3, page IX.

2. Request for funding to complete compliance with E.O. 11593 was submitted several years ago and funds were provided in fiscal year 1978 for a survey of the river corridor. That survey was completed by midsummer of 1978. A report of that survey is expected to be completed by midsummer 1979. The park archeologist considers that survey to be quite comprehensive, meeting the requirements of E.O. 11593. Funding for cultural resources repair and/or stabilization will be requested based on the information in the report of the 1978 survey. No timeframe can be firmly established for completion of the repair and stabilization work since funding is dependent upon appropriation from Congress. The identified sites will be continually monitored and if noticeable deterioration is detected, sites may be placed off limits to visitation.

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:
Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.
Indian Affairs
Mineral Resources
Transportation
Game & Fish
Ag. & Hort.
Az. Mining Ass'n
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
OEPAD - A. Kingery
R. Crystal
D. Thompson
Tourism
Power
Health
Water
Land
Parks
AORCC

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulations with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary) P. II-50 ¶ 2. "demand for higher priced trips appears to be greater..." Creating, having higher demand, the price could be set higher.

1 There is cost to the mitigation of impact from the canyon users. These users pay the concessionaire's costs. A charge could be established to offset some of the cost of mitigation of impact on the canyon.

Reviewer's Signature P. J. Becker
Title Prof. Center for Public Affairs
Date 1-27-78
Telephone 965-3026

IX-59

Response to: Arizona Center for Public Affairs

1. Legal constraints would prevent us from collecting a fee per passenger to offset the costs of cleanup, patrol, and other actions. Preserving the resource is the responsibility of the National Park Service with funds appropriated from Congress. Park patrol trips to clean beaches and enforce regulations are designed to accomplish this.

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Dr. R. Gwinn Vivian
Arizona State Archaeologist
Arizona State Museum
Tucson, AZ 85721

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.
Indian Affairs
Mineral Resources
Transportation
Game & Fish
Ag. & Hort.
Az. Mining Ass'n
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
DEPAD - R. Kindsey
R. Crystal
D. Thompson

Tourism
Power
Health
Water
Land
Parks
AGRCC

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☒ Proposal is supported as written
☐ Comments as indicated below

Comments (Use additional sheets if necessary)

Reviewer's Signature [signature] Date 01-20-78

Title Associate Archaeologist Telephone 884-1761

IX-60

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Dr. Hermann K. Bleibtreu, Dir.
Museum of Northern Arizona
P. O. Box 1389
Fort Valley Road
Flagstaff, AZ 86001

State Application (Identifier) (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

Economic Sec. — Tourism
Indian Affairs — Power
Mineral Resources — Health
Transportation — Water
Game & Fish — Land
Ag. & Hort. — Parks
Az. Mining Ass'n — ACRCC
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
OEPAD - J. Wingert
R. Crystal
D. Thompson

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or area-wide goals and objectives
(3) its support with any applicable law, rules or regulations with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 11 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

- No comment on this project
- Project is supported as written
- Comment is material below

Comments (Use additional sheets if necessary)

Comments by W. Breed - Geology, MNA

Congratulate the NPS on a fine management plan. Particularly agree with their plan to eliminate motors from the river.

Donald E. Weaver, Jr.

Reviewer's Signature: Donald E. Weaver, Jr.
Director, Archaeological Contracts Section

Date

IX-61

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Dr. Kenneth Kinsey, Director
Prescott Historical Society
415 West Gurley Street
Prescott, AZ 86301

State Application Identifier (SAI)

JAN. 17, 1978 State AZ No. 78-80-0002

Economic Sec.
Indian Affairs
Mineral Resources
Transportation
Game & Fish
Ag. & Hort.
Ar. Mining Ass'n
Arid Lands Studies
Environmental Studies
Archaeological Research
Prescott Historical Society
Museum of Northern Arizona
Renewable Natural Resources
Center for Public Affairs
Public Safety
Bu of Geology & Mineral Technology
Fire Marshal
Civil Rights
CEPAD - R. Kingery
R. Crystal
D. Thompson

Tourism
Power
Health
Water
Land
Parks
AORCC

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its conflict with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Region III
Region IV

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 11 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☒ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature Kenneth R. Kinsey

Date 1/25/78

Title Director

Telephone 645-3122

Response to: Arizona State Archaeologist
Museum of Northern Arizona
Prescott Historical Society

1. All of the above support the plan. No response required.

Northern Arizona Council of Governments

P.O. BOX 57 • FLAGSTAFF, AZ - 86001 • (602) 774-1895

WILLIAM C. WADE
EXECUTIVE DIRECTOR

Regional A-95 Review

TO: Ms. Jo Youngblood
Arizona State Clearinghouse
1700 W. Washington, Room 505
Phoenix, AZ 85007

RE: Project: National Park Service
Draft Colorado River Management Plan & DES
S.A.I. #: 78-80-0002

The Northern Arizona Council of Governments (NACOG) has completed its A-95 Review and Comment upon the above project. Action taken on this project notification is as follows:

☐ Proposal supported as described on the SF-424 and any attachments.

☐ Proposal is supported with certain recommendations, provisions, etc.

☒ Proposal is not supported.

SEE ATTACHED SHEET

Please be aware that NACOG reserves the prerogative of making additional comments should new information become available to the Agency.

The Northern Arizona Council of Governments has appreciated this opportunity to review and comment on this project.

Thank you.

William C. Wade
Executive Director

Date: March 1, 1978

THIS A-95 REVIEW IS SUPPORTED IN PART BY A HUD 701 PLANNING GRANT.

National Park Service
Draft Colorado River Management Plan & DES
S.A.I. #78-80-0002

There are many positive parts in the Plan; however, it is felt that some further study is needed on issues raised in the public hearings. In addition, supplemental studies on the economic impacts of the Plan on Page, Fredonia, Williams and Flagstaff are also recommended.

Reviewers in Region III have commented on these issues:

1. Elimination of motorized craft is objected to because of concerns of commercial river operators and those who think limiting of both motorized and non-motorized craft would be more equitable.

2. Increase of total user days through extending the season is criticized because of cold weather hazards and discomforts.

3. Motor trips spend less time in back canyons and stop at scenic attractions less than oar craft, presumably causing less damage to the environment.

4. Increasing the number of boaters hiking out of the canyon decreases user days available to hikers.

5. Eliminating motorized craft makes a full-canyon trip too lengthy for most users and would tend to make partial trips the only option for many persons.

6. Some flexibility in being able to tailor trips for individual groups is felt necessary by commercial river outfitters.

7. Commercial outfitters dispute the frequency of motorized craft meeting during the height of the season and claim that oar craft separate less easily, causing increased contact time.

Response to: Northern Arizona Council of Governments
Flagstaff, Arizona

1. All use will be limited as outlined in the proposed action section of the FES.

2. Use during midsummer months will be reduced to reduce crowding and congestion and resulting resource impacts. The alternative to allowing use during a longer season is a straightforward reduction for the mid-summer months. No one is required to take trips in the early or late summer. Trips may be taken at those times, if people want them.

3. Motor trips spending less time at scenic attractions may cause less resource impact. However, primary impact is caused by crowding and congestion at attraction sites. This will be corrected through the use scheduling and trail alignment as outlined in the proposed action of the FES.

4. Most people (estimated at three-fourths) hiking the canyon from or to river trips at Phantom Ranch will use the Bright Angel and Kaibab Trails and will be day hikers. There is no limit on day use of those trails and, therefore, no impact on hikers from the rim. There will be some impact on rim hikers from those river runners on partial trips who stay overnight on the lesser used trails (approximately 400). It must be recognized that such river travelers are visitors to the park and are equally deserving access to the backcountry for hikes in connection with river trips.

5. There will undoubtedly be certain individuals who will select only full-length trips. However, partial trips will provide the opportunity for short, quality wilderness river trips.

6. Concessioners are allowed flexibility in tailoring trips for individual groups within the limits set forth in the proposed action of the FES. Those limits are minimum trip lengths of eight days and maximum trips lengths of 18 days in summer and 21 days in winter. Complete flexibility is provided concessioners to respond to requests for special trips on geology, wild animals, birds, plants, cultural history, ecology, etc.

7. Contact data was gathered on river from actual case studies. If concessioners have other reliable data gathered through independent study we would be happy to review it. Oar craft do spend more time in sight of each other. This is one of the reasons for redistributing use.

Scott M. Matheson
Governor

Kent Briggs
State Planning Coordinator

No response required.

STATE OF UTAH
Office of the
STATE PLANNING COORDINATOR
118 State Capitol
Salt Lake City, Utah 84114
(801) 533-5246

June 7, 1978

James L. Isenogle
National Park Service
Utah State Office
125 South State Street
Salt Lake City, Utah 84138

Dear Mr. Isenogle:

The Utah State Environmental Coordinating Committee has reviewed the proposed Colorado River Management Plan for Grand Canyon National Park. The Committee offers no comment.

Thank you for the opportunity to comment.

Sincerely,

Joseph L. Platt
Deputy, State Planning Coordinator

JLP/jl

STATEMENT ON PROPOSED COLORADO RIVER

MANAGEMENT PLAN

BY THE

UTAH BOATING ADVISORY COUNCIL

The Boating Advisory Council was created to serve the Utah Board and Division of Parks and Recreation in a 1959 bill which imposed a Legislative mandate to administer the State's boating laws and develop, administer, and manage regulations and programs designed to promote safe and enjoyable public use of all lakes and rivers within Utah. We have been very much involved with the river running public for a decade and a half and have pioneered many of the river boating standards adopted subsequently by other State and Federal jurisdictions.

A recent example of our function in the development of responsive regulations is the circulation of questionaires to a very large number of river runners, commercial and private, and other involved persons and agencies, seeking comment and input on several proposed changes of long-standing river running requirements. Based directly on this input from that section of the public and managing agencies most affected, the Council made their recommendations to the Board for consideration. The changes were adopted and became official on the 20th of April, 1978.

In consideration of the drastic impact on public use being proposed in the "Colorado River Management Plan," it is difficult for us to understand why the readily available passenger lists were not utilized and a similar or even more comprehensive survey of those who have been actually running the river in the Grand, utilizing the many varieties of equipment, services and length of trip which best serve their interests, needs, time and money capabilities, was not included in the "nearly 3/4 of a million dollar research effort" or any of the many other "studies".

1

IX-66

Response to: Utah Boating Advisory Council
State of Utah

1. Researchers did obtain and utilize passenger lists for the sociological studies. Research on this subject was carefully designed to avoid bias.

It appears to us that this would have been most logical and appropriately responsive to those most directly affected, and would have provided a significant amount of input, of the type a "Public Service Agency" should want to utilize, and at a fraction of the taxpayer cost. While we don't understand why this wasn't or isn't being done,we do realize that the same "no motor" interests could have designed the survey questions so the respondants would quite naturally express "favor" for a total "wilderness" experience at some vague future time instead of allowing them to indicate what their feeling was for the experience they had. We are not impressed with the oft attempted and erroneous tactic to diminish the value or justify the deletion of such a survey by calculating statements to the effect that "it would be unreliable as a model because most every respondant would merely report that they enjoyed the particular trip they took and most wouldn't have known ahead of time that rowing trips were also available", so as to indicate a false impression that through all these years most of the public would have taken the longer row trips if they had only known about them, but were somehow coersed into a motor trip of one kind or another.

On the contrary, it is clear that the architects of this proposal have responded more to the strong and very vocal desires of small but influencial interests who represent very few of the Grand Canyon River users, in obviating much of the possible value of such a costly research effort and other studies by deciding ahead of time to "base the proposal" on their earlier decision to "eliminate the use of motors" and provide "a wilderness river running experience" only for everyone whether or not the majority preferred the five to seven day "wilderness adventure" made possible by the use of a motor. This inappropriate, unrealistic and grossly

inequitable "basic guideline" (while it has been used freely in the draft statements not seen by most users,) has been openly paraphrased many times throughout the various meetings and public hearings on the proposal, adding emphasis to the very obvious fact that a few, but strategically placed minds, were made up some time ago and only that criteria which would support this basic premise was utilized from the very expensive research and studies and/or actively sought mostly from selected river users and others with specific corresponding interests.

So much for criticism of the few most basic shortcomings and biases of the proposal. Earlier, we identified our Legislatively-created responsibility to the boating public in Utah and are, therefore, very much concerned about the most probable impact on Utah rivers if these drastic proposals were to actually be adopted.

IX-68

2

First, it is quite obvious to us that very significant numbers of the public would be "phased out" of the Grand Canyon, along with motors and the many varieties of "trip experiences" made possible by their use. It would seem logical that many of these would seek a substitute experience on Utah rivers where use is already at or approaching Federally imposed quotas.

3

Secondly, the adoption of this public restriction would give its instigators an overwhelming precedent on which to successfully seek the same imposition in Utah by the National Park Service in Cataract Canyon; the Bureau of Land Management in Grey-Desolation, Westwater Canyon, and on the San Juan; and more restrictive uses as well in the already motorless Dinosaur National Monument.

Unofficially, as a part of the river running public, we are also individually and collectively concerned with this unrealistic proposal for the Grand. We have enjoyed most of the many varieties of river running experiences available

2. Those people who prefer a motorized trip will be disappointed after the 5-year phase out. However, a wide variety of trip experiences will be provided through oar trips, and motor trips will be provided during the 5-year phase out. See also Professional River Outfitters response number 21. It is true that some people may seek motorized trips on other whitewater rivers.

3. There is no intent in this proposal to encourage other river managers to eliminate motorized use. There are draft management plans released for Desolation-Gray Canyon on the Green River and Cataract Canyon on the Colorado River that propose to continue the use of motorized craft.

to date from small, individually rowed craft to intermediate sized rafts without motors, 33' pontoons and the largest "J" Rigs. We have made runs of from one to seven days and have had experience with a variety of equipment, services, meals, problems and accomplishments, but the overriding factor is that we have individually and collectively enjoyed a great "wilderness adventure" and "quality experience", on every variety of trip, irregardless of whether or not there was a motor on our craft. We liked the experience of meeting other people on the river, lots of people, traveling in various modes and enjoying the same variety of wonderful experiences and feelings that we were.

We agree that there needs to be places and/or times available for those who cannot or will not tolerate the sight or sound or thought of a motor on "their" river. There are several in Utah and the West (such as Dinosaur National Monument) which also provide the option of choosing from a variety of trip lengths, mostly in the 5 to 7 day range which meet the particular needs, capabilities and desires of the majority of the river running public; but not to the exclusion of our being able to take a motor trip where they are well established and GRAND CANYON ISN'T A CANDIDATE FOR ONE OF THOSE PLACES, since a minimum no motor trip, as outlined in the proposal, would be 12 days and more particularly since it would come at the expense of the other 80% or more who have for many years now automatically identified what the "Public interests and Desires" in the Canyon are.

It appears to us, after viewing several years of controversy, and hearing all of the differences in philosophical points of view, mostly about which "quality experience" should be made available to, or more realistically, imposed upon all of the public, that the actual basis for most of the controversy is the "use ceiling" itself. (The philosophical difference will never be fully resolved so we should quit wasting time trying).

69-XI

4

4. No other whitewater river in this region offers the caliber of wilderness whitewater river experience that the Colorado of the Grand Canyon does. For this reason, the basic guideline of a quality wilderness river-running experience is fitting and appropriately applied to exclude motors. Trip length has been modified in the proposed action to allow shorter trip length for both motorized and rowing trips. Trip length will be evaluated annually and adjusted as necessary. Partial trips will be continued to provide shorter trips at lower cost to those who want them. Eighty (80) percent of the current trip offerings are motorized. However, it appears that concessioner economics, as well as public demand has influenced this ratio.

[redacted] resolved so we should quit wasting time trying)

The privates are scrapping with the outfitters. The motorless interests want to get rid of the motors. The "purist" is attacking the public through the concessionaires. Many, if not most, of these efforts are motivated by a natural desire to acquire an increased quota for one particular interest or another which, if successful, would naturally have to be at the expense of someone else under the present quota system.

Therefore, it appears that one overall solution which would ADVERSLY AFFECT THE FEWEST OF THOSE ACTUALLY INVOLVED WITH THE USE OF THE RIVER AND ITS MANAGEMENT, would be to simply RAISE the "Private Allotment" to accommocate all applicants. Of course there will be those who would put in for a private trip when in fact, it was a commercial venture. There will be the other forms of cheating which have to be dealt with now anyway. We realize that it will appear that a great percentage increase has to be allowed to this sector; but, the actual number increase would be a small factor compared to the total existing use.

5 IX-70

We also suspect that most of the proposed changes were, in fact, designed to reduce the numbers of people who can enjoy the canyon, but we cannot understand how doubling the average trip length from 7 to 14 days by eliminating motors will do anything but INCREASE the impact on most of the camp and visitation sites and provide much more on-the-bank-activity for those few who have the time and have worked so hard to achieve these exclusive uses at the expense of the 80%.

6

However, the excellent management programs which have been developed in the five years or so since the ceilings were imposed and the interest and care displayed by the river runners themselves, many of whom have a double

5. Noncommercial use allocation will be increased substantially by the proposed action, from approximately 40± to 222 trips annually. Trip makeup will be monitored to eliminate unauthorized commercial trips under noncommercial permits. Total use is being increased to accommodate some of the increased use and the remainder of this increase is provided for through a reduction in the number of commercial passengers.

6. The number of people allowed to take river trips is being increased. User days are being increased considerably but are being redistributed from approximately 4 to 12 months, and daily and weekly launch schedules will be adjusted to more evenly distributed use. This will reduce crowding, congestion, and resulting impacts. Primary impact from river running is in three areas; human waste disposal, use of fires, and multiple trailing. These impacts will be mitigated satisfactorily through human waste haul out, fire management, and single trail alignment as outlined in the proposed action.

reason to take the best care of the environment, has, in our opinion, resulted in the distinct probability that the Grand Canyon and other river areas could accommodate up to twice as many people, maybe, even more, with less detrimental impact on the ecology than was experienced in 1972 when the ceilings were justly imposed. 7

We feel that our suggested solution would satisfy the majority of those actually involved with the river use and its management and still stay within an acceptable range of "people impact" in the canyon. At the same time, we would expect it to have a significant impact on those few who are working so diligently to exclude all but "their" section of the public; but we feel that it is time for "Public Service Agencies" to cease "over-responding" to the "wants" and "demands" of small, though vocal groups and provide more "service" to the majority of the river running public, who, unfortunately, because of geographical limitations, cannot participate in representative numbers in the scheduled public hearings, even if all of them had been informed. 8

IX-71

We rest our case with the conviction that the existing variety of public use experiences must continue to be maintained in the Grand Canyon and elsewhere with an appropriate increase in the private quota to accommodate that important and growing need.

Respectfully submitted,

William A. Carver

William A. Carver, Chairman
Boating Advisory Council

doc

7. See #6 above.

8. Reasonable opportunity for public input was provided. See Section IX for a review of public input.

3. Comments Received from Indian Tribes

Hopi Tribe
Hualapai Tribal Council

THE HOPI TRIBE

P. O. BOX 123

ORAIBI, ARIZONA 86039

March 22, 1978

Mr. Merle E. Stitt
Superintendent
Box 129
Grand Canyon National
Park
Grand Canyon, AZ 86023

Dear Mr. Stitt:

Reference is hereby made to your letters of January 5, 1978 and March 8, 1978.

Reviews have been made of the copies of the Draft Environmental Statement and the River Management Plan for the Colorado River through the Grand Canyon National Park.

1 Please be aware that the Hopi people hold the Grand Canyon and its environs as a place of sacredness. Sipaponi (place of emergence of the Hopi) and the Hopi salt mines are two examples of such areas (sacred) which should be considered as "off limits" for visits by the public. There are, of course, a various number of Pueblo ruins located in the area which we are dealing with and those ruins are to be protected as much as possible from nature and man.

I am aware that you have made provisions, in your drafts of the Grand Canyon National Park area affected, to protect the aforementioned areas. We, the Hopis, appreciate your thoughtfulness in that we are able to help formulate your plans with our input.

We will be waiting for anymore new developments or possible changes in your proposal. Please keep us posted. Thank you.

Sincerely,

Stanley Honanie
Vice Chairman
Hopi Tribal Council

TX-73

Response to: The Hopi Tribe

1. The areas mentioned are recognized as places of special significance to the Hopi Tribe. The Hopi Salt Mines within the park are now and will continue to be off-limits to visitation. The Sipapu is not within the park but is easily accessible from the river and river runners are encouraged to respect and not disturb this site.

HUALAPAI TRIBAL COUNCIL

P.O. BOX 168 • PEACH SPRINGS, ARIZONA 86434 • 602 769-2216

April 20, 1978

COMMENTS TO PROPOSED COLORADO RIVER MANAGEMENT PLAN

The Hualapai Indian Reservation borders the Grand Canyon National Park at the Colorado River for over 108 miles from approximately Mile 165 to approximately Mile 273. The tradition of the Hualapai Tribe is that the northern boundary of their lands goes to the "spine" of the river.

The Colorado River has important historical, cultural and economic value to the Hualapai Tribe. The Hualapai Tribe insists that these values be accorded the decent respect of those who come in contact with the Hualapai Reservation. These comments of the Hualapai Tribe to the proposed Colorado River Management Plan involve only those concerns which affect the Hualapai Tribe specifically.

The Management of the Grand Canyon National Park has for years participated in the systematic desecration of the lands of the Hualapai Reservation. They have done this by their failure to exercise their responsibility to prevent travellers upon the Colorado River from camping upon the lands of the Hualapai Reservation without the permission of the Hualapai Tribe. Not only have travellers along the River camped upon the lands of the Hualapai Reservation, they have deposited human waste, the refuse of fires and other waste products. The travellers along the River have disturbed the natural vegetation along the River. The Management of the Grand Canyon National Park has failed to prevent the continued desecration of the Hualapai Reservation.

1 The Hualapai Tribe has the authority to exclude from its Reservation anyone who is not a member of the Hualapai Tribe. The lands of the Reservation are not open to casual visitors who leave behind them the evidence of their visit. The Management of the Grand Canyon Nat-

HUALAPAI TRIBAL COUNCIL

ional Park has a responsibility to the Hualapai Tribe to inform all visitors upon the river, whose entrance into the river the management of the Park controls, that they may not enter upon the lands of the Hualapai Tribe without the permission of the Hualapai Tribe. A river management plan which does not take into account the necessity of securing permission from the Hualapai Tribe before its lands can be used by those admitted to the River by the management of the Grand Canyon National Park, is unacceptable to the Hualapai Tribe.

1 Under conditions which take into account the concern of the Hualapai Tribe that its lands not be desecrated by deposits of human waste and other refuse and by the destruction of plan and animal life and with proper patrols and policing, the Hualapai Tribe is not opposed to allowing visitors on the River to use on a temporary and licensed basis, the lands of the Hualapai Reservation during the course of their trip down the Colorado River. Unless such arrangements are made, however, between the Management of the Grand Canyon National Park and the Hualapai Tribe, travellers down the River must be excluded from the Hualapai Reservation. The Colorado River Mangement Plan does not comtemplate such arrangements. Without such arrangements the Plan will not work.

2 Diamond Creek located within the Hualapai Reservation is the first road access to and from the River below Lee's Ferry. The Hualapai Tribe imposes a fee for travel over the Reservation to or from the River at Diamond Creek. The proposed River Management Plan is correct when it is implied in the Plan that it is important for the Tribe and the Park Service to maintain cooperative relationships so that the right of ingress and egress will be maintained for the benefit of River travellers, the Park Service and the Hualapai Tribe. The Hualapai Tribe maintains its right to set such uniform conditions as it deems appropriate to the travel by any person, not a member of the Hualapai Tribe across the lands of the Hualapai Reservation from or to the Colorado River at Diamond Creek or any other place.

3 The proposed Colorado River Management Plan asserts:

> "the debaracation of commercial passengers by helicopter from the River is tc be discontinued. As a condition of the commercial permits , trips will be allowed to terminate only through the use of livestock and hiking on trails designated for this

Response to: The Hualapai Tribal Council

1. The National Park Service recognizes the rights and interest of the Hualapai Tribe to lands on the south side of the canyon from Mile 165 to Mile 273. The proposed action has been modified to reflect this recognition. See also Bureau of Indian Affairs Truxton Agency response numbers 1, 2, and 4. The National Park Service cannot legally patrol and take action on unauthorized use of Hualapai Tribal Lands. NPS patrol trips will watch for visitors using Tribal lands and will inform such visitors that permission from the Hualapai is necessary for visiting these lands. NPS will also inform the Tribe of observed use of Tribal land.

2. All river runners are and will continue to be notified that fees are charged for use of Tribal lands for river trip takeouts at Diamond Creek or other locations on Hualapai Tribal land. NPS will continue to keep the Tribe informed of planned river runner takeouts at Diamond Creek or other locations on Tribal land.

3. It is true that NPS does not have authority to regulate or prescribe uses of Hualapai Tribal lands. However, the NPS does have authority to set requirements on concessioners concerning services they provide, that affect the river-running experience of their passengers or other river runners on the Colorado River within Grand Canyon. The proposal has been modified to allow concessioners to continue use of helicopter services for regular river trip takeouts. Helicopter services cannot be provided within the park. See Bureau of Indian Affairs, Washington D.C. response number 5, and Bureau of Indian Affairs, Truxton Agency response number 7.

purpose or through road access at Diamond Creek or Lake Mead. This stipulation will apply to both Park lands and adjacent privately owned or tribal lands. Trips from 2 to 18 days will still be available to the public."

The Mangement of the Grand Canyon National Park may make what rules it wishes as concerns the transportation of travellers down the river within the bounds of its jurisdictional capabilities. It has, however, no right to make as a condition of the issuance of commercial permits the non-use of particular kinds of transportation which originate and conclude outside of the National Park. The Hualapai Tribe for some period of time has had an agreement with a helicopter company which allows the removal of river travellers from land within the Hualapai Reservation to places outside both the Hualapai Reservation and the Grand Canyon National Park. Any attempt by the Grand Canyon National Park to violate the rights of the Hualapai Tribe to enter into contracts for helicopter service from its Reservation to places outside of the Grand Canyon National Parks will be vigorously opposed administratively and judicially. The mangement of the Grand Canyon National Park cannot directly take property from the Hualapai Tribe and it cannot do so indirectly.

3

4. Comments Received from County and City Government

Coconino County Board of Supervisors
Flagstaff Chamber of Commerce
Kane County Chamber of Commerce
Kane County Commission
Page-Lake Powell Chamber of Commerce

Town of Cottonwood
Town of Fredonia
City of Page

COCONINO COUNTY BOARD OF SUPERVISORS

COCONINO COUNTY COURTHOUSE: SAN FRANCISCO AND BIRCH • (602) 774-5011
FLAGSTAFF, ARIZONA 86001

JACK R. SMITH, COUNTY MANAGER
ETHEL ULIBARRI, CLERK

TIO A. TACHIAS
CHAIRMAN
DISTRICT 2

PETER J. LINDEMANN, D.D.S.
DISTRICT 1
J. DENNIS WELLS
DISTRICT 3

February 7, 1978

Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Sir:

IX-78

1 It has been brought to the Coconino County Board of Supervisor's attention that the proposed Colorado River Management Plan which was prepared by the National Park Service has an element which proposes to eliminate power assisted raft trips on the Colorado River. This curtailment of motor steered boats will lengthen the time necessary to complete a trip down the Colorado River. The increased time results in increased costs which will put the price out of the range of a large number of people.

2 Another aspect is that almost all communities in northern Arizona rely heavily on the tourist dollar. The twenty-one river trip concessionaires have an annual revenue of $4,000,000. This revenue would be severely reduced if trips were limited to row trips.

3 I find it difficult to understand what purpose would be accomplished in eliminating power assisted rafts. Anyone familiar with the Colorado River knows that the rapids make far more noise than the small motors presently being used. It is impossible to imagine any visible oil slick.

This appears to be an arbitrary recommendation made by federal bureaucrats with little regard to the public they are supposedly paid to serve.

Respectfully,

Tio A. Tachias
Chairman

cc: Representative Bob Stump
Representative Eldon Rudd
Senator Barry M. Goldwater
Senator Dennis DeConcini

Response to: Coconino County Board of Supervisors, State of Arizona

1. See Arizona State Office of Economic Planning and Development response number 1. Full-length trips will require more time on oar-powered craft than on motorized craft. Partial trips will be available for those who desire to spend less time and money in running the river. Partial trips require a hike, a mule ride, or a helicopter ride into or out of the canyon. Mule service will be available at two locations in the canyon, and helicopter service will be available in the Lava Falls area (operating outside park boundaries). See Arizona Office of Tourism response number 7 regarding cost.

2. See Arizona State Office of Economic Planning and Development response number 1.

3. The objective of the proposed action to provide a quality wilderness river-running experience for the public will be accomplished. See also response number 4 to Utah Boating Advisory Council. The rapids on the Colorado River provide noise that is a natural part of the river experience in a wilderness setting, whereas motor noise is contrary to the natural setting that includes sounds of the rapids. Since rapids occur only for short stretches linked by long placid stretches, motors create an artificial sound in otherwise tranquil areas.

CHAMBER OF COMMERCE
101 W. SANTA FE
FLAGSTAFF, ARIZONA 86001 • PHONE 774-4505

April 25, 1978

Mr. Merle Stitt
Superintendent, GCNP
Grand Canyon, Arizona 86023

Mr. Stitt:

RESOLUTION: The Flagstaff Chamber of Commerce has adopted a resolution to go on record opposing the proposed Colorado River Management Plan as presented in the draft dated October 1977.

1 It is the opinion of the board that the state of Arizona would be deprived of thousands of dollars in tax revenue and many jobs would be lost to our working force.

2 It is our opinion that there would be an economic hardship imposed upon all motorized commercial operators and force many of these operators out of business.

3 The promotional efforts throughout the state for many years have been to promote the river runs. We believe that this would completely destroy the residual benefits of the past years of advertising and promotion efforts of many persons throughout the state of Arizona.

4 The elimination of motorized trips will work handicaps upon the aged that like to take these trips and will provide a hardship upon those families that are planning to enjoy the peak periods of summer in their river run vacations. These operational reductions will drastically affect many communities surrounding the river run areas as far away as Flagstaff, Williams and other communities dependent upon tourism.

This action was taken by the board in a unanimous decision. We urge you to give serious consideration to our request.

Sincerely yours,

Ron Lee, President
Board of Directors
Flagstaff Chamber of Commerce

RL:gw

IX-79

Response to: Flagstaff Chamber of Commerce
Flagstaff, Arizona

1. See Arizona Office of Tourism response number 2.

2. It is true that some economic burden will be placed on concessioners currently running motorized trips in changing to oar-powered craft. This impact will be minimized by: (1) allowing 5 years to phase into rowing equipment; (2) a good deal of existing equipment used for motorized trips can continue to be used for rowing trips; (3) many concessioners have already amortized over half of their boats and related equipment and have 5 more years to continue that amortization and, therefore, will suffer little or no loss; (4) some of the existing motor boats could be sold for use on other rivers to offset the cost of acquiring rowing equipment.

3. Efforts to promote river-running trips within Arizona in the past years should not be significantly affected. The number of concessioners offering river trips is expected to remain about the same, and the number of people allowed to take concessioner guided trips will increase. It is true that promotional activities will need to shift from emphasis on motor trips to promoting oar trips.

4. Oar trips are not more difficult for the aged than motor trips since the boatman does the rowing and logistical work. Family vacation river trips will continue to be provided. Concessioners will be encouraged to adjust trip arrangements to accommodate families during times when their vacation schedules permit and to schedule trips for others at alternate times. See Arizona Office of Economic Planning and Development response numbers 1, 2, and 3 for discussion of economic impact on northern Arizona communities.

KANE COUNTY CHAMBER OF COMMERCE
P.O. Box 369
Kanab, Utah 84741
(801) 644-5033

March 23, 1978

Superintendent
Grand Canyon National Park
Grand Canyon, Arizona

Dear Sir:

The Greater Kane County Area Chamber of Commerce representing business, professional and private citizens, draws its membership from throughout all of Kane County, Utah and the Arizona Strip.

The Colorado River Management Plan proposal released in January 1978 is rejected in totality by the Board of Directors and membership of the Chamber of Commerce.

Our opposition to the management proposal is predicated on three elements: lack of health and safety precautions, discrimination and adverse economic impact.

1. Health and safety precautions under the new proposal are totally ignored. The smaller row-boats that are now required by this plan are notoricus for their capsizing or "bucking" people into the water. The larger motorized craft have never been known to capsize.

1

In reference to health precautions, there is no means for rapid egress from the canyon if an emergency should arise with the management plan's smaller row-boats. The larger motorized craft could "be put into gear" to move expeditiously should the need arise.

For this reason alone, we reject the National Park Services Management Plan proposal as totally unacceptable. However, there are other elements to be considered. We reject the blatant discrimination that is being written into virtually every new proposal prepared by the National Park Service.

2. This new concept precludes the utilization of our lands and our waters administered under the National Park Service by the average American family, the handicapped, the elderly and the less affluent.

2

With the present proposal, the river-running companies will by necessity be forced to exclude the elderly and the young, those with physical disorders and the handicapped, and those who cannot afford the time nor the expense of the more leisurely excursions covering twelve to sixteen days.

IX-80

Response to: Kane County Chamber of Commerce
State of Utah

1. Safety records have shown that neither motorized or rowing craft is safer than the other. In fact, both craft have capsized. We would speculate that more oar-powered rafts flip than do motored rafts. Motorized rafts do flip and when this occurs passengers are subject to greater injury from the heavy weight of the boat and attendant gear. We would also speculate that equally as many people fall off large motor boats during violent bucking action that occurs as they run rapids. There are no statistics to support either of these possibilities. Neither of these situations appear to contribute to significant problems of hypothermia or drowning. The most recent drowning occurred where a person fell from a large motorized raft (August 1977). However, the drowning was largely attributed to factors other than type of watercraft. Rapid egress in an emergency has not been necessary in the past, as most parties have alerted aircraft in the event of injuries. In the case of a severe injury, it is unlikely that the injured party could travel by either type of craft.

2. Oar-powered trips are currently provided and taken by average American families, handicapped, and elderly people with no loss in trip safety, or undue difficulty. There is no difference in socioeconomic or demographic characteristics between those who take oar trips compared to those who take motor trips. A variety of trip lengths and costs will continue to be provided through oar-powered trips after motorized craft are phased out. Partial trips involving hikes, mule rides, or helicopter rides in or out of the canyon will allow for a continued variety of trip length and cost.

3. Finally, the impact on the greater Kane County area would be more than just minimal. The summer time economy of the area would be severely impacted by the drastic cut that would be imposed by this N.P.S. proposal. The cut in the river-running operations has been computed to be between 40% - 50%. With eight companies ranging from minimal carrying capacity to a full-scheduled operation, we would be severely impacted. It is estimated that the cuts by the companies would cause a decrease between $2 and $3.5 million annually. An area such as ours that is economically depressed, by government standards, can ill afford an additional cut in the annual income.

3

We reject "absentee landlord-ism" or mandates by ninety-day wonders wherein arbitrary and capricious decisions are made in Washington and implemented by wild-eyed wonders without any regard to the consequences of the application in the field.

We appreciate the opportunity to express our views relative to this issue and would request serious consideration for them.

Sincerely yours,

GREATER KANE COUNTY AREA
CHAMBER OF COMMERCE.

James W. Carrico,
President

JWC/1

IX-81

3. The number of concessioners allowed to provide river trips is expected to remain approximately the same as in the past. The number of user days allowed to concessioners will increase and the number of passengers taken is expected to increase. Concessioner operations including number of river guides and their working season will increase and is expected to result in improvement of the economic situation in southern Utah and northern Arizona.

OFFICE OF

Kane County Commission

KANAB, UTAH 84741

March 22, 1978

Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

TO WHOM IT MAY CONCERN:

The County Commissioners for Kane County wish to have their feelings regarding the Colorado River Management Plan at Grand Canyon entered on the record.

We are opposed to the proposed plan as it has been presented to us. This will have a severe impact on the health and safety features of river-running. This will affect the economic factors of the greater Kane County area. This will exclude even more the average American family from participating in the wonders and delights of the scenic attractions of this area.

IX-82

1 We are opposed to any type of operation that could severely jeopardize life and limb of visitors to our area. The smaller, non-motorized craft that would be allowed are not safe. There is serious problem orientation in reference to craft overturns. Further, should medical attention be required, there is no way to expedite the trip through the canyon. For this reason, we reject any suggestion of eliminating the larger, motorized crafts.

2 Further, river-running is a vital element of the greater Kane County area's economy. With eight companies in our area, we have begun to depend upon them economically. Some of these companies will have to close operations, others will be reduced by 40% or more of their operations. Because of this factor, we reject this concept.

3 Additionally, we take severe exception to an increasing trend in the management of our lands administered by the National Park Service. These resources: land and water, are for the recreation, the edication and the enjoyment of all of our people. These lands belong to the elderly as well as the young, the handicapped as well as the hale, the insolvent as well as the affluent. However, the proposal rejects this thesis. Only the young, physically-able, rich people can afford the luxury of these prolonged, precarious trips.

We herewith issue a call for a reasoned management program for this resource that will be balanced, fair and enlightened. We feel that the needs of the recreationing public must be met, the investment of private enterprise must be considered and if abated sufficiently recompensed for present and future losses; and the adverse economic factors impacting the businesses involved on a secondary level should not be allowed. Overriding all of these considerations should be the omnipresent concern for the health and safety of those people participating in these awe-inspiring, exciting and wonderful river-running excursions.

Response to: Kane County Commission
State of Utah

1. See Kane County Chamber of Commerce response number 1.
2. See Kane County Chamber of Commerce response number 3.
3. See Kane County Chamber of Commerce response number 2.

Thanking you for your time, your consdieration and any possible action in support of our contention, I remain

Sincerely yours,

KANE COUNTY COMMISSION

Merrill R. MacDonald,
Chairman

MRM/j

PAGE-LAKE POWELL CHAMBER OF COMMERCE

Page, Arizona 86040

Site of Glen Canyon Dam and spectacular Lake Powell

Hub of the West's most scenic vacationland

STATEMENT OF THE PAGE/LAKE POWELL CHAMBER OF COMMERCE
Joan Nevills Staveley, speaker

STATEMENT TO BE INCLUDED IN RECORD OF HEARING HELD AT PHOENIX, ARIZONA, FEBRUARY 14, 1978

It is a relief to finally see the plan which we in the concerned area have been anticipating.

We applaud the National Park Service for their attitude of responsibility for care of the environment of Grand Canyon National Park. HOWEVER, we do not applaud their attempting to dictate how people should see the Grand Canyon, how long they should spend at each attractions, and what they should do while there.

William J. Whalen, Director, National Park Service, made the following statement this past October. QUOTE" We must ready ourselves and our parks for the arrival of older people, of urban people, of nonEnglish speaking and physically and economically handicapped people. We must work to remove all barriers that keep people out of parks, for parks must not continue to be exclusive." CLOSE QUOTES

1 We realize the NPS sees this plan as eventually limiting the number of people who enjoy the Canyon experience. Indeed, the total number of user days has been increased 62%. However, many individuals, and families who have never camped before will not wish to spend even a minimum of 12 days, let alone 16 days camping and outdoor living. But these same people having the

2 opportunity of a shorter trip will find it was great fun and not a traumatic experience - go home and become campers. Others will not have the time available - two week vacations still predominate and unless ALL ~~trip~~ 12 days trips depart on Sundays; allowing Friday evenings and Saturdays for travel to departure point and the same amount of time following the trip - they will not be able to go. The hiking/exchange of passengers plan as proposed will not only eliminate a large group of people who are physically incapable, too old, too young, but will help to create the actual crowding on the trails now claimed on the river! The trails, other than the Bright Angel and Kaibab, are not

3 maintained at present. Would these little used trails be upgraded, made safe for inexperienced hikers. What about the hikers who would normally be on these trails, who want to get out and enjoy the Canyon without crowding? This would seem to present an impingement on their rights.

FEATURING EVERY ACCOMMODATION FOR THE TOURIST AND VACATIONER

IX-84

Response to: Page-Lake Powell Chamber of Commerce

1. The number of people allowed to enjoy a river trip through the Grand Canyon is now limited. The proposed action of the FES allows for an increase in the number of people who will be allowed to take river trips in the future. There is a reduced number of commercial passengers and an increase in the number of noncommercial river-trip participants.

2. Total user days are being increased. Trip length in the FES has been modified to allow an 8-day minimum for full-length trips to Diamond Creek during the motor phaseout with maximum trip length during the summer season of 18 days. Trip length will be evaluated and modified as necessary. See also Professional River Outfitters response numbers 5 and 21.

3. A considerable number of river runners hike into and out of the canyon in connection with partial trips as evidenced by the 1979 information in Section II.M.3. of the FES. There has been only one significant incident involving hiking into or out from river trips in the past several years. See also Northern Arizona Council of Governments respone numbers 4 and 5. The proposed action provides for mule service at Phantom Ranch and Whitmore Wash, as well as continued helicopter takeouts in the Lava Falls area for those who want shorter partial trips but are not willing or able to hike into or out of the canyon. Most of the hiking into or out from river trips is expected to occur at Phantom Ranch on the Kaibab and Bright Angel Trails as in the past.

4 One of the most unsettling implied proposals of this plan is how alike the river trips will become. Length of trip, method of transportation, what must be visited, how long it should be visited, a standardized menu! We resent being regulated as to how we are to experience the Grand Canyon of the Colorado River.

5 Utilizing the shoulder months, April and November, has become a popular plan for keeping tourism at a high level in a seasonal area. We are for this! While skiing, hiking and visiting the South Rim should be promoted; running the river and camping in inclement weather can be very uncomfortable, if not downright dangerous.

There are facts and figures in this plan which are misleading. They put the onus on the outfitters, commercial and private alike.

For example:

6 Despite concern from boatmen and outfitters, the NPS required the dumping of charcoal in the main channel of the river. The boatmen said it would, with the water's surge, work the charcoal back onto the beaches. Now, the NPS alludes this dumping has been done without their approval.

7 The University of Pennsylvania took an audiometer down the river when they were under contract for various studies. At a seminar held at Albright Center, Grand Canyon, this was mentioned by a U of P speaker. He stated it was not part of their commissioned study, but they did test various sound levels. Two noises louder than the 20 hp steering motors were the cicadas near Emory Falls and several of the rapids!

8 Sales tax figures for the river industry are in error. The Parent-Robeson study reported $8,772 sales tax paid. In 1976 alone, Arizona based operators paid a total of $52,083. Did the Parent-Robeson study which was contracted by the NPS deliberately misuse these public figures? If so, why - was it carelessness or deliberate?

9 Approximately 8,000 people begin their river trip in Page, Arizona. Economic studies were done on other cities such as Salt Lake City, Orem, Greenriver, Vernal and Kanab, Utah. Page, which is a major gateway city to Lee's Ferry was not even contacted. Some of the researchers stayed in Page, ate here, bought gas, groceries, and souveniers. But Page didn't receive the courtesy of even a cursory study!!

10 Using the Arizona Office of Tourism's conservative figure these 8,000 people spent $400,000 prior to their river trip and again when they completed their trip another $320,000.

This proposed plan can have a definate adverse economic impact on our city and our businessmen.

The NPS must take a viable position. But through their juxposition of facts and contrivance of figures, it has created a serious credibility gap. We, of the Page/Lake Powell Chamber of Commerce, believe there can be a meeting of minds between the people and the government. We offer the following suggestions:

4. With the modifications made to the proposed action, it is expected that the variety of trip offerings will at least equal or exceed those in the past. There will be no motorized trips after the motor phaseout. Trip lengths will vary from 1 to 18 days during the summer season and up to 21 da s in the winter. There is no proposal to specify the method of transportation, what must be visited, how long it should be visited, or menu. In fact, wide variation in these aspects of trip offerings is strongly encouraged.

5. See Arizona Office of Tourism response number 9, and Fredonia response number 2.

6. Dumping of charcoal into the main river was required, instead of continuing the previous practice of dumping it into back eddies or on beaches. There has been no concern expressed by either boatmen or concessioners regarding this practice that we are aware of. Nevertheless, the practice was found to be less than desirable and therefore discontinued. There is nothing in the DES that alludes to this being done without NPS approval. In fact, this practice was better than the previous practice of leaving charcoal on the beaches.

7. Noise from cicadas and rapids are natural canyon sounds as opposed to artificial sounds of motors.

8. Sales tax information collected by Parent and Robeson came from concessioner annual financial reports. If the data is inaccurate, it is because concessioners did not indicate payment of such taxes in their annual financial reports. See also Arizona Office of Tourism response number 2.

9. The information presented is interesting and adds to the data available on economic involvement of river running in the area. The number of river runners purchasing supplies and services in the Page area should continue and possibly increase since the number of river runners allowed is being increased. Rowing trips involve more boatmen who will base in northern Arizona and southern Utah adding to the economy of these areas.

10 1. Keep both motorized and rowing trip available to people - so they have a choice.

11 2. Increase the number of private use days.

12 3. Maintain the number of commercial use days.

The draft of the Colorado River Management Plan is not the final mandate.

Quoting the words of the National Park Service on the inside front cover of the plan QUOTE " This planning publication has neither been approved nor disapproved. Its purpose is to provide information for further consideration and discussion, and it may undergo considerable revision." CLOSE QUOTES

The bottomline position of the Page/Lake Powell Chamberof Commerce is: The people need to retain their choice in the way they wish to experience the Grand Canyon as long as it is not infringing on the rights of others or damaging the environment.

Thank you.

10. Motor trips will be allowed to continue over the phaseout period but will be eliminated after the first 5 years.

11. Noncommercial use is being increased.

12. Commercial user days are being increased.

Town of Cottonwood
821 NORTH MAIN STREET
P.O. BOX 844
COTTONWOOD, ARIZONA 86326
(602) 634-5526

Charles D. Garrison, Mayor
Donald E. Hahn, Vice-Mayor
Richard D. Bridgewater, Councilman
Virgie L. Brown, Councilwoman
James J. McLarney, Councilman
Robert K. Minter, Councilman
Richard C. Wills, Councilman

February 20, 1978

The Honorable Cecil Andrus
Secretary of the Interior
Washington, D.C. 20242

Dear Secretary Andrus:

I am writing to you on behalf of the other members of our Town Council to voice our objections to the National Park Service's Draft Colorado River Management Plan. We oppose the plan as currently prepared because:

IX-87

1 | 1. It would eliminate motorized raft trips down the Colorado River, which are currently the most popular means of travelling the river.

2 | 2. The elimination of motorized raft trips will result in a financial hardship on commercial companies who have already made a large investment in motors and relate equipment.

3 | 3. Consumers will lose the ability to chose the mode of transportation they prefer.

4 | 4. Trips by oar are longer, thus the passenger will end up having to pay more per trip.

This plan accomplishes little more than to generate a larger staff and less responsibility for the National Park Service, while actually decreasing the number of persons who can safely experience and enjoy the Colorado River. Any redeeming features of the Plan are completely offset by its oppressive efforts to over-regulate and limit recreational functions.

In our opinion this plan should be held in abeyance until legitimate and objective surveys are conducted by neutral parties concerned with enhancing rather than restricting visitations to the Colorado River; then and only then will a plan be developed that encourages sensible wilderness experiences.

Sincerely,

Charles D. Garrison
Mayor

Response to: Town of Cottonwood, Arizona

1. Motorized river trips will be phased out over a 5-year period. See also Arizona Office of Tourism response number 2 as to popularity.

2. There will be some economic impact on some motor trip concessioners in changing to oar-powered craft. See Arizona Office of Tourism response number 3.

3. The opportunity to select motorized trips will be lost after the 5-year phaseout.

4. Full-length oar trips are longer and on the basis of 1979 trip prices an 8-day motor trip averaged $78 less than the average cost of a 12-day trip. The oar trip provided four more days in the canyon for an average of $78 more.

TOWN OF FREDONIA

Fredonia, Arizona 86022 Telephone 643-2641

February 13, 1978

Bill Wade, Executive Director
Northern Arizona Council of Governments
Box 57
Flagstaff, Arizona 86002

Dear Mr. Wade:

The Town of Fredonia is greatly opposed to the National Park Service's Draft Colorado River Management Plan. The plan is bias and misleading and was done by bias people. The idea of doing away with motorized raft trips is especially undesirable as this means of river travel is the most preferred by the majority of river toursits. The elimination of motorized raft trips will make it impossible for many to enjoy this natural beauty, as there are those who will be unable to spend the time or money for an oar trip or who would have the physical endurance for this type of river travel. 1

As for the winter trips on the Colorado River to compensate for the elimination of motorized trips. It is ridiculous. The River would be cold and uncomfortable during the winter months and there is a good chance that people would fall into the river and suffer from shock and exposure. 2

IX-88

The National Park Service Plan will effect the economy of our Town. At the present time there are four river companies located in or near Fredonia. These companies help bolster the economy of the area by using the facilities of the town, and by purchasing some supplies and employing local residents. Though they are not the mainstay of the economy they add greatly to the well being of the community. 3

We feel that this plan should not be put into operation until further study by neutral parties interested in enhancing visitation to the Colorado River rather than limiting those who wish to enjoy this National Recreation Area.

Sincerely,

Robert Harris

Robert Harris, Mayor

cc: Merle Stitt, Supt. Grand Canyon National Park
Senator Barry Goldwater
Senator Dennis DeConcini
Representative Bob Stump

Response to: Town of Fredonia, Arizona

1. See Kane County Chamber of Commerce response numbers 1 and 2.

2. The proposal to allow winter trips is not to compensate for the elimination of motorized trips. There is currently little or no winter use largely due to the fact that the amount of use allowed can be made within summer months. During the past couple of years, there has been a demonstrated interest for winter trips primarily on the part of noncommercial river runners. In addition, there is increasing interest for winter concessioner guided river trips, especially for fishing and for educational and regular recreation river running. It is true that winter trips require additional equipment and preparation for cold weather. However, with proper equipment a winter trip can be very rewarding. There are fewer people in the canyon during the winter resulting in fewer intergroup contacts and a greater sense of wilderness. Also, there are more wildlife to be seen along the river during the winter, such as bighorn sheep, deer, waterfowl, etc.

3. See Arizona Office of Tourism response number 2.

City of Page

P.O. Drawer HH
697 Vista Ave.
Page, Arizona 86040
(602) 645-8861

February 6, 1973

Mr. William Wade
Executive Director
NACOG A-95 Regional Clearinghouse
Post Office Box 57
Flagstaff, Arizona 86002

Dear Mr. Wade:

The City of Page is adamantly opposed to the National Park Service's Draft Colorado River Management Plan. The plan as prepared is discriminatory and riddled with more inconsistencies than one can imagine. The most undesirable characteristic of this plan is the intent to eliminate motorized raft trips, the mode of transportation preferred by the vast majority of tourists and the only practical way the aged, handicapped and young can safely see the river. This plan (a prelude to oppression) not only prevents a tourist from seeing the Colorado by any other means than by oar trip, but also the time frames involved actually reduce the number of persons who can experience and enjoy one of our National Recreation Areas. The National Park Service has made this recommendation by sampling the preferences of fifty-six healthy persons who have both oar and motorized trip experience; hardly a statistically significant way to evaluate the preferences of past or future thousands of visitors to the Colorado River who have neither the time nor the inclination to try oar trips. We probably would not be surprised if we were to learn that the same adventurous fifty-six preferred hot air balloons to motorized aircraft. If that happens to be the case, will the National Park Service ask the Federal Aviation Administration to ban the scenic flights of motorized aircraft over our recreational areas? 1 2

In the "spirit of the fifty-six", another of the plan's absurdities is to compensate for the elimination of motorized trips by increasing winter season use. The oar trips are not hazardous enough to control, but the shock and exposure (hypothermia) of falling into an icy river could be extremely dangerous; life preservers are of little value if a person becomes separated from the raft under such conditions. Few, if any people would be crazy enough to take such a risk of oar trips on the Colorado's icy Winter waters considering how common it is for any kind of raft to eject a passenger or capsize from time to time, especially those without power. 3

Response to: City of Page, Arizona

1. Oar-powered rafts currently provide safe trips for aged, handicapped, and young people. Most people (80 percent) do currently take motorized raft trips partly through preference and partly because 80 percent of trips offered by concessioners are motorized. The number of people allowed to take river trips is increased by the proposed action. It is true that some people who want full-length trips may decide against a river run because trip length increases under the proposed action. Partial trips will be provided for those who want a shorter, less costly trip and are willing to forego a full-canyon trip.

2. The decision to eliminate motors was based primarily on the objective of providing a quality wilderness river-running trip. The experiment conducted in the sociological research where 56 people took a combination motor and oar trip was considered along with other research data and public input in arriving at this decision.

3. See Town of Fredonia response number 2.

This plan accomplishes little more than to generate a larger staff and less responsibility for the National Park Service, while actually decreasing the number of persons who can safely experience and enjoy the Colorado. Any redeeming features of the Plan are completely offset by its oppressive efforts to over-regulate and limit recreational functions.

In our opinion this plan should be held in abeyance until legitimate and objective surveys are conducted by neutral parties concerned with enhancing rather than restricting visitations to the Colorado River; then and only then will a plan be developed that encourages sensible wilderness experiences.

Sincerely,

Marjorie Doland
Mayor

MD/js

cc: Secretary of Interior Cecil Andrus
Senator Dennis Deconcini
Congressman Bob Stump
Members NACOG Regional Council

5. Comments Received from Organizations and Associations

Included in this section are letters of comment from concessioners and organized groups. Letters from concessioners who opposed the phaseout of motors generally covered the same major points. Therefore, a few representative samples have been selected and are included for response. Additional letters from concessioners that discussed other significant points or supported the proposal are also included. Letters from conservation groups generally support the proposal and, in some cases, many letters from one organization were received. Again, a representative sample of these letters was selected for response.

American Canoe Association
Arizona River Runners, Inc.
Arizona Wilderness Coalition
Federation of Western Outdoor Clubs
Friends of the Earth
Grand Canyon Dories
Holiday River Expeditions, Inc.
National Audubon Society
National Parks and Conservation Association
Professional River Outfitters Association
Sierra Club, Plateau Group
University of Washington Canoe Club
Western River Expeditions
Western River Guides Association
Wilderness Public Rights Fund
The Wilderness Society
Wilderness World, Inc.

ORGANIZED 1880

American Canoe Association

Member: INTERNATIONAL CANOE FEDERATION • AMATEUR ATHLETIC UNION
THE UNITED STATES OLYMPIC ASSOCIATION

National Headquarters: 4260 EAST EVANS AVENUE • DENVER, COLORADO 80222

Canadian Canoe Association
American Red Cross
Boy Scouts of America
Girl Scouts, Inc.

John R. Sweet
118 S. Buckhout St.
State College, PA 16801

25 April 1978

To: Superintendent
Attn.: Inner Canyon Unit
Grand Canyon National Park
Box 129
Grand Canyon, AZ 86023

Re: Draft Colorado River Management Plan and EIS (October 1977)

Background: I have been a whitewater canoeist for 15 years. I paddled the Grand Canyon in June 1968 as one of the first group to run the river in kayaks and decked canoes. We accompanied a motorized trip, so I have some experience with both motorized and self-propelled travel thru the Canyon. I am a delegate representing the Middle States Division of the American Canoe Association in the ACA Congress. I am ACA-MS Conservation Chairman and represent the ACA on the Pennsylvania Scenic Rivers Task Force. I am also Adviser to the Penn State Outing Club Canoe Division.

General Comments: I am most pleased to see you addressing this most complicated problem of river management, and I must compliment you on the forthright and generally satisfactory approach you have taken. Nothing is perfect, and it is never possible to please everyone, but I am largely pleased with what I have read.

1 User-Day Allocations: This is the area which gives me the most difficulty with the proposed plan. While the 70/30 ratio of commercial/private users is a vast improvement over the existing 92/8 ratio, I do not see it as a fair alternative to a lottery system which does not distinguish between commercial and private users. The only really fair system would be based on putting all the names of potential users in a bin and then drawing out names until the total allocation for the time period is filled. Those chosen would THEN indicate whether they wish to travel as a private group or buy space on a commercial trip. As long as any allocation ratio is in effect, it is not possible to accurately assess the demand for the different types of trips. The draft Plan discusses having a flexible system, revising allocations, continual analysis, etc. None of this would be needed with a lottery system, and nowhere could I find an explanation of why such a plan was not adopted. I would appreciate having such an explanation.

2 No-Repeat Rule: I believe the two year no-repeat rule will be satisfactory if it applies equally to commercial and private boaters, with one exception. I believe it should be waived for one member of a private group, upon request. This person could then be in a better position to act as trip leader and guide for the party. This should enhance safety, increase compliance with park rules, and improve the educational value of the trip. The commercial guides are obviously many-time repeaters, which is one of the advantages of the commercial trips.

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Response to: American Canoe Association

1. The proposed allocation is based primarily on the number of people turned away annually by concessioners compared to the number of non-commercial trip applications that could not be accommodated by the National Park Service (see also Professional River Outfitters response number 4). In addition, consideration was given to a reasonable allocation based on the launch schedule. Research conducted by Parent and Robeson in 1976 found that an individual application system would not necessarily result in being more equitable and in fact would likely result in working against the interests of noncommercial river runners. This research also found that the individual application system would result in small concessioners not being able to successfully compete with large concessioners in advertising and possibly being forced out of business. This system would be very difficult to manage.

2. A specific no-repeat rule will not be necessary. With a first-come, first-served noncommercial permit application procedure, there is a built-in no-repeat rule. A person applies for a permit and then may not apply again until their name has come to the top of the waiting list and they have been granted a permit. If it takes one year to get through the waiting list, the no-repeat is a 1-year rule, and if it takes 5 years to get through the waiting list, it is a 5-year, no-repeat rule.

Wilderness Status: I favor designation of the entire Canyon as a Wilderness Area. Corollary to this is the elimination of motorized trips thru the Canyon, as such trips are inappropriate to a wilderness. I realize that this is a highly controversial issue, so I hope that the entire plan will not be dragged down by it. I do not believe that the arguments of those opposed to the motor ban have much merit, but they are quite vocal. If it comes to the point where a compromise is essential, I would favor a "quiet season" and a "motor season" rather than the present arrangement which, in effect, does not permit quiet trips. Another noise issue is that of aircraft overflights, particularly helicopters. These were quite frequent and quite annoying, especially in the central part of the Canyon, when I was there in 1968. I urge that such aircraft overflights be held to an absolute minimum as they are an intrusion on the wilderness. 3

Resource Protection: I am greatly concerned about the overall user impact on the Canyon, without regard to allocations, motor noise, or similar factors. In my view the place was already overcrowded in 1968. There were too many people, too much human feces, etc. I can hardly imagine the present situation. I urge NPS to take a very strict view of resource degradation. I am confident the proposed plan will be a great help, but I urge close monitoring of the conditions and, if necessary, a reduction in total user-days. There is, however, one area where I feel regulations might be relaxed, and that is the problem of human waste removal for canoe-kayak trips running without raft support. Such trips are entirely feasible for qualified paddlers and should not be prohibited, but the mere size of the boats precludes carrying chemical toilets or other means of waste removal. I believe that suitable guidelines can be developed for waste disposal within the Canyon for this type of trip, at least as long as they remain few in number. 4

Review of DEIS: I regret that the American Canoe Association is not listed in section IX-B of the DEIS as one of the organizations to be consulted in its review. We are interested in all aspects of paddle boating, and wish to be consulted on Colorado River issues in the future. Please add our name to your mailing list. 5

I request that these comments be taken into consideration, and made a part of the record on this plan.

Respectfully submitted,

John R. Sweet

IX-93

3. The plan proposes to phase out the use of motors over a 5-year period. During the 5-year phaseout period, there will be scheduled times where both motor trips and oar trips will operate and times when only oar trips will be allowed. The draft plan contained a proposal to eliminate the use of helicopters for routine river-trip takeouts. This proposal has been dropped from the proposed action in the FES. The entire aircraft overflight situation over Grand Canyon National Park is currently being studied and will be dealt with in a subsequent plan. River-trip takeouts are not conducted within the park boundaries.

4. Monitoring of resource impacts are an important part of the proposed action in the FES. If data from monitoring indicates a need to reduce use such a reduction will be imposed. A few kayak trips have experimented with human waste carry out systems that have been proven successful without support boats. The most successful system we know of to date is the use of a smaller ammunition which will fit very nicely in a kayak, and carry out the solid human waste of a couple of people for a 12-day trip. The comforts of a toilet seat are not possible with this system. Since it has been proven possible for kayaks to carry out their human waste without support boats, the requirement will not be relaxed for this type of trip.

5. The American Canoe Association has been added to the mailing list to receive future information on the river management plan.

April 18, 1978

Merle Stitt
Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Mr. Stitt:

Request this letter be included in the official comments regarding the Colorado River Management Plan, its accompanying Environmental Statement and the sociological research studies that support the Plan and EIS.

I. Reference is made to Sociological Research conducted by Human Ecology Research Services, Inc., 855 Broadway, Boulder, Colorado 80302, J. Eugene Haas, President; prepared by Joyce Neilson and Bo Shelby and what appears to be possible conflict of interest.

1 A. Investigation has indicated Human Ecology Research Services (hereafter referred to as HERS) submitted a bid of approximately $135,000 (excluding a study on private use in the Canyon) to perform the research. Is this true and, if so, why was HERS selected over a bid by the University of Arizona which had already done two or three years of ground work at a cost of over $10,000 and submitted a bid of $118,765?

2 B. Investigation has revealed that a Tom Haberline (or Haverline) headed the group that awarded the research contracts. His personal history alledgedly includes an association with Eugene Haas in the same department at the University of Colorado and Bo Shelby was Mr. Haberline's student at the same school. Is this true and if so, wouldn't this indicate a conflict of interest?

3 C. Investigation has revealed that HERS has recently gone out of business and additionally, the President, Eugene Haas, was found guilty of misusing federal funds during an earthquake study

Arizona RIVER RUNNERS Incorporated
P.O. BOX 2021 MARBLE CANYON, ARIZONA 86036
MARBLE CANYON PHONE: (602) 355-2223

Response to: Arizona River Runners

1. The bid submitted by HERS was $125,000, not $135,000. The HERS proposal was selected over 16 other proposals based on (a) soundness of the proposal (including methodology, theory, and research design); (b) familiarity with river running and the Grand Canyon; and (c) probability that the investigator would deliver a substantially sound report providing information specified in the proposal (based on past performance as demonstrated in previous research projects, through publication and peer review).

2. A panel of eight persons (seven of them Ph.D scientists), consisting of four National Park Service and four non-National Park Service personnel, reviewed the proposals submitted by investigators for the river contract study. Dr. Tom Heberlein was one of the eight members of the panel which was headed by Dr. Roy Johnson, Senior Research Scientist, Grand Canyon National Park.

3. We do not know whether or not HERS has gone out of business. We have not checked into Mr. Haas' personal situation. At the time the Sociological Study contract was awarded, NPS had thoroughly checked into and found that the reputation and viability of HERS was among the best of those submitting proposals. That this may or may not have changed since then has no bearing on the validity of the data. Those research scientists who worked on the project were then and are now the most reputable in the field of wildland recreation sociology.

and is at present on six months probation after paying a fine of $1,000 for the above. Is this true? Did the NPS study thoroughly the reputation of the prime contractor on the sociological studies and the viability of the corporation before a choice was made and a contract awarded?

4 D. Investigation has revealed that nearly all or all of the paper work compiled by Neilson and Shelby was not left with the prime contractor, HERS, but was taken by the employed investigators on completion of the study and their employment with HERS, and as far as is known, is still in their possession. Is this true? If so, isn't this irregular?

II. Reference is made to the credibility of the studies themselves and the procedures in gathering material.

5 A. Enclosed are letters from a few passengers on a trip accompanied by one of the researchers, David Schoen, indicating his performance and attitude on the trip. After this trip, his superiors felt he was not the proper individual to do the research and was relieved of his job. However, he had been on several trips and had submitted extensive material by that time. He voiced strong feelings as to his preference for oar powered trips. It is firmly felt that several of the researchers had a similar preference towards rowing, all being young and hardy and being paid to spend time on the river. Wouldn't this attitude create a bias in the reporting and therefore slant the results towards rowing?

6 B. On Page III-12 of the EIS, a short five day motorized trip "through the entire Canyon" is referred to. In "Motors and Oars in the Grand Canyon", a study by HERS, Page 5, a motorized trip of 5 days "to traverse the Canyon" is referred to. The first reference is probably based on the second. How did HERS arrive at that figure? Isn't it true that what has been known as the "entire Canyon" or "traversing the Canyon" is 225 miles from Lee's Ferry to Diamond Creek? Isn't it true that 5 days would be in violation of the 40 mile maximum per day NPS regulation? Was this 5 day trip figure used to arrive at a 7 day average motorized trip referred to elsewhere? Was this same figuring used to plan the combination oar-motor trips that resulted in such damaging evidence against the motorized trips? If this is true and the 5 day trip figure was included in the preperation of the combination trip, wouldn't this render the results of the experimental oar-motor trips doubtful?

7 C. Letters and statements from boatmen that drove the motor powered boats on the combination trips express a dissatisfaction about the time limit and the amount of miles they were forced to travel to meet the schedule. Wouldn't their frustration regarding the above and being in close proximity to the passengers on the trip tend to prejudice these same passengers against the motorized trip? Wouldn't this be another factor which would render the results of the combination trips doubtful?

4. We do not customarily ask for raw field data gathered by investigators.

5. Mr. Schoen made three trips, the last of which was with Arizona River Runners. When complaints regarding that particular trip were received and substantiated, Mr. Schoen was dismissed. There were no other substantiated cases of inappropriate conduct on the part of the researchers.

Mr. Schoen collected data concerning the structural characteristics (e.g. trip length, number of stops at attraction sites, etc.) of motorized and oar-powered trips. We have no reason to believe that his or others' recording of such information was inaccurate.

6. The reference on page four of "Motors and Oars in the Grand Canyon" states that motorized trips "take between 5 and 11 days to traverse the canyon." Geographically, the canyon runs from Lees Ferry to the Grand Wash Cliffs (mile 277). There is some confusion, however, about what constitutes a trip through the "entire canyon" because passengers regularly debark at Lava Falls (Mile 179), Whitemore Wash (Mile 188), Diamond Creek (Mile 225), and Pierce Ferry (Mile 280). All of these trips are generally advertised by outfitters as complete Grand Canyon trips, including the 5- and 6-day motor trips which end at Lava and Whitmore. In computing the averages for both motor and oar trips, the number of days passengers were actually on the river was used to determine the trip length. The first and last were counted as full days even though trips usually started around mid-day and ended in the morning. The combination trips used a 6-day motor trip and a 12-day oar trip, debarking at Diamond Creek.

7. Information from researchers on the combination trip indicate that both motor and oar boatmen did express their opinions when asked about the motor and oar issue. It is possible that if any dissatisfaction was expressed by boatmen on the motor portion of the combination trip, it could have influenced passengers responding to the question of which mode of travel they preferred. However, there is no way to substantiate this supposition. It would also be reasonable to assume that those same boatmen drawing salaries from a motor company would likely have tried to influence passengers toward the fact that their regular motor trips were much better. It would also be reasonable to assume that oar trip boatmen might likely have been dissatisfied with their part of the trip since it was different than normal and that they might have tried to influence their passengers toward oar trips. However, there is no reason to believe that motor boatmen had more persuasive power over their passengers than oar boatmen or vice versa. This is particularly so when passengers were exposed to both sets of boatmen and had personal experience upon which to base their judgments.

D. On Page 18 of the Plan, the writer or writers state, "People described their motorized trip as speedy, hurried, rushed, noisy, loud, crowded, big, wet, but fun and exciting." Didn't the writer intend that statement to reflect all river runners surveyed rather than the 56 on the combination trips and didn't Joyce Neilson object to this out-of-context usage of her material? In a survey done by three river companies, approximately 2000 people surveyed in no way indicated dissatisfaction with motors. Wouldn't this signify why the motorized trips are popular contrary to the above statement and also indicate some manipulation with the survey and/or the way the experiment was handled? 8

E. With all respect to Dr. Neilson's research, there is one question that was not asked of all the people who participated in the survey and that is, "If you would prefer the rowing trip, could you afford to take from 14 to 20 days away from home or business to participate?" (Travel time to and from the river needs to be considered.) Isn't it possible that that type question would have given the researchers a clearer idea of the demand for rowing? Millions of people might be able to afford a trip around the world and certainly have the desire but are unable to take the time. 9

All of the above lead one to the opinion that the credibility of the contract award, the gathered material and the writers of the Plan and EIS can all be seriously doubted. There are conclusions and statements throughout the Plan and EIS that should be studied further in order to ascertain the total credibility of the entire Plan as proposed.

IX-96

Respectfully,

ARIZONA RIVER RUNNERS, INC.
(Mrs.) Carol Burke
Secretary/Treasurer

cc: Richard Barber for Congressman Joe Skubitz
James Feltham for Congressman John Rhodes

8. The statement in paragraph three on page 18 of the draft management plan should refer to the combination trip passengers only, and not to all motor trip passengers. There is no question that motor trip passengers are satisfied with their trip. In fact, study results showed no difference in satisfaction between motor and oar passengers who had experienced only one travel mode. The problem being and the reason for the combination trip experiment was that passengers who had experienced only one mode of travel did not have a basis for comparison. The descriptive words were supplied by passengers who had experienced both modes of travel and therefore had a reliable basis for comparison.

9. Survey participants were not asked if they could take more time to go on a rowing trip. The point that there are some trade-offs in shifting to rowing trips is well taken. In phasing out the use of motors, short full-length (to Diamond Creek) trips will be eliminated. Those people who prefer such a trip to the exclusion of any other option will forego the opportunity for a river trip in the Grand Canyon. Many other options for short trips are already eliminated such as 2-day jet boat trips for those who have only weekends available for such a trip. For those who are flexible and willing to take more time or hike into or out of the canyon, there is the option of partial trips. Partial trips involving mules or helicopters are available for those who want shorter trips and either want to or have to ride in or out. It is clear from research data, public input, and a review of NPS policy that the use of motors for river trips on the Colorado River in Grand Canyon National Park is inconsistent with the management objective of providing a quality wilderness river-running experience to the visitor.

April 25, 1978

Merle Stitt, Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Merle,

Thank you for the opportunity to comment on your proposed Colorado River Management Plan and Environmental Impact Statement. I realize much work has been put into this by you and your staff and I want to commend you on the job done.

I am going to mostly address the issue of nonmotorized use versus motorized use. The alternative you proposed for allowing only nonmotorized watercraft on the Colorado River has the full support of the Arizona Wilderness Coalition. 1

I realize that Grand Canyon National Park is under tremendous pressure to continue motorized use on the Colorado River. After all, motorized use is established and motorized concessionaires are not about to relinquish their "right" to offer this form of river running experience. In the name of all the people who will lose the opportunity to run the Colorado River, the concessionaires are pleading, and demanding, continued motorized use on the river. How magnanimous!

Well, in the name of the Grand Canyon and the Colorado River, the Arizona Wilderness Coalition is asking the Park Service to stick tight with their initial decision to not allow motorized use. The concessionaires claim that there are a lot of people "out there" who want to see motorized use continued. And I am sure they have gleaned their list of people who have run the river to write letters in their support.

Let me say also, that there are just as many people who feel the Colorado River should be closed to motorized use.

Response to: Arizona Wilderness Coalition

1. No response required.

IX-97

But the important thing is the Grand Canyon. The Park Service is mandated to protect it; and your study shows that motorized use lends toward deterioration. Also, the Grand Canyon, with its Colorado River, is one of the best opportunities for wilderness the country has to offer. It is a paragon of what the spirit of the Wilderness Act of 1964 sought: outstanding beauty, outstanding opportunities for solitude, outstanding opportunities for primitive recreation...

There's something galling about a motor boat resounding its way down the eons of time that is the Grand Canyon. It makes a travesty of one of the most beautiful experiences a person can obtain--an experience that becomes harder and harder to obtain with each passing day, car, airplane, and motorboat--the experience of escape from a modern, noisy, mechanized world.

You were given, and you accepted, the responsibility of the Grand Canyon. I realize parks are for people, but don't forget about the Canyon. That's all I ask. I don't feel that discontinued use of motors in the Canyon will, in the long run, (or even short run), have that adverse an effect on river runners, the public, or anybody. But it certainly will have the beneficial effect of protecting the Canyon, and making it a high quality wilderness experience.

Thank you for your time and consideration on this matter.

Sincerely yours,

Steve McKeller

Steve McKeller, Chairman
Arizona Wilderness Coalition
353 Lake Mary Rd.
Flagstaff, Arizona 86001

2

IX-98

2. There is no evidence that mode of travel has any measurable bearing on resource impact. Research reports show that oar-powered travel better provides the quality wilderness river-running experience that is the objective of the proposal.

FEDERATION OF WESTERN OUTDOOR CLUBS

Established for Mutual Service and for the Promotion of the Proper Use, Enjoyment and Protection of America's Scenic, Wilderness and Outdoor Recreation Resources

1977-1978

Est. 1932

April 23, 1978

Robert L. Herbst
Assistant Secretary
Department of Interior,
Washington, D.C. 20240

Dear Mr. Herbst:

I am writing to you on behalf of the individual members and clubs of the Federation of Western Outdoor Clubs, representing some 200,000 members in the aggregate, to let you know that support for the Draft Colorado River Management Plan and the phase-out of motorized float trips on the river.

Personally, I support such a phase-out. I took a trip down the Grand Canyon and was disappointed when I found the raft was motor propelled. It was not at all pleasant to be rafting down the awesome Canyon against the background sounds of an outboard motor, to say nothing of gas fumes.

Sincerely,

Hazel W. Wolf,
President

No response required.

IX-99

Draft Colorado River Mangement Plan
And Environmental Statement

Good Afternoon. My name is David E. Ortman, a Research Associate with Friends of the Earth. Friends of the Earth is a national environmental organization with 25,000 members and sister organizations in sixteen foreign nations. Our D.C. office is located at 620 C St. S.E.

The National Park Service, Department of Interior, has issued a proposed management plan establishing policies and procedures governing the use of the Colorado River.

FOE's policy is to provide positive reinforcement as well as constructive criticism to Federal agencies. Today we applaud the substance and direction of the Park Service's proposed plan.

FOE's policy is committed to the preservation, restoration, and rational use of the ecosphere. We believe the Park Service best serves the public interest when it protects the wildereness and river resource. The proposed plan meets that criteria.

We urge that implementation of the proposed plan be carried out promptly. The time for studies has come and gone. The preservation and rational use of the river is at stake. The remedy is at hand - let's get on with it.

Thank you for the opportunity to present these comments.

No response required.

Martin Litton's
GRAND CANYON DORIES
P.O. Box 3029, Stanford, California 94305
Telephone 415/851-0411

GRAND CANYON RIVER MANAGEMENT PLAN: A system of reservations for float trips.

As we have said, we think any formal plan will endure best if it deals only in broad goals and principles. Detailed management should remain flexible, so that administrative decisions and the implementation thereof may conform to changing needs and circumstances.

1 The appropriateness of some present methods may not be properly appreciated. We have heard many statements on the achievement of "equitable" allocations, and quite a few half-baked "solutions" to the problems presumed to exist. One of these is the proposition that all applicants for trips enter a lottery on an individual basis and then further apply for a means by which to engage in a river trip.

The chaos inherent in such a system is almost beyond imagination. Very likely, the cost in money alone has never even been considered. Of course, the conflict is rooted in the inherent unfairness of the lottery system which has been employed for the issuance of private permits.

Now some of the private users, perhaps on a mission of self-defense, have proposed to compound the problem by extending the lottery to every would-be visitor on any kind of trip. It is gratifying that the Draft Management Plan anticipates no lottery at all, but a first-come, first-served system.

No system is foolproof. First-come, first-served private permits cannot solve one of the problems that will remain under any system: that it is neither fair nor workable to offer or produce permits limited to one person. Couples, families, and organized groups or simply gatherings of friends should not and need not be split apart by a permit system.

In a first-come, first-served application for a private trip, the NPS has the machinery for approval of as many persons as will not exceed an imposed limit on trip size.

The National Park Service will also (and does) limit the size of public ("commercial") trips. It does not have any need to assume the burden, however, of taking applications and issuing individual permits (or permits for couples, families, etc.) on a first-come, first-served basis, because that is already being done. Without compensation from the Government, each river concessioner effectively does or can serve as an agent of the National Park Service, taking applications, answering questions, serving as a filter through which some people are encouraged to engage in the wilderness river experience and others are screened out for any of a great variety of reasons.

Thus, in effect, public river concessioners serve as an arm of the NPS, simplifying the task of river management to a significant degree. At any time, the NPS can regulate methods, trip sizes, total volume by season, or prices. Travel agencies are paid for the services they render to the entities which they represent, but Grand Canyon river concessioners not only save the Government substantial costs by handling public reservations themselves but also contribute directly to the Government coffers through the medium of franchise fees.

It is a service both to the public and to the Government for concessioners to handle public

IX-101

Response to: Grand Canyon Dories

1. The alternative of a total lottery system was not selected for the reasons outlined in the FES. The first-come, first-served procedure for granting noncommercial river trip permits does seem to be the most equitable.

[redacted] trip sizes, total volume by season, or prices. Travel agents are paid for the services [redacted] only save the Government substantial costs by handling public reservations themselves but also contribute directly to the Government coffers through the medium of franchise fees.

It is a service both to the public and to the Government for concessioners to handle public

river-trip applications. As has been pointed out, there is no need to seek out applicants because the demand for trips, notwithstanding the figures cited for under-use on the part of a few concessioners, does exceed the supply. (If those concessioners who have a heavy excess of demand were permitted to balance out those who have had user-days left over, more accurate figures could be obtained.)

Although it is not necessarily to the interest of the National Park Service to facilitate participation by the public, it is a proper service to the public to issue lists of concessioners to those persons who request information, as has been done for the past several years.

The Government does have, and will continue to have, access to concessioners' records for the purposes of continuing evaluation of the levels of demand. At one hearing, a private user maintained that individuals should have to "earn the right" to the Colorado River experience by acquiring a kayak or raft and learning to run the river himself. This attitude raises the question of the rights of those persons who choose to engage in gainful employment, support themselves and their dependents, devote their time, or most of it, to pursuits other than personal fun, and pay the taxes that enable us to afford national parks and public rivers. Maybe another criterion for "earning" the Grand Canyon river experience should be how much taxes the applicant pays!

IX-102

2 We do agree that in general the Grand Canyon should not be a person's first wild river trip, but it is probably an infringement of personal freedom for the Government to tell any citizen that. As a concessioner, Grand Canyon Dories, Inc., in its brochure and in person-to-person responses to inquiries, urges everyone to partake of a less demanding experience first.

3 No-repeat rules are just as effectively observed by concessioners as by the Government, but it should be determined first whether such a rule is or is not unconstitutional. Possibly it is.

4 The National Park Service should seek and expect variety in the trips concessioners offer; otherwise there would be little justification for more than one river concessioner. Friendly competition among concessioners raises the level of quality of the offerings to the public, but striving for quality will be stifled if companies are bound to adhere to identical rules and are not allowed their own "character."

5 An example of a possible pitfall in attempting to deal with details in a management plan is the proposed banning of wood fires for cooking. We believe that good management can permit the continuing use of wood in stoves, under controlled conditions, to the benefit of the Canyon and to the enhancement of the experience. Fluid situations can be monitored from year to year, from month to month, from day to day. But being locked into such a prohibition would prevent, for example, assistance from river parties in the control of such exotic invaders or nuisances as tamarisk, which can be controlled only by means of fire. Help from river parties could be secured on a voluntary basis, for example, by means of a designated method for cutting off large, old, or dead tangles of tamarisk to restore beaches while securing stove wood. We should not kill our options at this point. But the final management plan should, perhaps, leave open the options to impose controls that are not spelled out in the basic document.

One of the solutions to the fuel problem being reached by Grand Canyon Dories is to split stove wood of the proper length before a trip and pack it tightly into the human-waste ammo cases. As the waste accumulates in the 7 cans we estimate are needed for one of our 15-day trips, the wood is diminishing and producing ashes which end up in the voids between the plastic bags in the cases, performing as one of nature's most effective sweeteners and deodorants.

2. Since the proposed action does not include a requirement that a person run some other whitewater river prior to a trip on the river in Grand Canyon we will not respond to this comment.

3. A no-repeat rule is built into the first-come, first-served permit application process for noncommercial river runners.

4. The NPS does seek a variety of trip services through concession permits for guided river-running trips.

5. Limited use of fires in connection with river trips will reduce the impact of charcoal buildup on the beaches, loss of driftwood, and use of live trees for firewood. Control of tamarisk through pruning or burning has proven to be impractical. Either of these activities stimulate root crown growth in the tamarisk resulting in multiple stalks of growth where one existed prior to pruning or burning. See also Professional River Outfitters Response number 7.

February 22, 1978

Merle Stitt
Superintendent
Grand Canyon National Park
Grand Canyon, AZ 86023

Dear Merle,

IX-103

1 I support the National Park Service draft River Management Plan to provide a quality wilderness experience to the park visitor. By eliminating motors, the river can now be placed with the rest of the park into wilderness designation for the environmental protection it deserves.

I feel the NPS has been making a mistake over the years, by encouraging the use of motorized trips through the user day concept. Again, I fear the NPS is making a mistake with the proposed allocation system for the following reasons:

2 1)By allowing only two public launchs per day, you are encouraging outfitters to run groups of the maximum size of 25 persons. What about the park user and public outfitter who feels 15 or 20 persons is maximum for a quality wilderness experience?

2)Because of cancellations and off season the Grand Canyon Public Outfitters don't have a ghost of a chance to ever utilize their full allocation of user days.

3 3)Although I am in favor of increased availability of the canyon to true private users, I am concerned that you may be opening the canyon to the commercial private outfitter. The commercial private outfitter will now be running Grand Canyon easier and more often than before while not only scabbing from the public outfitter, he will also be displacing him. The management plan has no guidelines to determine the difference between a private party and a commercial private party. I suggest you consider a four or five year no repeat rule. This will not eliminate the commercial private outfitter, but it will not give him as many

519 Malibu Drive
Salt Lake City,Utah
84107

Response to: Holiday River Expeditions, Inc.

1. No response required.

2. The proposed action has been modified to allow for concessioners to take makeup trips. This will allow for making up for no shows and cancellations. Concessioners may run trips of 15 or 20 if they desire but would not be able to realize all the difference on makeup trips.

3. With a standing waiting list, this problem should be controlled. Any member of a successful noncommercial trip that applies for another trip will be placed at the end of the waiting list. Also, names will be listed with a computer system which will facilitate eliminating duplicate names and addresses. It is likely that a person can take a noncommercial trip only once a year and perhaps only every two, three, or more years depending on the length of the waiting list under these conditions. It would be difficult to establish a commercial operation. However, there is some evidence of noncommercial river runners going from river-to-river actually running trips for profit. This will be closely watched for and will be stopped when detected, since a commercial trip cannot be legally run without a concession permit.

519 Malibu Drive
Salt Lake City, Utah
84107
801 268 2087

incentives and paydays. A true private user can run trips for two or three weeks a year in different areas and not run the same canyon twice within a four or five year period. If a private user needs more than two or three weeks (other than weekend trips) a year and a Grand Canyon trip every other year, then I wonder just how private he is. I feel the NPS will soon have the same problem as now exists, which is the commercial private outfitter using most of the private users allocation.

4 I believe the length in days of river trips should be determined by public demand, not by an arbitrary figure as long as outfitters do provide different length trips. Why not let public demand dictate how many days a Grand Canyon trip is to be?

5 I think a campfire on many trips is just as important as any other part of a river trip. As long as a firepan is used and charcoal is carried out, fires should be allowed. Wood can be carried into the canyon at the top and driftwood could be used when plentiful at the lower end of the canyon. Lizards do not need driftwood for their survival. Because of the natural imbalance of driftwood, I agree with you that all cooking should be done with stoves.

6 I commend the NPS on the draft management plan on the control of hiking trails and the carry out system of litter, garbage, charcoal and human waste. Your education program is a must.

In my opinion, the NPS should set some good stern rules for the ball game but allow the players to also enjoy the ball game as long as they play within the rules.

Respectfully,

Dee Holladay

Dee Holladay

cc: Marv Jensen

4. The proposed action has been modified by dropping the specific trip length proposal and substituting a maximum and minimum trip length for full-length trips to keep total use within acceptable limits. Within these parameters, desired trip length will be established by public demand.

5. The use of fires has been modified in the final proposal. Fires for esthetic purposes and supplemental cooking will be allowed. For all summer fires, wood must be carried into the canyon because of a limited supply of driftwood. Driftwood buildup is a definite element of the ecological systems in the canyon, providing habitat for numerous organisms. Driftwood may be gathered and burned during the low-use months of October through March.

6. No response required.

NATIONAL AUDUBON SOCIETY

REGIONAL REPRESENTATIVE

ARIZONA • COLORADO
IDAHO • MONTANA
UTAH • WYOMING

P. O. BOX 3232 • BOULDER, COLORADO 80307 • (303) 499-0219

May 1, 1978

Robert L. Herbst
Assistant Secretary of the Interior
Washington, D.C. 20240

Dear Sir:

IX-105

1 We endorse the "Draft Colorado River Plan for the Grand Canyon National Park." The canyon and its delicate systems need to be protected. The use of the river itself and its shores needs to be strictly regulated. In particular, we are in strong agreement with the plan to phase out the use of motors in the canyon. The natural magnificence of the Canyon and the river is absolutely destroyed by the sounds, smells, and residues of motors. We are

2 concerned about the impact upon wildlife and wildlife habitat by increasing numbers of people in the Canyon, but if more strictly and properly regulated, procedures for waste disposal, fires, trails, and campsites are enforced, then perhaps the environmental impact of the users not only would be controlled but perhaps reduced under present impact.

3 One problem that needs immediate attention is the ferral burro population. Almost all species of wildlife in the Canyon are being significantly impacted by these introduced animals, the threatened desert bighorn in particular.

Please support all measures to control, if not eradicate ferral populations of burros from the southwest public lands.

Sincerely,

Jay B. Reed, Jr

Jay B. Reed
Assistant Regional Representative
P.O. Box 396
Gillette, Wyoming 82716

cc: Roncalio
Wallop
Hansen

Response to: National Audubon Society

1. No response required.

2. Suggested measures to protect canyon resources are included within the proposed action of the FES.

3. Management of feral burro populations within Grand Canyon National Park is addressed in the Draft Feral Burro Management Plan which was released on January 15, 1979.

Ro[illegible]
Wallop
Hansen

NPCA

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WILLIAM ZIMMERMAN

February 8, 1978

Merle Stitt
Superintendent
Grand Canyon National Park
Box 129
Grand Canyon AZ 86023

Dear Superintendent Stitt:

Ever since Grand Canyon National Park initiated its research program in 1973 to evaluate the effects of visitor use and activities on the Colorado River environment, NPCA has anticipated with concern the management proposals to be eventually derived from the research results. Now with the issuance of the Draft Management Plan for the Colorado River by the National Park Service, NPCA is pleased to express our wholehearted endorsement of a progressive and praiseworthy plan.

1 In particular, NPCA commends Grand Canyon National Park for the proposed banning of all motorized craft from 240 miles of the Canyon corridor. NPCA has long felt that the dependence on motorized craft has contributed to congestion and crowding and added noise and noxious fumes to the river experience without increasing visitor safety or visitor enjoyment. NPCA believes the wilderness river running experience in the national park will be well served by the elimination of the noise, pollution, and rush of motorized trips.

2 NPCA cautiously concurs with the strategy directed at preserving the quality of the river environment through the management of visitor activities and patterns while maintaining existing visitor use levels. The Draft Management Plan states that Grand Canyon National Park intends to continue the monitoring and research studies employed in evaluating the impacts of visitor use levels and patterns and to make any necessary modifications in the management plan as new information becomes available. NPCA fully endorses the continuation of monitoring and research and encourages Grand Canyon National Park to maintain a critical eye on the data which result. The carrying capacity of the river must be carefully established and stringently adhered to.

NPCA endorses the resource management measures relating to fires, human wastes, trails, historic and archeological resources, and education and licensing programs as outlined in the Draft Plan. NPCA would encourage special attention to

National Parks & Conservation Association, 1701 Eighteenth Street, N.W., Washington, D.C. 20009
telephone (202) 265-2717
printed on recycled paper

Response to: National Parks and Conservation Association

1. No response required.

2. Redistribution of use will be carefully monitored to ensure that desired results of reduced crowding and congestion are achieved. Monitoring of resource impacts are an important and integral part of the proposed action.

3 be paid to the "Ecologically Sensitive Areas Along the Colorado River" as listed in Table 5 of the Draft Environmental Impact Statement. The DEIS states that these areas "should be afforded special management consideration as they represent biotic resources that are unique to the Grand Canyon riparian system" and that they "provide a unique element required for the reproduction and survival of plants and/or animal populations." Only certain of these areas are yielded special protection through restricted visitor use or protective trail construction. Research monitoring of the environmental health of these areas should receive special attention and concordant action.

4 The Draft Plan neglects to mention any particular policy regarding the feeding of animals in the canyon corridor, a practice contributing to the disturbance of natural wildlife patterns according to the NPS research team. NPCA recommends that visitors in the Canyon be informed of NPS policy forbidding the feeding of wild animals within the Park.

5 NPCA also endorses the provision in the Draft Plan which restricts camping and fishing within ½ mile of the Little Colorado Confluence with the Colorado River to protect the endangered "humpback chub" as well as the site of the Hopi "Sipapu". NPCA encourages the continued monitoring of the "humpback chub" population and modification of visitor restrictions as necessary.

We appreciate the opportunity to comment on a fine Management Plan. Without question, the unmatched majesty of the Colorado River Canyon is deserving of these management decisions.

Sincerely,

T. Destry Jarvis

T. Destry Jarvis
Administrative Assistant
Parks and Conservation

TDJ:11

3. No response required.

4. No feeding of wild animals within the park has been included in the proposed action.

5. The mouth of the Little Colorado has been closed to fishing by Superintendent's order effective May 1, 1979. The Sipapu is outside the boundary of the park, and we are only able to encourage the cooperation of river runners in not disturbing the site. Management of the humpback chub and other rare and/or endangered species are addressed in the Grand Canyon Natural Resource Management Plan.

PROFESSIONAL
RIVER
OUTFITTERS [illegible]

March 23, 1978

The Honorable Cecil Andrus
Secretary of The Interior
Department of The Interior
Washington, D.C.

Mr. Howard Chapman
Western Regional Director
National Park Service
San Francisco, California

Mr. William Whalen
Director, National Park Service
US Department of The Interior
Washington, D.C.

Mr. Merle Stitt
Superintendent, GCNP
Grand Canyon, Arizona

IX-108

This is our association's statement to the public record in the matter of the Proposed Colorado River Management Plan and its accompanying Draft Environmental Statement. References herein to "the plan" refer to that proposed plan dated October 1977, and to DES 77-37, unless either of those documents is cited separately with a page number.

The Act of August 25, 1916 establishing the National Park Service prescribed that our national parks be managed both for preservation and for use , and those two co-operant values have been reiterated many times in subsequent years as the bottom line in national park management. They are the will of the people, expressed through the congress.

The plan in its present form shows a clear intent to drastically restructure the river trip industry in Grand Canyon, altering long established patterns of use, and of public choice. The plan is, despite its title, not a plan. It is three things: (1) an obsession to dictate a certain kind of public experience; (2) a restatement of already adopted environmental and administrative measures; (3) a statement of an intention to plan.

1 The plan is actually an administrative "wilderness bill". It presumes to do things that would only be appropriate legislatively. It usurps the prerogatives of the congress. It seeks to do on the basis of 286 workshop participants and about that many public meeting comments in four states and the District of Columbia what 100 senators and 435 representatives have the prerogative to do or not do in response to 218 million people.

The plan has many fatal flaws, including these: (1) it is written around a central obsession with eliminating motorized rafts; (2) it indulges in personal bias; (3) it misuses information and conclusions; (4) its formulation foreclosed river outfitter input;

dedicated to responsible use of america's recreational rivers

Response to: Professional River Outfitters Association (PRO)

1. The proposed action to phase out the use of motorized watercraft on the Colorado River within Grand Canyon is within the authority of the Director of the National Park Service. This action does not designate the river corridor as wilderness. This action does coincide with the NPS proposal to the President for wilderness designation of most of the canyon.

(5) it conceals proposals in the draft environmental statement that belong instead in the plan; (6) it contains no "action" section; (7) it contains no schedule of cost.

The goals for management of the Colorado River as stated in the plan are:

1. TO PERPETUATE THE WILDERNESS RIVER RUNNING EXPERIENCE.

2. TO ATTEMPT TO MITIGATE THE INFLUENCE OF MAN'S MANIPULATION OF THE RIVER.

The plan proposes to achieve those two goals through twelve measures. We want to comment on each of those, to point out some of the ramifications of each, and to explain how the plan falls short.

1. ALLOW ONLY NON-MOTORIZED CRAFT.

OUR COMMENT: Motor-steered pontoon boats have been on the river in Grand Canyon as long as recreational river running has. So have rowed boats. Elimination of the motorized trips takes away a public choice that has existed for 40 years and that has been the prevalent choice for the last 25 years.

It eliminates the method that 80% of all river passengers have been shown to prefer; that the public can most afford in terms of cost and of vacation time.

It eliminates the kind of boats that let people ride through all rapids, rather than climb, scramble or walk around them.

It eliminates the kind of boats shown by research data as being more able to make "contact adjustment", that is, to move to alternate campsites and attraction sites when their planned ones are already occupied.

It eliminates boats that by virtue of their size give more assurance against capsize and drowning or hypothermia in the 45 degree water.

It eliminates the kind of boats that can more quickly move their passengers - as well as passengers on rowboat trips - to sections of the gorge where visual or radio contact can be made, or emergency helicopters landed in the event of serious injury.

2. ESTABLISHING A TOTAL USE CAPACITY AND RELATED LIMITATIONS ON RIVER USE.

OUR COMMENT: The plan proposes to double the level of use that has been maintained since 1973. Within this doubling, however, the plan would decrease the number of people that may take trips with river concessioners, and would greatly

2. Commercial river running on the Colorado River in Grand Canyon began in 1938 with Norm Nevills' first commercial trip using wooden cataract boats powered by oars. The first motorized boat was driven through the canyon in 1949 with commercial motor trips beginning in 1953. Since 1967, motorized boats have been the primary mode of travel offered by commercial outfitters; thus the prevalent type of trip on the river has been on motorized boats. It appears that the ratio of motor to oar trips has developed from concessioner economies as well as public choice. Many concessioners appear to favor motorized boats as a way to maximize efficiency and return on investment.

Choice of motorized and oar trips will remain available until use of motors is phased out. Motors are being phased out to achieve the objective of providing quality wilderness river-running experiences to the public.

Very few situations arise where passengers have to walk around rapids unless they prefer to do so. The exception to this is during times of very low water flow, generally less than 3,000 cfs, when passengers are asked to walk around a few rapids to lighten up boats. Under these conditions, large motorized rafts are not able to run the river at all.

The rescheduling of launches will significantly reduce the need to make adjustment for contacts.

There has been no proven significant difference in passengers falling into the river from motor boats compared to those falling into the river from rowing boats resulting in hypothermia or drowning. In fact, the last person to drown on the river fell from a motor boat, but the drowning was related to problems other than the type of boat.

In the event of an injury, boat parties could make visual or radio contact with aircraft from most areas, and most beaches would have available space for helicopter pickup. Experience has shown that motorized travel would not decrease the amount of time involved in an emergency situation in most cases, as the majority of incidents involve signaling aircraft and waiting for helicopter pickup. Normal time for evacuation of an injured person is 3 to 4 hours.

2

RIVER USE.

OUR COMMENT: The plan proposes to double the level of use that has been maintained since 1973. Within this doubling, however, the plan would decrease the number of people that may take trips with river concessioners, and would greatly

increase the number that may take "private" trips.

The plan proposes to artificialize the seasons. It would call April a summer-season month and would require 16% of summer use to occur in April, although only 4% occurs now.

It proposes to require a winter season, suggesting wet suits and hypothermia orientation, for 915 persons between October and April. Actual use of this period has been 151 concessioner passengers in the winter of 1975-76, and 79 passengers in the winter of 1976-77. For the October through December period of the present winter the figure so far available was 34.

Then the plan proposes to confiscate the user-days earmarked for the winter and April periods, if use does not occur!

It also proposes to reduce from 150 to 50 the number of persons who may leave the starting point any day.

It proposes to reduce allowable group size from 40 persons to 25 persons.

It proposes to use "computer technology" to assign and regulate departure dates and campsite occupancy.

3. ALLOCATE USE BETWEEN COMMERCIAL AND NON-COMMERCIAL USERS.

OUR COMMENT: Having doubled the use capacity, the plan then proposes to change the historically attained ratio of 92% commercial (concessioner) use and 8% non-commercial use, to 70% commercial and 30% non-commercial.

This increases the non-commercial allocation by an instant 560% in terms of people, and 673% in terms of user days.

It decreases the number of people who may take concessioner trips by 1325 people per year, but it decreases this same category by 3,000 people during the June-July-August family vacation period. (Note: the annual decrease is smaller than the summer decrease because the plan proposes to force all but 1325 of these 3,000 people into April and winter trips. Thus the public and the concessioners will experience not the 1325 person decrease, but the 3,000 person decrease.)

We are concerned about the instant doubling of user days. If competent studies have shown that level to be the carrying capacity of the riverine portion of the canyon, and if that carrying capacity has been set without regard to method of propulsion, we are pleased it has been established. If, however, user days have been doubled simply because the plan's mandatory rowing trips require about twice as many days for the same number of people to run the river, then the objectivity of the plan has been compromised.

3

4

IX-110

3. The proposed level of use increases from 96,000 to 175,950 user days annually not including crew, administrative, or research trips. This is an 82 percent increase. However, it should be kept in mind that approximately 22,230 user days of this increase is winter use which compares to little or no winter use under the past use limits. Therefore, the proposed summer use level should be compared against the previous use level since almost all of the past use occurred during the summer season. The number of people allowed to launch from Lees Ferry with concessioner-guided trips will decrease from 11,335 in 1978 to 9,150 (summer season) under this plan. The number of people taking partial trips is expected to increase significantly, thereby increasing the total number of persons taking river trips. The number of private trips is being increased from approximately 40 to 222 annually. This increases the number of participants from 395 in 1978 to approximately 3,330 under the new plan This responds to the significant increase in demand for noncommercial trips since the use limit of 1972 was imposed.

Use during the peak summer season is being reduced to reduce crowding, congestion, and resulting impacts on the riverine environment and the visitor experience. The nature and extent of impacts is such that with use at a lower level and distributed more evenly, the summer season can be extended earlier and later (April and September).

Winter use is not required. It is available for those who want to take winter trips. Use during the winter under the past use limits was very low primarily because use allocations could fairly easily be used during the summer season. See also Town of Fredonia, Arizona, response number 2. The proposed action has built-in flexibility to adjust use allocations where no use is being made by either concessioners or noncommercial river runners.

Daily commercial passenger launch capacity is being reduced from 150 to 50 with flexibility for makeup trips for no shows, etc. Commercial group size on the basis of average group size in recent seasons was approximately 22, preference shown in research results was approximately 20; therefore, a group size of 25 closely fits the objective of a quality wilderness river-running experience. Use of computer technology for operating some aspects of the new plan is expected to be more efficient and keep management costs down.

4. Use allocation is based on the best available information on comparative demand for concessioner-guided trips compared to noncommercial river-running demand. Previous allocation of 92 percent commercial and 8 percent noncommercial was based on actual use of 1972 by these two groups of river runners. Use demand since 1972 has changed considerably based on information available.

Use for noncommercial river runners is being increased by 843 percent in participants, 600 percent in trip numbers, and 718 percent in projected user days. Noncommercial user demand in number of trips has increased by 944 percent from 1972 to 1979. Commercial use demand has increased since 1972 but not at the same rate as noncommercial. In fact 1978 was the first year that all of the available 89,000 user days were used. It

4

However, if the canyon's carrying capacity is twice its present use level, we still doubt the wisdom of instantly expanding use up to that level. Particularly by means of the 673% user day increase to the amateur river runners the research data have shown to be less compliant with park regulations, and having a greater inclination to misuse the river-canyon resource. We acknowledge, however, that that is a matter between the Park Service and the amateurs, as long as it does not preclude or reduce the public's trips with the concessioners.

4. PROVIDE COMMERCIALLY GUIDED TRIPS CONSISTENT WITH A QUALITY WILDERNESS RIVER RUNNING EXPERIENCE.

OUR COMMENT: The plan proposes to make rowing trips the mandatory and only way concessioners could offer, or the public could take, river trips through Grand Canyon. It stipulates that all concessioners' offerings would have to comprise an aggregate offering that consisted of 50 percent 12-day rowing trips, 25 percent 14-day rowing trips, and 25 percent 16-day rowing trips. It stipulates that passengers wanting anything shorter would have to take a portion of one of these longer rowing trips by hiking into and/or out of the canyon at intermediate points.

5

Research has shown that the average length of all trips, rowing and motored, is 8.7 days, and that 70% of all passengers are signing up for trips of 9 days or less in length.

It also showed that 91% of all passengers perceived Grand Canyon as wilderness, regardless of trip length or method of propulsion.

The public is saying that guided trips are already consistent with a quality wilderness river running experience.

5. ESTABLISH AN EQUITABLE AND EFFICIENT METHOD FOR HANDLING NON-COMMERCIAL PERMITS.

OUR COMMENT: The plan fails to address this item. It merely recites (appendix D) a sequential procedure for processing non-commercial applications and permits.

6

It does not propose to resolve the measuring of relative demands: the registering of non-commercial demand in one Park Service office, against the registering of commercial demand in 21 concessioners' offices.

It does not speak to identifying and disallowing that portion of private trip demand that consists of concessioner boatmen on vacation, of duplicate applications by all members of a private group, or of multiple applications by members of the group for several rivers.

should be noted that several concessioners could have effectively used more user days in the past several years while some concessioners used considerably less user days than were alloted to them. However, concessioners have been able to borrow user days from each other and it was through borrowing during the 1978 season that all 89,000 user days were actually used rather than each concessioner using their alloted amount. Turnaway information from concessioners indicatesan increase of 183 percent since 1972, which is less dramatic than noncommercial, but results in a demand ratio of 70 percent commercial and 30 percent noncommercial based on turnaway information.

In 1978, 11,335 passengers took commercially guided river trips. Under the proposed action 10,125 passengers annually would be allowed to take concessioner guided trips. This is a reduction of 1,210 passengers on an annual basis. In 1978, there were 7,974 passengers launching from Lees Ferry on commercial trips during the peak summer season of June, July, and August. Under the proposed action during June, July, and August, there would be 4,600 passengers not including those who took partial trips. This would be 3,374 fewer passengers than under the previous situation. It should be kept in mind that approximately 1,200 of these passengers will be accommodated during other portions of the summer season principally April, May, and September. The remaining approximately 2,200 passenger difference is a reduction in total number launching from Lees Ferry.

In the process of arriving at the proposed carrying capacity, there was no consideration given to keeping the same number of people on the river. However, it was necessary to keep in mind that rowing trips would require more time for the same trip distance. The proposed capacity was based on the use capacity study conducted by the late Dr. Yates Borden with adjustments based on the contact study conducted by Shelby and Nielsen (1976).

The increase use level for noncommercial river trips has been modified so that it will be implemented in two steps. During the first year of operation of the plan, one trip every other day for the summer season will be allowed. Then, depending upon how effective the information and education program is in terms of reducing impacts to an acceptable level, the second portion of the increase will be implemented in the third year of the new plan.

5. Trip lengths proposed in the draft plan were to provide an indication of the general range of trip lengths desired. This was misconstrued by some to mean that trips of 13, 15, or 17 days were not desired and that the stated percentages of relative trips lengths were mandatory.

In fact, a variety of trip lengths are desired ranging from partial trips of one day on the river connected with hiking into or out of the canyon to full 18-day trips. Minimum trip length has been reduced to 8 days during the motor phaseout and will be reviewed and possibly adjusted when all trips are oar powered.

It is true that 91 percent of all passengers perceived Grand Canyon as a wilderness. However, it has been determined that motorized travel is not compatible with the quality river-running experience that the Grand Canyon is capable of providing.

6. The noncommercial permit processing section of the proposed action has been expanded to provide more detail on handling these applications. Measurement of demand is covered in the monitoring section of the proposed

It does not speak to identifying and disallowing that portion of p[redacted]e tr[redacted]man[redacted]t co[redacted]s of[redacted]ess[redacted] boa[redacted] on vacation, of duplicate applications by all members of a private group, or of multiple applications by members of the group for several rivers.

[redacted] The [redacted]summer[redacted] permit processing section of the proposed action has been expanded to provide more detail on handling these applications. Measurement of demand is covered in the monitoring section of the proposed

6 Yet it proposes an instant 673% user day increase to this non-commercial sector, at the expense of the public, and research shows, at the expense of the riverine and back country environment.

6. PROTECT AND PRESERVE THE RIVER RIPARIAN ENVIRONMENT WITHIN THE NATIONAL PARK SERVICE'S ABILITY TO DO SO CONSIDERING UNCONTROLABLE EFFECTS OF GLEN CANYON DAM.

OUR COMMENT: The plan proposes to effect this by six stated measures: (1) prohibiting use of soap at or in side streams. (2) requiring all waste to be carried from the canyon. (3) closing certain areas to visitation or camping. (4) prohibiting driftwood fires. (5) designating single trails and constructing new trails. (6) monitoring and stabilizing historical and archeological sites.

The intent of these measures is commendable and in fact most of them are already being done as part of the operational requirements for river runners in Grand Canyon. They have merely been incorporated into the plan.

7 We are presently allowed to have wood fires for aesthetic reasons but not for cooking in the summer. Fire permits are required, all wood must be carried in aboard the boats and all ash and charcoal carried out, and firepans used. We believe that under these conditions wood fires should be allowed for meal preparation as well as for aesthetics.

The plan proposes to build new trails so people will know which one to use. We believe this is needless and that where multiple trails lead to an attraction, designation of the desired trail could as well be done by rock cairns.

7. REDUCE HIGH VISITOR DENSITY AND CONGESTION AT ATTRACTION SITES.

OUR COMMENT: Despite advocating mandatory rowing, and increased non-commercial use, both of which the studies identify as contributing to density and congestion, the proposed plan does not addess this objective.

8 In the draft environmental statement, however, is some information that should have been openly disclosed in the plan. It is a notice of intent to increase Park Service patrol of the river from 3 patrols per year to 39 patrols per year. There is also a stated intent to have these patrols prohibit more than two separate groups from stopping simultaneously at an attraction site.

8. PRESERVE WATER QUALITY IN SIDE STREAMS AND THE RIVER.

9 OUR COMMENT: The plan only addresses this consideration slightly and obliquely, via the matters of prohibiting soap in side streams, and the requirement for waste removal; these two requirements are already in the concessioners operational

action. Concessioner boatmen cannot be denied the right to apply for a noncommercial trip. Some problem will still exist with duplicate applications under the first-come, first-served proposal. However, with the increased use available to noncommercial river runners, the fact that all noncommercial trip participants can apply for a trip, and the cross checking that will be possible through use of computer technology, this problem should be reduced to a minimum. There is no plan to prevent anyone from applying for river trips on several rivers. See response number 4 as to increase in noncommercial use.

7. All of the proposed environmental protection measures have already been implemented. These measures are essential to protection of the canyon resources and, therefore, are important to and included in the proposed action.

Experience has shown that it is impractical to carry sufficient wood for cooking fires for the entire trip and that companies who were supposedly doing so, in fact, often ran out of wood and had to rely on driftwood. Continued monitoring will provide information needed to determine whether or not this procedure can be changed.

The draft plan proposed that single trails be designated or constructed where needed to reduce problems caused by multiple trailing. Further emphasis is placed on designation of single trail alignment in the proposed action. In most cases there is already a satisfactory trail that can be designated and the other social trails obliterated or disguised. In a few instances, there will be a need for minor construction on short stretches to achieve an acceptable alignment or stabilize the trail.

8. The redistribution of launches to reduce heavy weekend launch activity and increase low midweek launches will achieve the reduction of crowding and congestion.

NPS patrol trips will be adequate in number to accomplish the job to be done. The proposed action of the FES has been modified to reflect that there will be approximately 12 patrol trips during the summer season and six during the winter season.

9. The proposed action addresses only those river-running activities that could affect water quality. Other things that affect water quality are addressed in the natural resources management plan for the park.

requirements issued by Grand Canyon National Park.

9 The draft environmental statement notes that the amount of all pollutants added to the river by visitor activities will probably be insignificant.

Not addressed at all are three other water quality factors cited in the draft environmental statement: concentration of specific elements,e.g., zinc, mercury, lead ; total salt concentrations ; biotic and abiotic parameters that could lead to hypereutrophication.

9. MAINTAIN PUBLIC HEALTH AND SAFETY STANDARDS.

10 OUR COMMENT: The proposed plan only reiterates already established requirements for trash and litter removal, boat loading and safety, crew qualification, and existing health and sanitation guidelines.

10. INCREASE INTERPRETIVE OPPORTUNITIES ON THE RIVER.

11 OUR COMMENT: The plan does not address this objective. The draft environmental statement only mentions that one function of the greatly increased river patrols will be "interpretation". This carries an undertone of interpretive imposition rather than interpretive opportunity.

11. INCREASE EDUCATION AND INFORMATION FOR ALL RIVER RUNNERS REGARDING PROTECTION AND USE OF RIVER ENVIRONMENT.

12 OUR COMMENT: The plan proposes (1) written guidelines for every guide or trip leader; (2) an audiovisual program on resource protection at the departure point for all commercial and non-commercial passengers; (3) trip leader training programs of one week for concessioner boatmen and one day for private boaters.

We see a credibility gap in the relative durations of these training programs inasmuch as private boaters have been shown to be less responsible and less compliant than professional boatmen.

12. ESTABLISH RESEARCH MONITORING PROGRAMS TO ASSESS RESOURCE MANAGEMENT AND VISITOR USE OF THE COLORADO RIVER.

13 OUR COMMENT: The plan says additional data and continued efforts are needed in two areas, sociological and biological, but it does not propose when or how to begin obtaining them, or include cost figures. An ongoing present program is not mentioned.

10. Existing health and sanitation guidelines have proven adequate to the need and, therefore, are not being changed.

11. There is no intent to impose interpretation on those river runners who are not interested in it or do not want it. NPS patrol personnel will be available to provide interpretation. The annual river guide training sessions and the information and education activities at Lees Ferry are primary methods of accomplishing increased interpretive availability.

12. One-day information and education sessions at Lees Ferry should be adequate to accomplish the needed training of noncommercial river runners. In the event that it does not, use may have to be reduced to reduce impacts. Noncommercial trip leaders only run one trip in a given season, where commercial river guides run several trips during the year. Thus, longer training sessions are provided for commercial river guides.

13. Biological monitoring program is ongoing at the present time. In the event additional funding for sociological monitoring is not provided, sociological monitoring will be done to the extent possible with existing funds.

The plan is particularly obsessed with the elimination of motorized rafts and with the dictation of trip lengths. To support these thrusts the plan's writers have taken what we consider to be unconscionable liberties with the data, and with events. Here are specific instances:

1. In March 1976 there were public workshops for a Grand Canyon river management plan and later that year Grand Canyon National Park sent out a letter summarizing those sessions. That letter included a listing of the issues raised, and primary points of view taken, in order of mentioning. The third item on the list was "Motors vs. Oars", explaining that views were mixed both for and against motors.

   In the draft environmental statement, however, (Page I-1) the order of mention has been changed to move this item from number 3 position up to number 1 position.

14 The plan, on page 11 under the heading of "The problem and the Issues", gives the benefit of question form: "Should motors be eliminated to perpetuate the wilderness experience?" Then only six pages later the plan lists its number one management objective as being "to allow only non-motorized craft".

   It should be remembered that some of these 1976 workshop participants expressing "motors vs. oars" concern were advocates of continued motorized use, who merely wanted the concern entered objectively on the record and the matter discussed. The plan, in its obsession to ban motorized boats, has represented that as having been a solid anti-motors feeling, when in fact it was not. Public comment since the release of the plan confirms this conclusively.

2. In seeking statistical support for the banning of motorized rafts, the writers of the plan draw on two experimental 1975 river trips conducted by ARTA, one of the river concessioners, with Park Service-contracted researchers aboard. ARTA set up these trips to see whether a similar offering would be popular if published for their 1976 season. They were not well received, they were not published, and have not been conducted again in the ensuing seasons.

15 Each of two full length trips was divided so that its paying passengers went approximately halfway on a motorized boat and halfway on a rowing boat; they were then surveyed by questionnaire.

   The trips were not typical of either good motorized or good rowing trips. Both portions were hurried - faster than that company's normal trips of either kind. The motorized boats were illegally loaded (beyond the limit set for that type of raft by Park Service operational requirements standards). The passengers expressed resentment and anxiety at being required to change boats, and at being questionnaired.

14. Motors and oars issue discussed at the 1976 workshops was number 3 in order of mentioning. In the DES page I-1, the motor/oar issue was considered the most controversial due to concessioner and public input from other sources. On page 14 of the Draft River Management Plan, where the information is related only to the 1976 workshops, the motor/oar issue is shown as number three which was the order of mentioning at those workshops. There is no intent to represent input from the 1976 workshops as being solid anti-motor. However, as stated in the plan the majority of input from those workshops was in favor of oar travel.

15. The experimental combination motor and oar trip conducted in 1975 was faster by one day than that particular companies' normal motor trip; the non-motorized portion of that trip was also faster than their normal trip. The boat capacity for that particular year was not exceeded. Boat capacity has since been reduced. The combination trip information substantiated informal comment from river-running passengers to the effect that after having experienced both a motor and oar trip that oar trips would be preferable. It is true that the experiment should have been repeated in subsequent seasons to confirm these findings. In connection with the statement of the possibility of pre-selection of combination trip passengers, the researchers also stated that "there is good reason to believe the combination trip group was both representative and open minded." The decision to phase out motorized watercraft is not based solely on this research data. This decision is based on the objective of providing a quality wilderness river-running experience, and considers public input as well as this and other research data. The projection of 5 percent (3 people) preferring motorized travel may not be a statistically sufficient sample to adapt to all river runners. Nevertheless, the data is sufficiently reliable to project the fact that when a person has had the opportunity to experience both motor and oar trips, the majority will select oar trips.

It is true that 85 percent of standard river trip passengers described their trip as "perfect" or "excellent" regardless of mode of travel. Those people who had the opportunity to experience both motor and oar travel on the combination trip were able to make a further comparison of the two modes of travel and described motorized trips are speedy, hurried, rushed, noisy, loud, crowded, etc.

Then, despite the fact that only 56 people ever took those combination trips, the data from those 56 questionnaires was extended over to the entire river running public; the plan alleges the feelings and preferences of these 56 represent the feelings and preferences of all past, present and future river passengers.

This extension of the 56 person data was done despite the following cautions by the researchers who accompanied the combination trips (Colorado River Research Program, Technical Report Number 2, under the Motor-Oar Experiment, page 12): "This procedure does not fulfill formal experimental requirements for controlling sources of invalidity."

From the same report, page 13: "The ability to generalize from this study is limited by two factors. First, the respondents were self-selected rather than randomly assigned. As a result, the representativeness of the group who chose combination trips can only be estimated after the fact rather than assured. Second, the motor and oar trips experience by subjects can only be considered representative of ARTA motor and oar trips."

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And from page 38: The possibility of an 'oars only' policy, however, goes beyond our data, and involves some speculation about its effects on river travel in the canyon."

Despite these cautions the writers of the plan extracted from the 56 people the 5% (3 people!) who preferred the motorized portion of the combination trips under the rushed, illegally loaded conditions it experienced, and extended that 5% to the total river running public for the season - and by inference to every future season. The draft environmental statement, page III-12, says "Assuming this group represents the river running population, only 550 of the 11,094 people who ran the river in 1975 would be adversely affected by the change from motors to oars."

In addition to this statistically unacceptable assumption, the Park Service selected the adjectives used by participants on those combination trips for use in the Park Service press release announcing the plan for public comment. A typical newspaper article generated from that press release reads in part: "People described their motorized trips as speedy, hurried, rushed, noisy, loud, crowded...".

These are not the adjectives being used by passengers on normal trips. Studies of the full river running population found 85% rating their trip as either "perfect" or "excellent".

3. Another attempt to cast motorized trips unfavorably against rowboat trips is made in comparing off-river time available for hikes on the two kinds of trips. On page II-48 of the draft environmental statement, Table 12 is used to show the average number of attraction sites visited and the average

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16. While there is more time available on motor trips for off-river activities than on oar trips of the same length, the data collected clearly shows that motor trips actually provide less off-river time to passengers.

3. Another attempt to cast motorized trips unfavorably against [redacted] is made in comparing river time available for hikes on the two kinds of trips. On page II-48 of the draft environmental statement, Table 12 is used to show the average number of attraction sites visited and the average

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time spent at each for the average rowing trip and the average motorized trip. The fact obscured in all these averages is that rowing trips only move at river current speed or less, while motorized trips add 3 or 4 miles an hour to river current speed. It therefore takes a rowboat trip of approximately 14 days to provide the same number of off-river hiking hours that a 7-day motorized trip provides.

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To get comparable data, one should look at 12-day full length trips, which are currently available in both rowed and motored versions. A 12-day motorized trip offers 4.5 more hours per day of attraction visitation time on a Lees Ferry to Lake Mead itinerary, and 3 more hours per day on a Lees Ferry to Diamond Creek itinerary than does a 12-day rowing trip.

4. On I-55 of the draft environmental statement, a table to compare motor and oar trips lists motorized boat size as ranging from 30 to 40 feet, although we know of no motorized boats longer than 37 feet on the river. It lists rowing boats as ranging from 15 to 20 feet, when many of them are 22 feet and a 27 footer is occasionally used. We can only interpret this as an effort to make motorized boats seem larger, stigmatizing them somehow with size, and to make rowing boats seem smaller.

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5. In this same table, by comparing the number of boatmen on each kind of boat, and disregarding the two or more crew on nearly all motorized rafts in addition to the pilot, the writers of the draft environmental statement have set up a differential passenger-to-crew ratio they then suggest elsewhere in the plan is unfavorable to motorized passengers.

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This same page again cites the 1975 combination trip data in support of a Visitor Mode of Travel Preference - despite the researchers' caution about extending the data. And it repeats the combination trip adjectives used in the press release.

6. On page II-59 of the draft environmental statement, the costs of motorized and non-motorized trips are compared by using the cost of a complete 8-day motorized trip against the cost of an 8-day portion of a longer rowing trip. The allegation in the plan is that rowing trips will not cost more. It hardly need be pointed out that this compares a whole apple with part of an orange.

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Here is what mandatory 100% rowing would do to the number of boats required, and the number of boats in the canyon at any one time:

BOATS REQUIRED

1. At a user level of 12,000 people each season mandatory rowing would require an increase from 1120 boats to 2400 boats.

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2. At the plan's reduced level of 9150 people each season mandatory

17. The table comparing boat sizes has been corrected.

18. There is variation from company to company as to the number of guides and crew per boat. However, the majority of motorized boats have a guide plus one crew. There are sometimes additional miscellaneous crew on both motor and oar trips. See response number 15 as to combination trip experiment.

19. For 1979, the average cost of a full-length, 12-day rowing trip to Diamond Creek is $78 more than the average cost of a full-length, 8-day motor trip covering the same distance. See Arizona Office of Tourism response number 1. Data collected from participants of the public meetings on the draft plan indicate that over half of those people would be willing to pay more for an oar trip.

20. It is true that more boats will be required for oar-powered trips than for motor trips. However, the number of boats required is not as important as the number of groups since inter-group contact results in contact and crowding that adversely impacts the trip experience and the canyon resources.

rowing would still require an increase, from 1120 boats up to 1830 boats.

3. It would still require 710 MORE boats per season to go to mandatory rowing at reduced level of 9150 people than it would require to stay at the present use level and retain the 80% - 20% present ratio of motors to oars choice.

BOATS DEPARTING AND ON THE RIVER

1. At the present level and ratio of use, with just under 9 days as the average of all trip lengths, and just over 6 boats per day departing, there are always about 56 boats in the canyon on a given day of the summer season.

2. Under the proposed management plan format, with a 14 day trip as the median length, and 10 rowboats departing each day, there would always be about 140 boats in the canyon on any given day of the summer season.

3. The present mix of motored and rowed boats spreads boats on the river and upper Lake Mead over as much as 312 miles because they use different takeout points. Mandatory rowing could reasonably be expected to spread about 2½ times as many boats over 86 fewer miles, as the Diamond Creek takeout at Mile 226 avoids rowing or being towed down the slack water of Lake Mead.

4. Not unless all present trips were 20 days long would there be as many boats in the canyon at any one time under the present user equation as there would under the river management plan format.

The bases and compilation of these conclusions is attached to these remarks.

In addition to our concern over a mandatory kind of propulsion, we are concerned over the proposal for a mandatory trip length. All trips are now limited to an average of 40 river miles per day. That limit should be retained, unchanged, as a reasonable and sufficient parameter of trip length. There should not be the requirement, as proposed, for a 9 day mandatory minimum for motorized trips during a motor phaseout, and there should not be any motor phaseout. Nor should there be any mandatory minimum length for rowing trips other than the 40 mile per day average mileage allowed.

Also attached to these remarks is a spreadsheet showing that for 1978 the public has 68 different Grand Canyon river trips to choose from. These include 32 choices of motorized trips in 9 different lengths, from 3 days to 12 days; of those 32, 22 are full length trips. They also include 36 choices of rowboat trips in 12 lengths, from 5 days to 22 days; of those 36, 19 are full length. There is also a good spread of price choices for each.

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21. Trip length has been mandatory by the limit of averaging no more than 40 miles per day. Trip length will continue to be mandatory but the average per day is being adjusted to 30 miles with a corresponding minimum of 8 days to Diamond Creek. This is a change from the 9 days to Diamond Creek proposed in the Draft Environmental Statement. A greater variety of trip length and related costs are expected under the proposed action than exists at present, within the parameters of minimum and maximum trip length. Full-length trips shorter than 8 days will be eliminated as will trips of more than 18 days (two offerings of trips longer than 18 days were available in 1979). Minimum time for full-length trips after the motor phaseout will be longer. See also response number 5 above.

[redacted] 197[redacted] pu[redacted] has [redacted] ffe[redacted] Gran[redacted] yon [redacted] tr[redacted] choose [redacted]. Th[redacted] includ[redacted] choices of motorized trips in 9 different lengths, from 3 days to 12 days; of those 32, 22 are full length trips. They also include 36 choices of rowboat trips in 12 lengths, from 5 days to 22 days; of those 36, 19 are full length. There is also a good spread of price choices for each.

River permits and user days are non-denominational, and any river company is perfectly free to offer rowing trips or motor trips or both kinds. This broad spectrum of 68 offerings is a response by the river concessioners to the indicated preferences of the public.

21 But of the 68 offerings, only 13 fit into the mandatory 12-day, 14-day, and 16-day formats the plan would impose. That is fewer than 1 in 5, and it virtually divorces the river concessioners from the public they want and need to serve, and that the Park Service expects them to serve.

The plan states that a wide variety of river trip services should be available to the public. Under the present system, whereby concessioners can respond to public preference, that variety can continue to be available.

If the Park Service begins dictating trip length, there will be only a few choices, and the offerings within those will become much like each other regardless of which company provides the trip.

We also object to the assignment of mandatory departure days for each company's trips. The plan mentions "computer technology". This approach is filled with potential atrocity and must not be allowed to happen. Some of us may remember when the Pennsylvania Railroad and the New York Central tried to merge. The resulting financial "Wreck of the Penn Central" occurred primarily because the two railroads had two different computers that couldn't talk to each other. Consequently the Penn Central couldn't find its rail cars. Computerized departures on the already computerized Colorado River would be the wreck of the river experience!

22 The presently used system is the best possible way. Each company requests the starting dates of its choice about 10 months ahead of a season, and receives them if they are available. This is most flexible and equitable and is providing a wide choice of starting days, from those on which adequate water is released at Glen Canyon Dam. It offers river men and women the best opportunity for maximum employment and utilization. It is needed, to fit individual company logistical patterns and aberrations of the Glen Canyon water release. It offers more variety of departures on adequate water, in more fairness, than any imposed system, human or computerized, could offer.

With regard to concession permits and the selection of concessioners, the language in the plan, page 23, and the DES pages I-8 and I-9 is intimidating and constitutes a "hunting license" on present and future concessioners. First, whereas the Fact Sheet appended to the plan states that "preference in granting concession permits shall be given to previous permit holders", the Fact Sheet appended to the DES states it will be given, and the plan on page 23 states only that it may be given. Concessioners in different parts of the country are reporting that at renewal time they are

22. Specific assignment of launch days to concessioners has been dropped from the proposed action. The present system of assignment of launch days on a first-come, first-served basis will be continued.

receiving new contracts with the wording subtly changed as above. In signing them they are contracting away considerations congress intended them to have under Public Law 89-249, the Concessions Policy Act. In protesting signing they are being told they can't operate without a contract. This language with regard to preferential right must be standardized between documents.

Secondly, the procedures described on these same pages for renewal of permits would require existing or prospective concessioners to respond to a solicitation that does not describe exactly, or even very well generally, what the National Park Service is seeking in the way of river trip services. It does not explain what it wants in number of concessioners, whether these would all be the same size, if different sizes then why, how many of each size, and what it feels the upper and lower limits of size should be.

23

Yet it infers a "leveling" of concessioners through confiscation of user days from some companies and reissuance of them to other companies. And it reserves the right to reject any individual concessioner offer that does not "mosaic" into an overall park package of 50% 12-day trips, 25% 14-day trips and 25% 16-day trips.

The National Park Service should fully disclose what it intends as to specific services and number and size of concessioners. It should then encourage existing concessioners to begin exploring with each other any desired voluntary adjustments to their size through tentative buy-sell agreements submitted to The Service. By fulfilling its role as the managing and approving agency in this matter, The Service could facilitate some potential, equitable restructuring of the river concessioner group within the concepts of Due Process and natural market methods, within the present permit and allocation systems, and without resorting to controversial, confiscatory management procedures.

As an example of what a river management plan can be, we cite the plan for the river in Canyonlands National Park, Utah. The General Management Objectives stated in that plan are:

1. Operate and manage the river environment as an entity (sub-district, district, or special unit) because it differs from other park sub-units in type of use, environment, problems, etc.

2. Exclude any use development on the rivers beyond that now existing.

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3. Limit administrative development to that which is absolutely necessary to protect the park environment and the park resource.

4. Seek and maintain an open dialog with the river user and open channels of communication with river-oriented organizations such as the Western River Guides Association and the Canyon Country River Marathon Association, with commercial permittees and with government operations having similar problems in order to get a more diverse input into river management.

23. The statement in the proposed action which is quoted from the Concessions Policy Act of 1965 (Public Law 89-249) is controlling. The key word in the Act is "shall," and the FES has been edited to use this word where appropriate.

Additional information has been added to the proposed action of the FES to further describe the procedures for renewal of concession permits. The reason that the draft plan and environmental statement did not give a specific number or size of concessioner was to avoid any inferred preselection or guarantee of permit renewal to existing concessioners. The point that existing or prospective new concessioners interested in a permit need more information on the number and size of concessioners desired is well taken. The proposed action has been modified to include some additional information on these points. The procedure for allocation is described in the commercial permit management section of the proposed action of the FES. The allocation is based on historical use. However, in converting percentage of current user day allocation to percent of number of people under the new plan, those concessioners who have been running longer trips realize an increase in both people and user days, while those who have been running shorter trips will realize a reduction in number of people by an increase in user days. Through the permit renewal process concessioners may wish to consider consolidation of operations in making proposals. Such proposals will be considered on the basis of their particular merits. Present policy allows for the transfer of concession permits. Transfers must be approved in advance by the National Park Service. Approval of transfer proposals could be jeopardized if actual control or ownership changes prior to the approval of the transfer proposal by the NPS.

24. The river management plan for Canyonlands National Park was reviewed and considered in developing the river management plan for Grand Canyon. There is considerable similarity in these two plans. However, there is of necessity some differences due to the unique nature of each of the two canyons. In each case, the primary objective is to protect and preserve the resource while at the same time allowing for optimum river-running use within established capacities. Obvious differences are the motor and oar situation, use capacity and allocation, and in particular the pooling and redistribution of use. Motors and oars, use capacity, and allocation have already been discussed. The pooling of use will work very well until all concessioners and noncommercial river runners are using all of their respective allocations. At that point there is nothing left to pool, and it is no longer possible. We do not include information on staffing and funding for management in the plan but would provide that information to anyone interested upon request.

channels of communication with river-oriented [illegible] such [illegible] the [illegible] Gui[illegible] Association and the Canyon Country River Marathon Association, with commercial permittees and with government operations having similar problems in order to get a more diverse input into river management.

The Resource Management Objectives for that river are as follows:

1. Preserve and protect the river environment.

2. Permit natural forces and events to run their course without interference.

3. Limit, describe and justify any interference in natural processes.

4. Adhere to wilderness management policy in all areas proposed for wilderness. Manage the non-wilderness portions essentially as wilderness except that motors are allowed on vessels and primative vehicular access may be maintained but not extended.

5. Return or allow to return to their natural conditions those areas scarred by exploitation, except where historical values take precedence.

6. Develop and maintain a comprehensive research program to acquire the data needed to develop sound plans for river management.

7. Provide for the conservation of important historical and archeological resources which are associated with the rivers.

Visitor Use Management Objectives are stated as follows:

1. Research establish and implement carrying capacity for the river system so that visitor use does not significantly damage the resource.

2. Protect the river visitor from the environment and from himself and other visitors.

3. Provide for optimum use of the resource without destroying the the very values for which the park was established.

4. Assure the opportunity for a variety of river experiences.

5. Provide for interpretive and informational services to make the visitor's experience of the highest quality possible.

6. Insure that minimum safety and operational standards are met by Special Use Permittees, both commercial and private.

The Canyonlands River Management Plan also has some other features for which we commend it, and recommend it as a model.

One of these is an "action" section in which it clearly states what it intends with regard to (1) allotments and limitations, both commercial and private (2) a pool of unused user days (3) profiles on commercial operators (4) permits including commercial permits with regard to business activity in the park, listing of

permittees, stating transfer-assignment conditions, providing for the superintendent's monitoring of quality, and measures for violation of permit conditions; private permits with regard to credential, qualifications, and the definition of "non-commercial". (5) operational requirements (6) on-site management and protection including organization, staffing and funding, development, equipment and facilities, operational committment, patrols, inspection, law enforcement, safety, emergencies, reporting visitation, historic and archeological site survey, co-ordination with the adjoining NPS area, communication with other user organizations. (7) fiscal and staffing requirements, listing current staffing and then required staffing in priority order, with explanation and justification.

We urge Grand Canyon National Park, if they are the re-writers of the river management plan, to draft a plan something like the Canyonlands plan. A plan that does not try to impose a certain kind of river experience, but lets each user choose from a variety of trip lengths and propulsions. A plan that honors historic use and public preference.

The proposed river management plan for Grand Canyon missed its mark,in those instances where it did miss its mark, primarily because it incorporated personal bias against motorized boats, and because it endeavored to overmanage.

Herbert Brown, who is a member of Stewart Udall's environmental consulting firm, Overview, took a seven day motorized river trip through Grand Canyon a few years ago. In a Wall Street Journal article titled"Thoughts on a Wilderness Trip" he said:" Few things can compare with a wilderness trip to clear the mind of cobwebs that accumulate from an urban-suburban routine. For myself - a 'professional environmentalist' within Washington's legal and consulting community - this prescription took me floating 300 miles down the Colorado during the second week in June...It was a week of the simple life, and the best thing about it was the absolute freedom from urban values and constraints."

That is what the public is looking for. They do not want, or need the experience pre-defined for them. Wilderness is in the eye of the beholder; 91% of all river passengers already perceive the Grand Canyon as wilderness, without it having to be designated or labeled.

Sincerely yours,

Gaylord L. Staveley
Chairman,
Professional River Outfitters Association

Gaylord L. Staveley
[redacted]
Professional River Outfitters Association

Professional River Outfitters Association
Attachment to statement

I. BOATS REQUIRED - COMPARATIVE

A. At the level of 12,000 passengers per season

1. With 80% motored and 20% rowed
   80% of 12,000 = 9600, @ 15 per boat requires 640 boats
   20% of 12,000 = 2400, @ 5 per boat requires 480 boats
   TOTAL 1120 boats

2. With 100% rowed
   100% of 12,000 carried @ 5 per boat requires 2400 boats

B. At the proposed level of 9150 passengers per season

1. With 80% motored and 20% rowed
   80% of 9150 = 7320, @ 15 per boat requires 488 boats
   20% of 9150 = 1830, @ 5 per boat requires 366 boats
   TOTAL 854 boats

2. With 100% rowed
   100% of 9150 carried @ 5 per boat requires 1830 boats

SUMMARY:

1. At the use level of 12,000 people each season, mandatory rowing would require an increase from 1120 boats to 2400 boats.

2. At the proposed 9150 person seasonal level, mandatory rowing would require an increase from 1120 to 1830 boats.

3. It would still require 710 MORE boats per season to go to mandatory rowing at REDUCED use level than it would to stay at the 12,000 level AND retain the 80% - 20% ratio of choice.

4. The summary can be put in tabular form as below:

	No. of 15 passenger motorized boats	No. of 5 passenger rowing boats	Total No. of boats required
12,000 per season			
a. 80%-20% split	640	480	1120
b. 100% rowing	-0-	2400	2400
9150 per season			
a. 80%-20% split	488	366	854
b. 100% rowing	-0-	1830	1830

Professional River Outfitters Association
Attachment to statement

II. BOATS DEPARTING - COMPARATIVE

A. Present Format: 1120 boats are required to serve the public demand. Over the 180 day extremes of the season these depart at an average of 6.2 boats each day on an average trip length (DES 77-37) of 8.7 days.

Therefore during each day of a 9 (8.7) day period that the average boat spends in the canyon, a fraction more than 6 other boats start into the canyon. The number of boats then in the canyon on each day of the first 9 day period is then as follows:

Day	1	2	3	4	5	6	7	8	9
Boats in canyon	7	13	19	25	31	37	43	50	56

This total of about 56 then tends to remain constant, as 6 or 7 boats start a trip each day, and 6 or 7 end one.

B. Proposed River Management Plan format: 366 summer trips of 25 people each, with 2 trip departures per day. This at 5 people per boat requires 10 boat departures each day.

Because the plan proposes 12-14-16 day trips, the median length of 14 is used. During each day of a 14 day period in which 10 boats entered the canyon the number of boats would be as follows:

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Boats in canyon	10	20	30	40	50	60	70	80	90	100	110	120	130	140

This total of about 140 then tends to remain constant, as 10 boats a day start a trip, and 10 end one.

C. Summary and Comment: The above does not predicate a takeout point, but assumes that in the present format, companies will use several takeout points and the 56 boats may be spread over as much as 312 miles; in the proposed format it should be expected the 140 boats would use more Diamond Creek takeouts to avoid rowing or being towed on Lake Mead. This would spread them over 226 miles instead of 312.

Not until all trips averaged 20 days long under the present system and level of use would the number of boats on the river at any one time be as great as it would under the format proposed in the river management plan with 100% rowing and departures controlled by party and b y day.

system and level of use would the number of [redacted] on [redacted] at [redacted] the [redacted] as [redacted] at [redacted] would [redacted] the format proposed in the river management plan with 100% rowing and departures controlled by party and b y day.

Route 4, Box 959
Flagstaff, Az 86001

William Whalen, Director
National Park Service
Department of the Interior
Washington, D.C. 20240

April 28, 1978

RE: Colorado River Management Plan

Dear Sir,

I am writing this letter as chairman of the Plateau Group of the Sierra Club, which covers all Northern Arizona.

The members of our group would like to commend the Park Service on its Draft Environmental Statement and River Management Plan for the Colorado River in Grand Canyon National Park. We strongly support the proposals contained therein, except for two which will be discussed later.

IX-124

We are particularly pleased to see that the Park Service believes that running the river is a wilderness experience and so proposes to eliminate motors from the river. It has long been our contention that Park Service proposals to designate, as wilderness, the lands below the rim in Grand Canyon did not make sense if the river was to be excluded, and the adverse impact on the riparian habitat allowed to continue.

1 The two proposals we would like to see changed are the proposed increase in the number of user-days, and the lack of a separate allotment of user-days for educational trips. We would like to see the proposed number of user-days ~~raised~~ from 225, 320 to about 155,000. Even with an extended "summer" season we feel that the proposed number will still result in an adverse impact on the popular beaches, especially since there will be a shorter recovery period each year for the riparian vegetation and a possible inhibition of its spring growth due to an earlier start to the "summer" season.

2 We also think that a certain number of user days should be set aside specifically for educational trips. The Canyon is not just an amusement park but a tremendous outdoor classroom, particularly in the areas of geology and ecology, and we feel that the Park Service should give more adequate recognition to groups that wish to take advantage of this aspect of Grand Canyon.

Finally, we urge that the plan be implemented as soon as possible.

Yours sincerely,

Celia Holm, Chairman
Plateau Group, Sierra Club

Response to: Sierra Club, Plateau Group

1. Total use in the proposed action has been reduced (see Council on Environmental Quality #1). Summer season use is proposed at 153,720 user days for commercial passengers and noncommercial participants. Noncommercial use will be phased in and monitored to ensure that impacts are kept within acceptable limits. Redistribution of use on a weekly and seasonal basis in combination with proposed requirements to haul out human waste, limit use of fires, and designated single trails where appropriate is expected to successfully mitigate any impacts from increased use.

2. Educational groups currently have access through noncommercial trip permits, if the group is noncommercial, and through a concessioner if the group is commercial. It would be inequitable to single out educational groups to be granted a special allocation over underprivileged youth groups, church, civic, Boy Scouts, Girl Scouts, etc. Also it is difficult to specifically arrive at a definition for a bona fide educational group.

1929 E. Blaine
Seattle, WA. 98112
April 27, 1978

Dear Sir:

As the river rights representative of the University of Washington Canoe Club(UWCC) I wish to comment on behalf of the UWCC on the proposed management plan for the Colorado River through the Grand Canyon.

1 First, it is clear from research programs and visitor response that use of motorized craft in the Grand Canyon is absolutely not necessary. Motorized trips are hurried, cause noise and air pollution, crowded conditions and more visitor contact. I strongly support the recommended alternative("C") allowing only non-motorized watercraft after 1981 and also support the designation of "wilderness" for the entire river corridor.

IX-125

2 I have a couple of points concerning total use figures and the allocation of use between commercial and non-commercial parties. My biggest concern is that there appears to be very little flexibility in the allocation system. For instance, if noncommercial demand exceeds the 30% allocated it in 1981 while commercial demand is not filling their quota, when will a change of the 70%/30% rule be made(5 years?, longer than 5 years is like the present system we've had since 1972--frozen at 92/8 %)?? I propose that the 70/30 rule be examined and shifted downward, if necessary,every two years for the first ten years from 1979-1989. In the present plan, what little flexibility I find certainly favors the commercial operator (e.g. page 27 of the river management plan, paragraph 2 under"Plan Modification" "Changes that include use allocations will take place over a longer period to provide concessioners. . ." --What about providing for the noncommercial, private boater??).

I would also point out that although the user day allocation is 70% commercial, 30% noncommercial, the percentage with respect to passengers/participants is 75% commercial, 25% noncommercial. I believe that the number-of-passengers percentage should include the crew in the commercial portion as well as reflect, as close as possible, a 70/30 distribution.

3 I am in complete agreement with National Park Service recommendations to prohibit wood fires during the summer season(with the noted exceptions), human waste disposal, trails, public safety and public health.

4 The section on noncommercial permit management is rather confusing. Read as written, it implies that on a certain date I may be 8th on the waiting list and thus have to wait 8 years before I can obtain a permit. Is this correct or will applications be discarded yearly and re-applying necessary??

5 Finally, I hope that there will continue to be close monitoring and research in evaluationg both social and environmental impacts in the canyon. This additional monitoring and research should be used to regularly(every 2 years) adjust use levels and user allocation percentages.

Sincerely,
Myron Sayles II
Myron Sayles II
University of Washington Canoe Cl

Response to: University of Washington Canoe Club

1. No response required.

2. The allocation has been designed to be flexible so that when a change in demand is evident an adjustment can be made. It is expected that adjustments will not be made more often than every 2 years. This is necessary to allow time for careful evaluation of data and provide time for concessioners to adjust operations. However, should a significant change occur for some reason, adjustment could be made more quickly. Data available at this time indicates that demand for concessioner guided trips is increasing at a comparable rate with noncommercial trip demand. Based on total use and allocation outlined in the proposed action, commercial and noncommercial percent allocations are as follows:

	Commercial	Noncommercial
Participants or passengers	75%	25%
Number of trips	65%	35%
User Days	69%	31%

3. No response required

4. The section on noncommercial permit management has been enlarged in the FES. The additional detail provided should clarify this point. (Refer to I.B.5.).

5. Continued monitoring is an important and integral part of the proposal.

Sincerely,

Myron Sayles II

Myron Sayles II
University of Washington Canoe Cl

Western River Expeditions

Survey

Conducted by Western River Expeditions, Inc.

The attached card was mailed to just under 1200 people during the first week of February, 1978. The names were those people who had requested information and or reservations for trips during the previous season. To date, 561 cards have been received and tabulated as shown on the attached graph. The results of the survey todate are as follows:

1 Question # 1

	Yes	%	No	%
(a)	465	82	96	18
(b)	531	95	30	5
(c)	Trip length: 6.8 days			
(d)	545	97	16	3

2 Question # 2

Trip preference:	#	%
5-day	238	40
7-day	281	47
10- day	50	8
12-day	12	2
Longer	4	.06

3639 MacIntosh Lane · Salt Lake City, Utah 84121 · Telephone (801) 942-6669

Response to: Western River Expeditions - Survey

1. This information coincides with data reported from the sociological studies conducted by Shelby and Nielsen in 1976. Most river runners considered their river trips to be a wilderness experience regardless of mode of travel. Here again the problem with this information is that the majority of those who were questioned had experienced only one mode of travel and had no basis for comparision. From the sociological research reports, we find that people who have taken motorized trips will generally support that mode of travel and those who have taken oar trips will usually support that mode of travel. However, when given the opportunity to experience both motor and oar trips, the majority prefer an oar trip.

2. Most of the people responding to the questionnaire had taken a previous motorized trip. From the information provided, a little less than half of the people preferred a 7-day trip and most of those remaining preferred a 5-day trip. Western River Expeditions offers primarily 5- and 7-day trips. Since most of the people were already on a Western River Expeditions mailing list and had likely taken a previous trip with Western River Expeditions of either 5 or 7 days, it would follow that they would prefer and support this type of trip. Again, this information supports data from the Shelby and Nielsen reports of 1976.

Western River Expeditions

Survey - Continued

3 | Question # 3

Rowing participation: Yes: 18.9%, No: 81.1%

4 | Question # 4

Hiking in and/or out of the canyon for shorter trip.

Yes: 28.4% No: 71.5%

It is interesting to note that of the 28.4% who indicated they would hike if necessary, 62% have not been on a Grand Canyon river trip. Only 21% of those having been on a Grand Canyon river trip would hike if it were the only way they could participate.

Since tabulation of these cards on February 16, 1978, an additional 368 have been received and the entire survey is on file in Western River Expeditions' office in Salt Lake City, Utah, for inspection by any interested party.

Western River Expeditions, Inc.

Bill F. George, President

3. The percentage of people who prefer motorized trips coincides almost identically to the percentage who had taken motorized trips in the past, and the same thing holds true for those who had previously taken oar trips. As mentioned in numbers 1 and 2 of the above, these are the same results as reported by Shelby and Nielsen in 1976, but do not provide an informed comparison.

4. Almost 3,500 people took partial river trips in 1978 involving a hike into or out of the canyon. This would be approximately 26 percent of the total number of people taking river trips in 1978. This corresponds well with the percentages reported in comment number 4. It is logical that those who had been on a Grand Canyon river trip and had not hiked would generally choose not to hike as part of a future trip. The proposed action has been modified to allow for the continued use of helicopter takeouts from river trips, which will provide an additional option for shorter river trips along with a third option of a mule ride in our out of the canyon in connection with river trips.

REQUEST FOR INFORMATION

Western River Expeditions, Inc., is conducting a survey to determine the feasibility of operating trips in Grand Canyon in accordance with the proposed Colorado River Management Plan. We would appreciate your taking a few moments to answer the following questions:

1. Have you taken a Grand Canyon river trip? ☐Yes ☐No. If yes, was it ☐motorized ☐rowed? Trip length: ____ days. Would you describe your trip as a wilderness experience? ☐Yes ☐No.

2. Which of the following Grand Canyon river expeditions would you prefer? ☐A trip of 5 days/$485 ☐7 days/$545 ☐10 days/$750 ☐12 days/$900 ☐14 days/$1050 ☐16 days/$1200 ☐Longer expedition.

3. If rowing trips of 12, 14 and 16 days were the only way you could take a river trip through Grand Canyon, would you participate? ☐Yes ☐No.

4. Would you be willing to hike in and/or out of the canyon for a trip of less than 12 days in length? ☐Yes ☐No.

Please initial or sign card. Additional comments would be welcome.
YOUR REPLY BY RETURN MAIL WOULD BE GREATLY APPRECIATED!

PRESENTED BY FRED BURKE, REPRESENTATIVE FOR WESTERN RIVER GUIDES ASSOCIATION

TO: Superintendent, Grand Canyon National Park, Grand Canyon, Arizona

To preface this, let me say that we are concerned with preserving the Grand Canyon. We are in favor of doing it in such a way that as many people as possible will have the opportunity to enjoy this resource without causing any environmental damage. The Park Service has recently admitted that motors are not doing any ecological damage to the Canyon.

We are also of the opinion that some kind of workable, practical plan must be devised to allow the continuance of the kind of river trip the public demands. For this reason, I would like to address my remarks today to the implementation of the plan as proposed.

The river plan will not obtain the desired results as envisioned by the writers. It will not only fail in reducing the number of group contacts on the river but it will reduce the number of families able to see the Canyon with no reduction in impact. At the same time, it will put a number of smaller river companies out of business thereby ending employment for boatmen.

Recognizing that the plan is too detailed to cover in one short talk, I will hit only a few highlights. Hopefully, the Park Service will consider these questions in detail when it writes its final plan.

1 Page I-4 of the EIS states that there will be a 30% reduction in motorized trips by company of those run in 1977. But the Park Service does not specify what a "trip" consists of. Is it one boat or five boats? And how many user days does it represent?

Page I-5 of the EIS states there will be only 9150 passengers per season

Response to: Western River Guides Association

1. A trip as outlined in the DES and FES consists of one group of up to 25 passengers and trip length of from 8 to 18 days (summer) or 21 days in winter (FES). The trip may use from one to 25 boats (if kayaks were used) during the phaseout of motors and from two to 25 boats after motors are phased out. The number of boats used is up to concessioners within the boat capacities listed in the operating requirements. The number of user days will fluctuate for each trip depending primarily on trip length and the number of passengers per trip. There will be no specified limit except a maximum of 25 passengers times 18 days (21 winter) or 378 user days (525 winter) per trip. Smaller group size or shorter trip length is up to the concessioner.

many user days does it represent?

Page I-5 of the EIS states there will be only 9150 passengers per season

providing all trips are filled daily from April 1 through September 30. Common sense and past experience of river companies will indicate this is highly improbable, so less than 9150 will be the final total. This will result in over 2000 less passengers, by the Park Service's own figures, traversing the Canyon during the season. (See EIS Pg. III-19) The majority of these will be families who would normally vacation during June, July and August. This will result in excessive losses for companies and/or dramatically increase the cost per person as already recognized by the Park Service.

2

Page I-22 of the EIS states that beginning April 1, 1979, there will be only 366 commercial launches per summer season which will affect an automatic 30% reduction, since for the last five years, launchings have been in excess of 500 (See pg. I-10 EIS). But as a further reduction in our user day quota, under which we are still supposed to be operating, a restriction of 9 day minimum trips to Diamond Creek is imposed (See pg. I-23 EIS). So each motorized trip will loose 2 user days X 25 passengers assuming a present trip length of 7 days.

IX-130

3

Page IV-4 of the EIS states that 30% of the passenger day allotment must be by rowing. Here we find further evidence that NPS is counting on us being on a user day allotment. We have already sustained a 30% loss by converting to launch dates in 1979 and now another 30% reduction to rowing which requires 50% 12 day trips, 25% 14 days and 25% averaging 16 days (See pg. I-8 EIS).

4

Assuming (A) there is no increase in prices charged for motorized trips in 1979 even though we will have to add days to the present operation and

2. Maximum number of commercial passengers for the summer season will be 9,150. The proposed action has been modified to allow for makeup trips. See also Professional River Outfitters response number 4 and 9 as to midsummer use changes and trip costs.

Concessioners may realize an impact from having to modify booking arrangements to accommodate families during midsummer months and other individuals and groups in early and late summer.

3. The total number of commercial trips for 1978 was 491 which should be compared to the proposed summer season launch limit of 366 trips. Since only 10 of these trips were during the winter, there is a reduction in number of trips of about 25 percent. Trip length will be longer and more user days will be granted to concessioners which will partially offset this loss. Part of the adjustment is due to the corresponding increase in number of noncommercial trips.

Minimum time for full-length trips to Diamond Creek has been modified in the FES to 8 days rather than 9. Number of user days per trip will be less restrictive since the number of passengers and trips are the measure by which concessioner use is to be governed.

4. The method of phasing out motorized use has been modified in the FES so that all trips in April or 17 percent of the trips in 1980 will be rowing. The statement that 30 percent of passenger day allotments would be rowing was in error and should have read in number of passengers and trips. There is a reduction of about 25 percent in number of trips. Only those concessioners who decide not to offer rowing trips will realize any additional reduction. The FES has been modified to allow complete flexibility to concessioners in trip length offerings. The only limits being minimum and maximum parameters for full-length trips. See also Professional River Outfitters response number 6 as to trip length.

(B) attempting to price the rowing trips within a popular range, also a big assumption that these rowing trips could be filled, you do not need to be a CPA to see that the bigger motorized companies will sustain extreme losses and small motorized companies will be forced out of business in 1979. Is that the Park Service's plan for those of us who have been attempting to furnish the type of trip the public desires as exhibited by the fact that at present 80% of those who have taken the river trip chose motors and only 20% chose rowing. An interesting footnote to this would be the fact that in 1977, the Park Service's figures showed a decrease in the rowing percentage to only 18.5%.

5

Further evidence the plan is unworkable can be found on Page III-14 of the EIS which states, "Elements of the plan that serve to reduce the resource impacts that result from crowding and congestion at attraction sites will also operate to reduce contacts while on the river, and contact and congestion at off-river areas of interest. These include less variable rates of speed due to the removal of motors, the smaller trip size, and scheduling."

IX-131

Referring to the above paragraph, I offer the following questions:

1. The 12 and 14 day trips will overtake the 16 and 18 day trips in the Canyon. Then without motors, it will take them some time to get separated. How are the trips going to space themselves to the 0.25 miles groups are supposed to be separated? (See pg. III-14 EIS)

6

2. The average trip size will not be smaller. As Page I-10 of the EIS, Table 1, indicates, 533 commercial trips have been launched annually and the number of passengers departing Lees Ferry has been 11,000. Simple division will show an average of 20 passengers per trip. What

5. See also Professional River Outfitters response number 2 to public reference for motor and oar trips. It is true that in 1977 the percentage of rowing trips dropped to 18.5. However, in 1978 the percentage of rowing trips was 21. The general ratio of motor/oar trips remain approximately 80 percent motor and 20 percent oar.

6. Trips of variable length will increase the probability of contacts. The only way to totally eliminate the possibility of contact is through strict scheduling. The proposed action will reduce the number of contracts from present levels through fewer trips being on the river at one time and the launches being more evenly distributed. Motors have been used in the past to reduce contact time. Other methods of reducing contact time on the river are possible, such as simply pulling into a back eddy or stopping at an attraction site to allow another trip to pass.

[redacted] EIS [redacted] 1, [redacted] tes, [redacted] mer [redacted] -ti[redacted] [redacted] ecer [redacted] annually and the number of passengers departing Lee[redacted] was [redacted]en 11,000.

[redacted]

makes the Park Service think 25 is a smaller size, as proposed in the study, and how did the study arrive at 25 to begin with? (Page II-43 EIS)

3. With two commercial and one non commercial trips leaving daily, each trip being a different length and dividing the launchings among 21 companies, how will the Park Service implement a schedule for each company that will not overlap thereby forcing companies into buying additional equipment and hiring extra crews only at peak periods? Why won't the Park Service let us control our own schedules so we can use the most efficient amount of equipment and crews and also be able to make up lost passengers who refused to make the trip in the cold month of April?

4. The proposal does not make allowances for training boatmen without "bumping" passengers. How does NPS expect us to "bump" a passenger without increasing the cost to the other passengers?

5. Many companies are presently booked to capacity for 1978. We don't know what to tell the public inquiring about 1979 since the NPS's proposal is so vague and unworkable. How long is it going to take NPS to finalize 1979 and how will it be done? If drastic changes are made as proposed, we should have our planned brochures and schedules at the printers right now. Does the NPS have some kind of responsibility to see that the person who wants to plan his vacation time several months in advance is not frustrated by its foot-dragging policy making?

I have only addressed the effects of the plan in 1979. In 1980, it will be even worse since 60% will be rowing and 40% motorized, again with only 366 launch dates. If some companies, having collected deposits from customers, can't keep their heads above water because of the above mentioned problems and retire from the river running business, who takes care of the people each company has booked? I realize the Park Service has no obligation to the concessioners to make a profit but does the

7. Average passenger group size on commercial trips in 1978 was 21.4. Research data indicates that 86 percent of people questioned preferred groups of 30 or less. Considering this information and other public input plus concessioner logistics, passenger group size was set at 25. See also Professional River Outfitters response number 3. Based on the proposed method of allocation, the large concessioners would likely run about 40 trips each summer season. It is probable that a concessioner could launch three trips on three consecutive days so as to make efficient use of shuttle vehicles and other equipment. Launch schedules can remain flexible provided trips do not travel together while on the river. If the group of concessioners so desires, the National Park Service will allow them to work out their own launch schedules, with final approval by NPS.

8. The proposed action has been modified to eliminate maximum group size. Concessioners may include trainee boatmen on regular trips, which is probably the most effective way to train them and/or train them on a winter trip.

9. Obviously, the plan was not implemented in 1979 as originally proposed. Target date for implementing the plan is now 1980. Full implementation of the launch schedule may not occur until 1981.

10. If a company retires from the river-running business and has future trips booked, the NPS will work with the other companies or a new company to provide a trip opportunity for those passengers already booked.

11 Park Service have an obligation to allow the concessioners to make a fair return in order to keep running a viable operation with which to serve the public?

12 In summation, it can readily be seen that this proposed plan is not workable, it has not been studied to the end and it will not reduce impact on the Canyon. Nor will the over control in scheduling and the increase

13 in Park Service patrols from three per season to over twenty four trips add to anyone's enjoyment of a quality river trip.

This is a fantastic wilderness experience for everyone whether he rows or motors all the way through the Canyon. This Park Service proposal will do one thing for sure: It will eliminate many, many people in less than top

14 physical condition whether by reason of age or physical disability from being able to see and enjoy the Canyon as well as those who cannot afford a long and more expensive trip. It will eliminate many families with school age children who will thereby miss the chance to learn the appreciation and care of the great outdoors.

15 This proposed plan is being forced on the public in spite of the fact that 85% of those taking the trip stated it was excellent and [illegible]% perceived it as a wilderness. (See pp. [illegible])

16 Contrary to an information sheet, dated [illegible] and distributed by the Park Service at a congressional briefing, that stated 15 concessioners were pro motors and 9 were anti-motors [illegible], all 11 river companies have indicated their preference for a continuing choice between oars and motors as means of propulsion on river trips.

11. The Concessions Policy Act (PL 89-249) states that a concessioner is to have an opportunity for a reasonable rate of return on investment.

12. The proposed resource protection requirements were implemented in the 1978 season and have already measurably reduced impact on the canyon The rescheduling of use has not been initated yet, but is expected to reduce impact even more.

13. The FES has been modified to provide for 12 patrol trips in the summer season and six in the winter. This is less than proposed in the draft. Patrol trips are essential to accomplish the job that Congress has mandated to the NPS. One particular aspect of that job is evaluation of concessioners, which must be done on the river. Concessioner evaluations are done to assist them in maintaining high quality river trips.

14. See Arizona Office of Tourism response numbers 5 and 7 as to aged and disabled people as well as cost, and response number 8 as to shift in season of use.

15. This section of the FES does state these facts, but also points out that the highest quality wilderness river-running experience is provided on oar-powered boats.

16. This information was based on concessioner input at that time. Based on concessioner letters of input received on the draft plan by May 1, 1978, there were 11 companies in favor of motors, six who preferred oar trips but felt motors should be allowed, one company who felt motors should be phased out, and three companies who did not comment.

We believe that with a modification of the present use of the Grand Canyon and a closer scrutiny by the National Park Service of its present launch restrictions, party size and boat capacity of passengers, that it is possible to have motors on the river and still give the public a quality experience while at the same time preserve the Grand Canyon for future generations to enjoy.

Wilderness
Public Rights
Fund

P.O. BOX 308
ORINDA, CALIFORNIA 94563
TELEPHONE 415-254-5112

February 21, 1978

The Honorable Cecil Andrus
Secretary, Department of the Interior
Washington, D. C.

Dear Mr. Secretary,

Five years ago for reasons of environmental protection the National Park Service began limiting recreational visitor access to the Colorado River in Grand Canyon. NPS also set the user-day allocation of floating at the 1972 actual-use levels: 94% commercial concessioner parties and crews, and 6% non-commercial visitation by those members of the public who have no need or desire to use concessioner services. In terms of actual people, the percentage is 96% commercial and 4% non-commercial.

Since then NPS has maintained this same use-allocation in the face of a demonstrably greatly growing demand for use by the qualified non-commercial public. As there were no safety or environmental protection reasons for maintenance of the allocation status quo after 1973, it must be assumed this was simply an arbitrary decision by the Park Service management in Grand Canyon, merely for operational ease and convenience, and to protect the stability and profitability of the concessioners. No public hearings were held.

Under Congressional mandate in the Park Service Act of 1916, the Secretary of the Interior is authorized to "grant" (to concessioners) "privileges, leases and permits for use of" (public) "land for the accommodation of visitors", but only when such commercial privileges are "necessary and appropriate". It is also stipulated that "no natural curiosities, wonders or objects of interest shall be leased rented or granted to anyone on such terms as to interfere with free access to them by the public".

Your office has granted concessioners control of the large majority of the permitted access to the Colorado River in Grand Canyon. These concessioners are fine individuals and constitute an exemplary group of wilderness guides. But no firm evidence is at hand that their services are necessary or desired by any significent segment of the public. The concessioner-guided parties are assembled in considerable part through fare-financed advertising and promotion by the concessioners. The assemblage is outside of any NPS selection process, contact or control except as to overall numbers. Such assemblage does not in itself constitute evidence of necessity. No evidence is at hand that the concessioners are turning away any applicants, and, in fact, the

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IX-135

1

2

Response to: Wilderness Public Rights Fund

1. Wilderness Public Rights Fund is plaintiff in litigation against the National Park Service on this point. Therefore, it would be inappropriate to discuss this matter to any great length. Suffice it to say that the NPS position is that free public access to park areas includes not only those who wish to run rivers on their own but those who wish to run rivers with a paid guide.

2. This again is a point of the abovementioned litigation. However, as described in the FES, there is data that demonstrates concessioners are turning away people who would like to take river trips (see also PRO response number 4). There is also evidence that noncommercial river runners advertise to some degree and there is no question that concessioners do so. There are many differences between commercial and noncommercial river runners; therefore, permit procedures and requirements must be different.

concessioners as a group do not use all of their allotments each year.

Yet there is ample evidence, furnished by your own offices, that large numbers of qualified, safely equipped, sincere applicants from a broad population cross-section who want to share expenses and labor for lower costs and who have no need or desire to use commercial guide services are being turned away each year by NPS and thus denied access to the Grand Canyon river run except via a commercial guide. These people apply directly to NPS. All would-be non-commercial participants are listed by name and address and are screened by NPS officials. No reason is given for this rejection other than allocation limits. Non-commercial permits are selected by government lottery. Numerous requirements and regulations such as far-in-advance registration of all participants, no substitutions even for death or disability of a party member prior to a trip, driver's license identity inspections at put-in, even regulations as to the aesthetic objective of the trip: all are propounded and enforced by NPS edict for non-commercial participants. Commercial passengers suffer no such requirements.

2

Now after years of studies the new Grand Canyon Draft Management Plan is released. We enthusiastically applaud and support many of the proposals on environmental and aesthetic matters. But the Plan proposes the same allocation system as has been in effect as "interim policy". (There appears to be some adjustment in the allocation percentages, made possible by increasing the overall use ceiling while maintaining essentially the same allocation for the concessioners and shunting some of the additional use into the winter season.)

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3

In all the research that led to the new Plan we can find no record of any study of ways to implement a fair and equitable system of access allocations. No recognition is given to the possibility that by the time the Plan is in effect the demand figures may have again changed dramatically. Our only conclusion can be that the new division of access as between concessioner and non-commercial use is, again, totally arbitrary.

As you are doubtless aware there is on-going litigation to determine whether, in fact, your office has the statutory authority to allocate rationed recreational use of publically owned preserves as between concessioner and non-commercial user groups. This is an unprecendented situation not envisioned by Congress when the enabling acts were passed, and not previously put before the Courts. There are far-reaching implications both as to costs and Constitutional rights for recreational access in general to public lands to prevent such access from surely falling under the complete domination of commercial interests, nation-wide, in the future.

4

The Wilderness Public Rights Fund does not wish to abridge the rights of that portion of the public that has neither the time, inclination or capability to participate in a non-commercial wilderness trip. But until such time as the Courts have defined your statutory authority in this matter - and until specific proposals for implementing

3. Use allocation between commercial and noncommercial river runners is based on available information on number of turnaways by concessioners and number of noncommercial applicants not granted permits by NPS, and the launch capacity and scheduling system of the proposed action. See also American Canoe Association response number 1 and number 2.

4 an equitable allocation system can be developed in Congress or otherwise submitted to public hearings should your statutory authority be upheld by the Courts - we respectfully request and do hereby Petition that beginning immediately with the 1978 season, you make the Grand Canyon river run use-ration available, according to law, first to the qualified non-commercial applicants, with any unused portion of the ration to go to the concessioners.

Yours very truly,

Richard Saltonstall, Jr.
President
Wilderness Public Rights Fund

4. We are aware of the pending litigation relative to allocation of use for river running in Grand Canyon National Park. Our position in this litigation has been stated in the record for that action, and since Wilderness Public Rights Fund is plaintiff in one of the actions, they already have this information. The present method of allocation, which is also the proposed method, will be continued pending outcome of that litigation.

I am Celia Hunter, Executive Director of The Wilderness Society, a national conservation organization of some 70,000 members concerned with the preservation of America's wilderness heritage. I appreciate this opportunity to testify on the Draft Colorado River Management Plan for Grand Canyon National Park.

From its earliest association with humankind, The Grand Canyon has evoked awe. It is a special place. To many Americans, the Grand Canyon is the National Park -- it is the epitome of wilderness. The Indians of the Southwest have, and still do, hold the Grand Canyon in special reverence. The early S panish conquistadors stood in amazement on its rim. Major John Wesley Powell dared both its rapids and the unknown in one of the greatest wilderness adventures of all time. And President Theodore Roosevelt, after seeing the Grand Canyon, said, "The ages have been at work on it and man can only mar it. Leave it as it is."

The Grand Canyon is not just scenery. It is not just spectacle. It is not just the thrill of huge rapids. It is peace. It is enlightenment. It is wilderness. And the Colorado River is its heart.

The Wilderness Society is pleased that so many Americans are interested in experiencing the wilderness of Grand Canyon by floating the Colorado River. This is part of the great national return to the wilderness that we are experiencing, and we recognize the necessity for commercial river outfitters to help make this adventure available. But we also ask that the paramount wilderness values of the Grand Canyon be approached with respect and balance.

No response required.

The Wilderness Society is very pleased to give our full support to the Draft Colorado River Management Plan for Grand Canyon National Park. We particularly endorse the proposal to phase out motor use on the river by 1981. We urge the Park Service to implement this phase out without delay. We also urge that the Park Service include the Colorado River in the wilderness recommendation for Grand Canyon National Park.

On behalf of the Wilderness Society, I would like to express our appreciation to the National Park Service for their recommendations on managing the Colorado River in Grand Canyon. These actions, if implemented, will help preserve the Grand Canyon for the enjoyment of all Americans, now and in the future.

Thank you.

1342 Jewell Ave.
Pacific Grove, California 93950
Telephone (408) 373-6882

WILDERNESS WORLD

No response required.

Secretary of the Interior
Department of the Interior
Washington DC

Dear Sir:

As one of the 21 outfitters now holding concessionaire permits to run the Colorado River through Grand Canyon National Park, we wish to express our support of the Grand Canyon River Management Plan and the Grand Canyon Wilderness Bill.

We have been one of the pioneer outfits using only oar-powered rafts on the Canyon run since our permit was issued originally in 1972. We believe that motors do not have a place in the Grand Canyon (except in case of emergency) and that oar-powered trips can be run safely and efficiently.

Although it will not benefit our company to require all companies to run oar-powered trips (on the contrary, it will increase our competition), we feel that the noise and other pollution caused by motors have a negative effect on the environment and on the quality of all river trips within the Canyon.

Although there may be minor points on which we would differ with the proposals of the National Park Service and the Department of the Interior, we believe the overall plan to be soundly conceived and developed, with the protection of the Canyon and of the wilderness experience as its major goals.

We therefore urge your support of the Grand Canyon River Management Plan and the Grand Canyon Wilderness Bill. It is a big step toward preservation of a very special place, and its special atmosphere.

Sincerely,

Vladimir and Nada Kovalik, Owners
Wilderness World, Inc.
1342 Jewell Avenue
Pacific Grove CA 93950

cc: to various concerned Congressional leaders

"In wildness is the preservation of the world."
Henry David Thoreau

6. Comments Received from Individuals

Included in this section are letters of comment from individuals not representing any particular group. A variety of opinions were received from these people ranging from total support of the proposals to total opposition. A representative cross section of these letters covering the two extreme viewpoints and various middleground positions is included.

William L. Graf
Robert H. Hassell
Morley Hudson
Claire Moore
Kendall D. Neisess
James E. Peterson
Robert A. Quinn
Marga Raskin
David L. Schein
Peter S. Winn
Jeffery Zimmerman

The University of Iowa
Iowa City, Iowa 52242

Department of Geography

(319) 353-3131

March 7, 1978

Superintendent
Attention: Inner Canyon Unit
Grand Canyon National Park
Box 129
Grand Canyon, Arizona 86023

Dear Sir,

IX-142 1

In reviewing the Draft Environmental Statement for the Proposed Colorado River Management Plan of the Grand Canyon National Park, I note only one serious omission: a specific section to address natural hazards. I have recently completed a research project, sponsored in part by the National Geographic Society, to investigate landscape processes in Dinosaur National Monument, and there I found evidence of the two major hazards that also threaten users of the Grand Canyon: flash floods on tributary streams and rockfalls.

Flash floods are of special importance because they may enter the main canyon across fans which are also camping areas, catching users by surprise and without preparation. That such floods are common and exceedingly powerful is evidenced by the damages done by the 1966 flash flood in Bright Angel Creek, by boulders recently moved into Crystal Rapid, and by data in a recently published study by the U.S. Geological Survey (Cooley, Aldridge, and Euler, 1977). Although the mouths of tributary canyons are attractive camping spots, at least zones near the channels should be off-limits to campers.

Although less is known about the magnitude, frequency, and distribution of rockfalls, the numerous cavities lacking desert varnish within the canyon attest to the recency of the process and the danger of falling materials. I think it is important to note that the lack of talus at the bottoms of some slopes may not be an indicator of stability, since boulders of some rock units disintegrate on impact and are quickly disposed of by surficial processes.

It would seem prudent to construct a natural hazard map of the river corridor, but I presume that the Park Service lacks the necessary funds to carry out such a

Response to: William L. Graf

1. Natural hazards inherent within the Grand Canyon are normally an accepted part of the wilderness experience. Concessioner river guides are generally aware of these hazards and inform their passengers. However, we will include this subject in training sessions and educational literature to inform future river runners of the problem.

project. If this is the case, users should at least be informed of the potential hazards during their introductory briefing.

Sincerely,

William L. Graf
Assistant Professor

bob

Proposed Colorado River Management Plan

Comments on the Draft Environmental Statement
prepared for the
National Park Service, Grand Canyon National Park
by
Robert H. Hassell; Aztec, New Mexico

I am pleased to be able to comment on the rpoposed management plan for the Colorado River within Grand Canyon National Park. I also appreciate the extra time allowed by the National Park Service for public comment on the plan. The Colorado River within the Park is certainly a national treasure of ever-increasing value, and the public should help decide its future. I have run the river on a commercial trip, and hiked to it on several occasions via the non-maintained trails in the Park. I therefore feel a special kinship with the Colorado River and want to add my voice to those asking that it be saved for future generations.

To begin, I think the Park Service has done an excellent job of gathering available data, of seeking expert opinion, and of presenting the available options to the public. The result is two documents which are readable, consise, and polished. My commendations go out to those responsible for its writing, as I think you have done a fine piece of work. One cannot read this document without believing that the Park Service has done the necessary leg work to know whereof it speaks. Unfortunately, too little is known about Grand Canyon and its environs, but the Park Service plan seems based on using all that is known in writing its plan. This certainly is all that can be done unless we wait for some disaster to demonstrate that the "no action" alternative was indeed the wrong one.

1 I find one glaring inconsistency in the writing, however, and that concerns trip length. On page 19 of the plan we find that "all trips would be 11 nights and 12 days long, with only 1 to 3 hours spent at major attraction sites and only 2 hours spent in camp in the mornings and evenings." Yet on the following page we find allowance for 12-, 14-, and 16-day trips during the summer season, and no further mention of restriction on stay at attraction sites. The rest of the plan and the draft EIS make it clear that trips longer than 12 days are to be allowed, so the statement on page 19 should be rewritten to avoid confusion.

Response to: Robert Hassell

1. The statement you refer to is from a research report of a model for maximum carrying capacity. The plan has been modified to allow 8-day minimum (during the phaseout period), and 18-day maximum trip lengths limits during the summer season and up to 21 days in the winter.

As to use at attraction sites, 3 hours is not sufficient time for a hike to Thunder Spring or Surprise Valley in the Tapeats Creek drainage, nor is it sufficient for a walk to the highest waterfall on Royal Arch Creek in Elves Chasm. For a person like myself who finds the greatest charm of the Canyon in its side drainages and hidden places, this restriction on use is a disaster. The main canyon is certainly a fine sight, but side hikes of at least a day's duration are essential to the complete canyon experience.

2

I floated the canyon in a dory, and many mornings we had to wait for some time for the water released from the dam to reach sufficient volume to allow passage over the rapids. A restriction on camp time would be unreasonable for the wooden boat passengers, and in my opinion a trip in such a boat represents the ultimate way of floating the river.

3

I am not quite sure that I agree with your allocation of use between private and commercial trips. On my river trip we encountered several private parties. In all cases of my observation these private groups were insensitive to the rights of others, were uncaring of the canyon's resources (our party cleaned up the beach at Tapeats of the litter left by a private party), and are generally not truly appreciative of the natural scene through which they are floating. In contrast, our dory trip leaders constantly emphasized care of the canyon, safety, natural history, and important attraction sites. If a restriction on use is necessary, and I am in firm agreement that it is, the preference should definitely go to the commercial trip over the private one. In saying this I am following the maxim "the greatest good for the greatest number," both for the canyon and its visitors. Certainly the provision for private trips should remain, but perhaps a 15% of use level would be more appropriate.

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4

I am in complete agreement with your decision to phase out motor use from Lee's Ferry to Diamond Creek. My trip was an oar trip, and I cannot imagine doing it any other way. For the one-time visitor who may not understand the advantages of the oar trip or be able to compare and contrast on the basis of his experience, the motor trip is a terrible shortchange of what should be a beautiful, memorable experience. It is certainly the responsibility of the Park Service to decide on what is the best visitor experience possible and then to provide for that experience. Motors on the river are simply unnecessary, and they detract from the

5

2. There is no limitation on time for hiking side canyons other than the overall trip lengths and that no more than 2 nights can be spent in any one camp area. Time taken to hike side canyons is up to the individual river group.

3. A river party may leave camp at whatever time they choose.

4. There is some valid concern that noncommercial river runners do not adhere to requirements that protect the canyon resources. The information and education program and additional patrol work outlined in the proposed action is expected to resolve this problem.

5. No response required.

shortchange of what should be a beautiful, memorable experience. It is certainly the responsibility of the Park Service to decide on what is the best visitor experience possible and then to provide for that experience. Motors on the river are simply [illegible] and they interfere [illegible]

5 experience of all visitors. Therefore they should be eliminated.

Of course, the ultimate solution to most problems in the Canyon is the total elimination of that monstrosity called Glen Canyon Dam, which is now perpetuating an ecological disaster in the Park. Hopefully a future generation with more sense and wisdom than our own will drain its foul reservoir and dismantle its concrete. In the meantime, I think your plan is the best possible for preservation of the canyon, and I hope you will begin to implement it very soon.

Statement for the March 23,1978 Public Hearing in Washington D.C. on the 1977 Draft of Colorado River Management Plan and its Environmental Statement - by Morley Hudson of Shreveport, La.

I am a resident of Uncertain, Texas, a Mechanical Engineer by training, a small, independent businessman in Shreveport, La. - and one of the now endangered specie - an employer that has to meet a payroll every Friday evening - including the FICA or Social Security payment.

My family and I love and enjoy the National Parks and have visited most of them. I have taken a number of river trips, oar and motor powered, including 2 trips in the Grand Canyon - one with my family.

When I received the Summary of Proposals and Alternatives in January, I was appalled that what appeared to be biased and subjective statements and positions could by distributed by a respected agency of our Government.

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1 So I obtained a copy of the complete Draft Plan and my suspicions were confirmed. As an Engineer, sailor and motor boat owner, I lay on the floor laughing at "5,750 pounds of outboard motor oil are dumped in the Colorado River annually". Based on the data, a maximum of 3,750 lbs. of oil are mixed in the gasoline fuel and is incinerated in the power cylinders of outboard engines on the River annually!!

My opinion is that a lot of this Draft Plan should be incinerated and go back to the drawing board!

Here are 3 of my major observations and reasons for a major revision or a new Draft Plan.

2 No. 1: River offers unique and exclusive SCENERY and one of the outstanding White Water THRILLS in the World. Just how Wilderness and Wilderness Experience involving solitude or primitive experience gets into this situation escapes me. The Public is entitled to every opportunity that can be provided to enjoy the views and thrills -

Response to: Morley Hudson

1. The draft on page II-18 should have read, ".23 pounds of petroleum residue is wasted per gallon of fuel consummed." This figure is based on the entire gallons of fuel rather than just the amount of oil added. The FES has been corrected accordingly.

2. The Colorado River through the Grand Canyon is wilderness in almost all respects either by legal definition or customary understanding. It is obviously true to an expert that Glen Canyon Dam has altered the natural erosion, natural flow, river shores, marine biology, natural growth, and ecosystems. However, the average river traveler is not aware of these subtle changes but does, in most cases, easily notice the fluctuation of daily water flow. In the overall experience of a river trip, the overwhelming evidence of natural forces outweights the evidence of the effect of the Glen Canyon Dam. There are outstanding opportunities for solitude on a river trip. The rim visitor is not evident to a river runner,but aircraft overflights are impacting on the opportunity for solitude. In summary, daily water flow fluctuation and aircraft overflights do adversely impact the opportunities for solitude. However, the unique overpowering nature of a Grand Canyon river trip outweighs by far these two impacts.

Lets review the Legislation and Statutes involved in WILDERNESS - quoting from Title 16 of the US Code, Section 1131: "A wilderness is an area where the earth and its community of life are untrammeled by man - where man himself is a visitor who does not remain".

The River Corridor does not meet this criteria!

Both the earth and its community of life have been trammeled by man - since the 1963 Glen Canyon Dam closing - the River Corridor is un-natural and artificial - natural erosion of earth, natural flow and shore changes, natural marine biology, natural growth and whole natural ecology are NOW un-natural.

"Protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude OR a primitive and unconfined type of recreation".

The River Corridor does not meet this criteria!

As the Plan amply states, the corridor's natural condition has been dramatically and drastically changed - the imprint of man's work is substantially noticeable.

The corridor has limited opportunities for solitude or a primitive type of recreation. The Grand Canyon is one of the great attractions to the public - is viewed from the air, the rim and the river. The evidence to the senses of man's presence permeates the area - pure solitude or primitive recreation are not truly possible. My view is that considerations of a Wilderness Area or a Wilderness Experience - as customarily understood and legally defined - should be eliminated entirely from the Plan and from any of its objectives and purposes.

3 No. 2: The Plan Draft is grossly deficient and inadequate in the whole area of management and increased costs of management as they relate to negative effects to the Park and River Corridor.

Implementation of any Adopted Plan is obviously contingent on additional funding by Congress. Where are the alternatives on timing of changes in useage to cope with varying funding level increases - say 25%, 50% or 75%?

4 No.3 The Draft Plan is derelict in its responsibility for providing maximum enjoyment and gratification by the public. Total Use ALTERNATIVES offered in the Plan are extremes, one is almost unrelated, and the favored Alternative D is unrealistic in that it ignores human nature, the mores of the American public, and available data on use and demand by the public. A whole new set of Alternatives of Total Use is needed, ranging between Alternatives A and B.

My reaction to the concept of this Draft Plan is that it is an conscious effort to restrict the River to the "3-Martini Lunch Trade" of Executives and Bureaucrats who have 3 or more weeks of vaction and ample cash to pay for expensive River trips!

Very truly yours,

Morley Hudson

MORLEY HUDSON

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3. Management and its related costs are not included in the proposed action, but are part of the regular park budgeting documents. Funding for increased management has already been requested and is high on park Regional priorities for 1980. In the event that funds are not forthcoming, the proposed action has a provision for modification of use levels.

4. Total use alternatives in the FES are feasible but have undesirable results. Alternative D suggests retaining motorized travel during certain time periods. The suggested time period would set aside part of the summer and winter seasons for oar trips only, and the other part for motor or oar trips. These time periods could be changed.

The proposed action on total use is between Alternative A and B and is considered the most reasonable, based on management objectives.

419 Main Ave.
Paonia, Co. 81428
March 3, 1978

National Park Service
Grand Canyon
Box 129
Grand Canyon, Arizona 86023

Gentlemen:

Here is my testimony regarding the Draft Environmental Statement on the Colorado River management plan for the Grand Canyon:

I am opposed to the recommendation for allocation of use at 70%-30% for commercial vs. non-commercial (p.I-6). No such fixed percentage should be established. Demand will fluctuate for non-commercial (probably increase). This must be researched as suggested on page IV-4, last three lines.

The thing that seems so unfair is that by paying a person can easily be assured of a trip. The private individual has to apply far in advance for a mere "chance" to use a public attraction. Citizens' lawsuits accusing the National Park Service of the violation of the Park Service Act of 1916 will continue if this management plan is implemented. These lawsuits should be listed as an adverse impact in section III-5. 1

Concerning p. VIII-14 on the option of Allocation by Individual Application: Not all the possibilities for making this idea work are discussed. There could be a lottery among the commercial customers as individuals and as groups and a separate lottery for the private river runner groups. The percentages of allocation should be decided on a yearly basis, based on demand. I do not agree with the stated argument that the commercial applicants would be artificially increased. This Environmental Statement should elaborate on and specifically document the "case studies...under comparable situations," as this important option of allocation seems to have been rejected partly because of these "case studies." 1

Therefore, you need to work on section VIII.,F.,1.

IX-150

Response to: Claire Moore

1. The proposed allocation ratio is based on the best available information we have at this time. This ratio is flexible and will be adjusted as additional data becomes available. Based on information available for 1978, approximately 12,000 people were turned away by concessioners and were not able to take trips. Therefore, simply being willing to pay for a trip does not easily assure one of getting a trip. The FES does mention that the lawsuits are an expression of noncommericial river runner dissatisfaction with management of use allocation. Because of the fact that there is considerable possibility for manipulation of demand through an individual application system and the difficulty of managing such a system, this alternative was not selected. The case study of a similar situation with hunting permits in the State of Wyoming provided sufficient insight on the problems of such a system. The details of the study are available in Colorado River Research Technical Report number 16, Economic Analysis of River Companies Running the Colorado River in Grand Canyon National Park; Dr. Michael Parent, 1976.

I approve your recommendation of eliminating motorized trips.

Page IV-1: I think you should leave the user days about the same as present levels. The construction of foot trails at attraction sites is a good idea.

2 Page V-1,section V: The mention of the adverse impacts that cannot be avoided on wildlife is an especially important reason not to increase the user days.

3 Page V-1: I do not see the shift in visitor characteristics as "adverse."

4 Page III-11: I think that in the future you will see more women going on private river trips.

5 Page IV-3: The increased enforcement of regulations by the Park Service Patrol will be good.

I could not find any discussion of the option of use of outhouses as an alternative to human waste carryout (which will be difficult to enforce).

Thank you.

Sincerely,

Claire Moore

Claire Moore

copies sent to Cecil Andrus, Secretary of the Interior
and to Senator Floyd Haskell

2. User day levels are being increased through careful redistribution of launches during the week and seasonally. This redistribution along with other resource protection requirements will keep impacts within acceptable limits. No response required on foot trails.

3. No response required.

4. No response required.

5. No response required.

2110 E. Skyline Drive
Fullerton, Calif. 92631

Feb. 21, 1978

Superintendent, National Park Service
Grand Canyon National Park

Dear Sir,

I hereby request that this statement be made a part of the official record regarding the "Draft Colorado River Management Plan", dtd, October 1977, as presented at the public hearing on said plan in Los Angeles, Calif., this date.

1. The efforts to preserve the Grand Canyon for posterity have been well evolved in the past, and are to be commended.

2. Our family has been involved with the Canyon for over 30 years and I have been through the canyon many times in the years 1967 to 1977. Our experience include boats of several types: rigid hull, inflatable, motor and oar powered. The following remarks are based on that experience and on study of the Management Plan.

3. In general the present management regulations seem to work well: the park is clean and uncrowded and loved by all who experience it. Some continuing action to care for high impact areas and occasional problems as they arise, is needed.

4. A major concern of the Plan seems to be an effort to spread usage into the cold months. These months have always been there to use but the water and cold conditions are too expreme. Perhaps some of the winter months could be set aside for wilderness purists who desire to be very much alone and primeval in their canyon experience. 1

The months of May through September will probably remain the most practical months for most trips.

5. The plan has a goal of spacing trips down the river and the Park Service has helped with their Lee's Ferry scheduling; however the river conditions and the experienced pilots really control spacing, once the trip starts. I believe present policies are effective and only need continuing; not the major overhaul presented in the Plan. 2

6. The discussions of aircraft flights and helicopter landings seems strange. The occasional airplane is probably a good safety factor, in case some trip needs help. Helicopters are hardly ever seen and if they enable someone to experience some of the canyon they serve a laudable purpose. Certainly the locations of their pads could be carefully planned, however. 3

Response to: Kendall Neisess

1. The proposal includes allowing use during the winter season. Little or no use has been made in the past during winter months. After review of the research, it was determined that winter use could be allowed within fairly close limits to allow the natural cleansing action to continue. No one is required to take winter trips. Winter trips are available to those who want to take them. Summer season will likely continue to be the most popular.

2. Redistribution of use through the proposed launch scheduling is necessary to reduce crowding, congestion, and resulting impacts on the canyon resources and the visitor experience.

3. The noise of aircraft overflights does impact most river-running trips. Particularly impacting is the use of helicopters for takeouts at the Lava Falls area when the helicopter flies low over other river parties. However, the entire aircraft overflight situation over the Grand Canyon will be the subject of another study and management plan which will allow for public input. Therefore, helicopter takeouts for river trips are not being eliminated, at this time. See also Bureau of Indian Affairs, Washington, D. C. response number 5 and Bureau of Indian Affairs, Truxton Agency response number 7.

7. The plan seems contradictory in terms of protecting the canyon. Probably the least damage to the area is done by carefully managed trips with professional guides, that stay close to the river.

However, mention is made of opening up more access trails, some long abandoned, to hikers and pack trains. The dirty part of the Canyon is now the Phantom Ranch area and the Park Service would do a disservice to the Canyon to increase such points along the river.

4

On page 21 the Plan states that non-commercial trips do more damage to the canyon than public carriers, yet the Plan proposes to increase the former by around 500%, decrease the latter by 27 %. (Page B-1). Perhaps judgement has yielded to pressure in this regard because p. 14 speaks of over "---100 clubs ---" providing "Public Input". There seem to be 20 public carriers who carry 11,000 passengers per year, as against 500 non-commercial visitors. This would seem to be an area with overtones of canyon protection, public safety, and respect for qualified private groups, that should be carefully watched.

8. Presumable since the river parties are now carrying out their fecal material, the hikers and pack animals will be required to do the same? I question the need to carry out human waste. There are many large non-camping areas adequate for such disposal, away from and above the river; boats can carry it out, but boats spill sometimes, too! Also, what happens to the accumulation at the ending points? Incidentally, the requirement to carry chemical toilets was an excellent step.

5

9. On p. 25 mention is made of a plan to build Park Service trails at 13 locations in the Canyon. This would be wise at Nankoweap and the lower portion of the River to Surprise Valley trail at Deer Creek, but such construction might be a marginally needed eyesore at Elve's Chasm, Little Colorado, Cardenas Creek, Shinumu, Stone Creek or Havasu.

6

10. The plan shows obvious and rather heavy-handed bias in authorship regarding motors in the Canyon. Such non-objective writing puts the entire plan into some jeopardy. Neither the National Park Service Act of 1916 nor the Master Plan excerpts, authorize such action regarding the type of boat; they speak instead of the Canyon's preservation for and enjoyment by the public.

On p. 14 under the heading of "Public Input - Motors vs Oars" the fact is stated that "views were mixed both for and against motors". Yet in the opening paragraph of "Public Input" the author states that "---input strongly favored---the eliminating of motorized river craft,---". The author of the plan has committed an outright prevarication.

7

On p. 17 I read that "The Plan will allow only non-motorized craft". The only preceding basis for this statement is the "Public Input" and the lie referred to above.

On p.18 the author has inserted a page entitled "Motors vs Oars" in which an extensive effort is made to discredit trips made via motorized water craft. Once again the opening paragraph tell the same untruth, "Public input to date heavily favors elimination of motorized water craft"---

4. The primary objective of the plan is to protect the canyon resources. The provision of partial trips where people hike into or out of the canyon is not expected to impact the canyon resources to any significant degree. Partial trips were taken by approximately 3,900 people in 1978. The number of people taking partial trips under the proposed plan is expected to increase by up to 3,000. However, most of those people taking partial trips in the past left the river or joined a river trip at Phantom Ranch. It is expected that most of those who take partial trips in the future will also leave or join trips at Phantom. Trails into and out of the canyon at Phantom Ranch are the most commonly used trails in the canyon. Up to 300,000 people hike these trails each year. An additional 3,000 people each year on these trails will not be detectable. Not all of these will access river trips at Phantom Ranch. Other primary access points such as Lava Falls, Whitmore Wash, and Diamond Creek will be used by some and lesser used trails will also be used by some. Mule access is now provided at Phantom Ranch and Whitmore Wash. These are the only two locations that mule access will be allowed to continue.

5. There are no plans to have hikers or mule parties pack out their human waste. The need for river trips to haul out their human waste is that such waste was being buried on beaches used for camping by subsequent river parties. This caused a serious problem because of the sight, smell and potential health hazard of this material and its related products. A spill of this material would be very unlikely since it is contained in metal boxes with lids that clamp on tightly, and is secured to the boat by ropes. Even if a boat flipped, it would be rare that a container would come open. This procedure has been readily accepted by the majority of commercial river guides and noncommercial boaters as well, primarily because it is less hassel.

6. Trails are to be designated at heavily visited sites to reduce multiple trailing and its related impacts to acceptable levels.

7. Public input sections have been modified to correct this discrepancy See Professional River Outfitters response number 14, and refer to Section IX.

Use of motorized watercraft is inconsistent with the objective of the proposed action to provide a quality wilderness river-trip experience. Descriptions provided in the DES of motorized trips were taken from people who had taken river trips. The experimental combination motor and oar trips provided information on preference of people for motor trips or oar trips after they had the chance to experience both. For further explanation of this, see Professional River Outfitters response number 14, and Arizona River Runners (Carol Burke), response number 1 through 9.

From research work done on river, it was found that motor noise does inhibit conversation. Pollution from motors on river trips is insignificant as mentioned in the FES. No difference in safety has been demonstrated between motorized boats compared to rowing boats. Rowing boats are able to take families, older, younger, and handicapped people with equal comfort to motor boats. See Professional River Outfitters response

input to date heavily favors elimination of motorized water craft"---

equal comfort to motor boats. See Professional River Outfitters response

(Remember the statement on p. 14 of the Plan.) The description of a motorized trip is diametrically wrong and proves in itself that some author of the plan is more interested in advancing his own philosophy than in telling the truth.

Also on p. 18 it is stated that "passengers on combination trips, who had experience with both motor and oar travel in the Canyon preferred the oar trip.--- 79 to 91 percent chose oar and 4 to 6 chose motor." This sounds impressive until we learn that these statistics are derived from two trips of a total of 40 people who had both motor and oar rigs and used both during the trip. ARTA Southwest, company that is rowing oriented, (perhaps exclusively) arranged the trips and the motorized portions were run by another company - Relco - which leases equipment to ARTA and is not a licensed concessioner. Only 33 of the 40 people seem to have completed the run according to Hualapai Tribe records at Diamond Creek. At any rate this experiment seems too small and inconclusive to be used as policy substantiation.

7 In reality a motor-rig provides a "combination trip" with the best of two worlds and an oar-powered craft cannot. A motor powered craft does not inhibit conversation nor pollute the air or water; motor trips do silent drifting when desired, yet have the maneuverability to run rapids more safely rescue people more quickly from the 48° water, take families of older and younger and the more infirm and can readily carry Park Service required equipment to keep the Canyon clean and unspoiled.

It should be pointed out that Canyon visitors presently have a choice of motor or oar craft, and 80% opted with their money and time for the motor rig.

It is also interesting that in the Ecological Impact Study by Drs. Joyce Neilson and Eugene Haas, Dr. Neilson credits information on the motor-oar controversy to Mr. Jeff Ingram who is an outspoken oars proponent.

It is a very obvious fact that the pontoon-raft with a steering motor is the safest and most practical boat on the river and it should be kept in service.

11. On p. 20 and some following pages there is discussion of the proposal of 12, 14, and 16 day trips; also of partial trips of 2 days or more. This arbitrary plan seems incredibly ill-advised and contrary to the interest of the public and the canyon. Most people find the trip of 8 or 9 days about 8 the right length of time for their purse, perceptions and calendar; at least this is so on a motor-rig. Oar trips do take longer.

Cost is also a factor. An 8 day motor trip is around $450.00; if more days are spent the cost goes up. The 14 day trip would presumable cost around 300 - 400 more, plus loss of another weeks wages, perhaps for a wage earner, making a new total cost of $1000.00 or more.

12. The Park Service is responsible for preserving and managing the Grand Canyon, and the "Plan" does discuss that matter. The issue of whether

number 2 for a discussion of preference of mode of travel. The sociological research discussion with Jeff Ingram had no bearing on the results of research conducted on the river.

8. Proposed trip length has been modified. See Professional River Outfitters response number 5. However, partial trips of lower cost will be available, and motor trips will be available during the phaseout.

page 4.

9

the boat used is fiberglass, rubber, blue or green, propelled by river current, motor, paddles, or oars has nothing to do with preserving the Canyon. The author of this plan has committed a disservice to us all by inserting a personal bias about motors into the consideration. The issue of motors should be completely removed from this plan. It is abundantly clear that 80% of the people in the Canyon like the motor raft and 20% prefer oars and paddles. Neither type of boat will change the color of the sunrise over Furnace Flats nor the contour of the trail to Elves Chasm.

The Park Service should get on with its business of preserving and managing the Canyon and let time determine what is the best and preferred type of boat.

Kendall D. Neisess

Kendall H. Neisess

9. Protection of resources within the Grand Canyon and providing a quality wilderness river-running experience for the visitor are the primary objectives of the proposal.

March 17, 1978

Superintendent
Attention: Inner Canyon Unit
Grand Canyon National Park
Box 129
Grand Canyon, Arizona 86023

Dear Sirs:

I wish to comment on your Draft Environmental Statement and Draft Colorado River Management Plan for Grand Canyon National Park. I attended the public meeting you held in Denver last month but did not have an opportunity to speak. First, let me say that I think you handled yourselves and the meeting very well. Considering the almost rabid antagonism of a few individuals, tempers could easily have been lost and the whole thing could have degenerated into chaos.

Next, I have some comments and questions about the statement and plan themselves. I do not expect you to send me a personal letter answering these questions, although I am curious, but some of them raise points that I feel should definitely be clarified in the final versions. Some are of minor importance, but some have major implications. I have run the river on both commercial and non-commercial trips. The commercial trip (with Hatch) was excellent. The private trip was even better. Having since acquired both experience and equipment, I am unlikely to go on another commercial trip. As a result, most of my comments are directed toward items that affect non-commercial river runners, and there are probably a number of items I am neglecting. I will comment on items in the order in which they appear.

Draft Environmental Statement:

1 Page I-5 (second paragraph) - "Perhaps the repeat rule of one trip every 2 years should be waivable if the use allotments are not filled by non-repeaters (but only after reallocations between commercial and non-commercial quotas are made)." The repeat rule should definitely be waivable for scientific researchers and field trip leaders from educational institutions (for example, college geology departments), in my opinion.

I-9 (section E) - Your scheme for issuing non-commercial permits by (probably) a combination of first-come, first-served, lottery and waiting list, is not clearly detailed here. I hope it would be done on an equitable and timely basis; when organizing a trip for a dozen people, timing problems nearly always arise. Many people must arrange to take their vacations far in advance. Therefore, early notification is very important.

Response to: James E. Peterson

1. The no-repeat rule has been eliminated as a specific item of the proposed action. However, the no repeat rule is built into the noncommercial permit processing; a person may not apply for a second permit until his or her name has come to the top of the standing waiting list and has been granted a permit.

For other people, for example teachers who might have 3 months off, exact timing might be much less critical. I suggest that you have a question on the application form asking how critical the requested date is. Some people would undoubtedly not care within a week one way or the other (as long as they are given plenty of advance warning). Thus, you could reduce the problem of assigning all the slots for a given week to groups who are not too concerned about the exact date, thereby excluding an application you receive a short time later because they can only depart in that certain week. In other words, if the computer processes an application for a critical date just after it has assigned that date to an applicant who is not too concerned about the exact date, I feel it would be fairer to have the computer adjust the departure date of the earlier applicant rather than put the second applicant on a waiting list or reject his application for that year. Obviously you should not wait too long in issuing permits for this reason, or every-one's planning develops problems, but some consideration of this situation is justified. Maybe you have already incorporated this in your plans as outlined in Appendix D of the Draft Colorado River Management Plan. If not, please consider doing so.

2

I-13 (and elsewhere) - Just what is, exactly, a "specially designed leak-proof firepan"?

3

I-18 (and elsewhere) - What is "stabilization" of an archeological or historical resource?

4

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I-20 (8) - In this section you mention a "two-week boatman training session" and "two one-week boatman training sessions". Which is correct? You also state here that <u>all</u> trip leaders will be required to attend one of these sessions, yet in the last paragraph on page I-21 you say that non-commercial trip leaders must attend a <u>one-day seminar</u>. Which is correct? That para-graph refers to Appendix D of the Environmental Statement, but the appendix does nothing to clarify this ambiguity. Skipping ahead to page IV-3 (third paragraph), you again mention two five-day training sessions for guides and trip leaders. This and the last paragraph on the preceding page (IV-2) indicate that the requirement applies to non-commercial trip leaders as well as to commercial guides. Then on page V-2 (last paragraph) you state that non-commercial trip leaders must commit <u>an extra day</u> for boatman's training. Which is correct? Skipping ahead again to the Draft Colorado River Management Plan, on page 28, you again mention two one-week training sessions and state that "all commercial guides and trip leaders" must attend a one-week training session. This leaves an ambiguity because it is not 100% clear whether you mean only commercial or also non-commercial trip leaders. The above-mentioned passages in the Draft Environmental Statement imply that you mean <u>all</u> trip leaders, but again on page 29 of the DCRMP you state that non-commercial trip leaders must attend a one-day seminar!

5

2. The description in Section I.B.5. has been enlarged to provide additional detail on noncommercial permit processing.

3. Details and specifications of firepans are found in Appendix D., the operation requirements.

4. Stabilization of archeological sites is simply strengthening a structure to reduce the rate of deterioration.

5. Two one-week boatman training sessions are correct for commercial boatmen or river guides. A one-day session is required for noncommercial trip leaders the day prior to their trip launch. Noncommercial trips leaders may come to one of the one-week training sessions at their option, provided there is room in the session. These points have been cleared up in the FES.

My impression is that you intend to require only commercial trip leaders and commercial guides to attend one-week training sessions and that non-commercial trip leaders would have to attend only a one-day session. Although I get that impression, your statements are very ambiguous and could be interpreted as requiring a one-week training session for everyone. It is absolutely essential that you clarify these statements so that your exact meaning is clear. Otherwise you are leaving the way open for future misinterpretation, either accidental or intentional, of your intent, and the resulting requirements could put a severe hardship on non-commercial applicants.

If my impression is wrong and you actually intend to require non-commercial trip leaders to attend a one-week training session in the spring or fall, I must vehemently object because the time and cost for a person to attend such a session as a requirement for leading a maximum of one trip in two years imposes an unreasonable hardship.

A one-day seminar requirement for non-commercial trip leaders seems reasonable to me, but only if it is the day immediately preceding departure on the river. Most of us have limited finances and limited vacation time, and to require us to make a special trip to Lee's Ferry or to come for a training session and then have to wait one or more days for departure would impose an undue burden on us. That would undoubtedly eliminate a number of people as possible trip leaders and would be unfair to them and to everyone in their groups. Requiring trip leaders to come more than one day early would generally be a hardship for others in the group, too, because river parties usually come in groups sharing vehicles, and either more people would have to sacrifice extra time or more vehicles would be necessary.

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6

III-18 (third paragraph) - The requirement that private river parties must haul all human waste from the canyon is a good one. However, the requirement that they must make their own arrangements for disposal equipment is inconvenient and potentially expensive. Durable water-tight containers are essential for this purpose. Suitable military surplus containers have become scarce and hard to find. Suitable commercially made containers are expensive. The use of a container for storing excrement precludes its usefulness for anything else. With a two year no-repeat rule on river trips, a group must purchase an item that gets little use. Though a group running other rivers would find purchasing this equipment desirable, a group running only the Grand Canyon on rare occasions would be inconvenienced. Therefore, I suggest that the Park Service purchase a number (24 should probably be adequate to allow for transportation time and spares) of suitable storage containers and rent them to non-commercial river parties. Only the containers should be provided, as the other equipment is cheap and readily available. A small rental fee sufficient to cover purchase and maintenance costs should be charged, and each renter would be required to return the container clean and ready for the next user. A substantial deposit (say twice replacement cost) should be required to insure that the renter would return the container in a clean condition. The deposit would be forfeited if the renter either fails to return it or does not clean it satisfactorily. Rental fees should

6. Most noncommercial river runners have all the necessary equipment, including fire plans and human waste carry-out systems. However, there are some who do not. Several river concessioners have expressed an interest in providing rental units. We encourage this service and will assist them by letting noncommercial river runners know where such equipment can be rented.

be adequate to pay for occasional replacement of containers necessitated by unavoidable wear and tear. With a deposit system requiring returning and cleaning of the containers by the renters, the related work load placed on the Park Service would be negligible. The inconvenience to non-commercial river parties would be greatly reduced and any temptation to cheat on the requirement to remove waste from the canyon would also be reduced. 6

A similar rental system might be desirable for leak-proof firepans to insure adequate quality of firepans, increase the convenience to private river parties, and decrease any temptation to ignore regulations.

IV-1 - You have made a small error with gross implications in the first paragraph by saying an "increase of 225,320 user days annually" instead of an "increase to 225,320 user days annually". 7

IV-4 - I just want to emphatically agree with your first and last paragraphs on this page. Most speakers at the Denver meeting in February ignored this provision for annual review and were hostile because they assumed a 5-year wait (I suppose because of the 5-year commercial-permit duration) before possibility of reallocation. 8

VIII-15, 16 - I agree that special group allocations need not be given, but I suggest that if a large group (for example, a college field trip) has good reason to travel together, then trips from 2 allotment days might be allowed to merge and leave at one time, eliminating the other departure. This would apply for both commercial and non-commercial trips. The only crowding that would result should affect only the group wanting to travel together. 9

IX-159

Draft Colorado River Management Plan:

Page 15 - As you are certainly aware, the "hunting system" for permits would be a vast can of worms. I fully support your proposed methods. 10

Pages 22, 23 - Your proposed reallocation of commercial and non-commercial permits is the most important single item in the plan, in my opinion. The provision to reallocate surplus user days on an annual basis is essential to maintaining a fair and equitable response to true demand. The lack of flexibility in the interim system resulting in an unadjustable 92%/8% ratio was, as you know, a great flaw. 11

Page 29 - Helicopters - I agree that helicopter take-outs as a routine part of a trip for able-bodied persons should be eliminated. Exceptions should be made in certain cases, however. I know a geologist who wears a leg brace because of polio. If he was to take part in a geologic field trip between Lee's Ferry and Phantom Ranch, he would be unable to hike out and probably unable to ride a mule because of his legs. He should not be 12

7. Corrected in the FES.

8. No response required.

9. If a group size exception were allowed for one group, then it must also be allowed for others. This would lead to lack of control on group size.

10. No response required.

11. No response required.

12. We agree that helicopters impact the river-trip experience. However, the proposed action has been modified to allow helicopter takeouts to continue at specific times and locations to minimize impacts until the entire aircraft overflight situation can be further studied and an proposal prepared that will address the entire aircraft overflight situation. See also Bureau of Indian Affairs, Washington D. C. response number 5 and Bureau of Indian Affairs, Truxton Agency response number 7.

eliminated from such a trip because of an absolute ban on helicopters. For another case, I saw a man on my last river trip who had no legs below mid-thigh. He could neither walk out nor ride a mule. Therefore, I feel strongly that the no-helicopter rule should be waivable, on a case-by-case basis, for exceptional circumstances.

Other comments about items in the DCRMP have already been made above in reference to the DES.

Next, I have some comments about the public meeting you held in Denver last month.

Several speakers commented that no adjustments would be made in allocations for 5 years. They must have been reading a different plan, because on page 22 my copy of the DCRMP says that surplus days from each group will be reallocated for the next year if it is determined that the surpluses indicate a lack of demand. Many supported the so-called "hunting system" of permit distribution. I find it hard to believe that they cannot see the logistical and planning problems this would cause, so I must assume that they hope such problems would discourage and perhaps eliminate some commercial operators.

Several people complaining about the plan primarily objected to forcing longer commercial trips at higher cost. Many of them forget that shorter trips are available by not running the entire distance. Also, there are other rivers in desert canyons with short complete trips available--Mrs. Carmony (?) Thorp (e?) was the first to note this fact.

Many speakers have read the proposal but managed to not see or ignore parts of the contents when making their statements. They would leave out a phrase from a sentence or sentence from a paragraph to make their point. For example, one man mentioned the statement in the DES (p. II-23) about motor party members being unable to hear natural sounds in the canyon and said that most of the day and night the motors are not running and, therefore, the statement is invalid. He obviously totally ignored the first phrase. This same man, Sam Yaden (?), representing a concessionaire, implied that non-commercial runners flood the permit application system with duplicates and that true demand is not large. He obviously has not tried to get a private permit lately.

Martin Litton doubted that private demand is really 6.5 times current allocation. I doubt that he is right, but your plan should determine the true demand within a year or two. Also, he objected to the trip duration limits. Since his dory operation is unique, I would not object to waiving them in his case (but I expect most private river runners would disagree with me unless their trips also had no time limit).

IX-160

Ted Hatch was concerned about the possibility of commercial licenses going to the highest bidders. My impression is that the plan does not intend for that to happen, and I certainly agree with him that trip quality and historical use should be the main criteria. The last sentence on page C-3 of the DCRMP leaves a hint of ambiguity that obviously troubled Mr. Hatch, and I think it should be made very clear that licenses will not be granted on a bid basis.

Many speakers commented pro and con about the motor issue. Some people argue that the power and maneuverability of the motor is a safety advantage, and it can be if the motor works and if using a motor does not require running in deeper and rougher water than oars, which can be used in shallower, safer water (such as at Lava Falls and Hance Rapids). In 1970, I saw a commercial raft go through Crystal Rapids out of control (sometimes sideways, sometimes backward, and only by luck not upside-down) because the motor died going into the rapids. That was hardly safe. The next day, however, we found a corpse on a small beach. Our private group in small boats could not take it along, but a short distance downstream we met a commercial boat and told the boatman the situation. With his motor he was able to go upstream, pick up the corpse, and bring it to a beach big enough for a helicopter pickup. I can see advantages either way and it is not a major issue to me. I prefer an oars-only trip, but would not necessarily object to being passed by an occasional motor trip.

I was at that Denver meeting for over three hours and was surprised that in that time only one speaker flatly supported the DCRMP. Many of the objections were rooted in the long-standing commercial vs. non-commercial antagonism and, I feel, were made on the basis that "the best defense is a good offense." Unfortunately, several speakers on both sides were offensive. I think it is significant that your sole, non-arguing supporter was Brant Calkin, representing far and away the largest organized group involved, the Sierra Club.

In summary, I was pleasantly surprised when I read the DES and DCRMP. I had expected to find many points with which I would disagree. On the whole, and in consideration of my comments above, I think you have done a remarkably good job. Obviously a great many compromises were required and many people will find something in the plan that they dislike, but I think that your proposed plan is a fair and equitable one, and I think that it is flexible enough to remain fair and equitable in the future. I hope that you will clarify these points that I have questioned, and seriously consider the few suggestions I have made. I appreciate your efforts and the opportunity I have been given to comment on them. Please keep me on your mailing list for any future announcements you may make.

Sincerely,

James E. Peterson

Jim & Francoise Peterson
4974 Grouse Court
Evergreen, CO 80439

[redacted]

Jim & Francene Peterson
[redacted]

95 Linda Avenue, Apartment 16B
Oakland, California 94611

April 27, 1978

MAY 1'78

Attention: Comments on Draft Colorado River Management Plan
Mr. Merle Stitt, Superintendant
Grand Canyon National Park
P. O. Box 129
Grand Canyon, Arizona 86023

Dear Sirs:

This is to advise that I have read the copy of the Draft Colorado River Management Plan (October 1977) and the Draft Environmental Statement (Proposed Colorado River Management Plan - DES - 77 - 37) which you have provided me, and I desire the comments which I have written below be included in the Hearing Record for the Management Plan.

Having read both the Management Plan and the Draft Environmental Statement, I find there are many specific points in the proposals with which I can find agreement. For example, the elimination of wood camp and cooking fires during the proposed summer season; the establishment of an education/licencing system for noncommercial party leaders/ commercial guides; and the continuing monitoring and research programs aimed at assessing the effects of human use on the canyon and environs and the effect of the Management Plan itself.

However, there are many aspects of the Management Plan I would modify or change in one direction or another, and to these areas I address my coments:

First, I would give my strong support to designation of the Colorado River system through the Grand Canyon and the surrounding river corridor and environs as a Wilderness under the National Wilderness Preservation System and the Wild and Scenic Rivers Act, if possible. I see no reason why at least certain stretches of the Colorado would not meet the eligibility criteria. I would strongly like to see the Colorado nominated for a "Wild" classification under the Wild and Scenic Rivers Act. In addition, I would go further, in that I feel the river wilderness designation should be extended beyond the current boundary of the Grand Canyon National Park, beyond river mile 277 to a point near Pierce Ferry on the backwaters of Lake Mead. In justification of this position, I feel that every area designated as wilderness should have a buffer zone to clearly separate those uses consistant with a wilderness setting and those areas for which there are other uses (in this case, power boating, water-skiing, fishing with motor boats, motorized sight-seeing, etc.). Surely there must be more than enough water acreage currently available on Lake Mead to accomodate all of these activities that are not consistant with wilderness use, without including the backwater stretch on the Lower Grand Canyon. I see no discussion in the Draft Environmental Statement of the obvious necessity for such a burfer zone, should the

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1

Response to: Robert A. Quinn

1. No response required as to suggestion of wilderness designation for the river corridor. Nomination of the Colorado River within Grand Canyon National Park under the Wild and Scenic River Act does not appear likely at this time and would add little to its protection and management. The proposed action does not include the Lower Gorge in the motor exclusion area or as a part of the river that should provide wilderness river running. The reason for this is that Lake Mead has filled to a level that covers the free-flowing section of the river below Separation Canyon and, therefore, lake boating uses since completion of Boulder Dam in 1935 is a well established use. A buffer between motorboat use and the wilderness river-running experience is provided by takeouts at Diamond Creek and the fact that motorboat use in the Lower Gorge in the summer is generally less in this upper part of Lake Mead. Those who do not want any contact at all with motorboats after the phaseout can choose to take out at Diamond Creek. Those who are willing to accept a minor amount of motorized traffic can continue through the Lower Gorge to Pierce Ferry. If motorized travel was discontinued below Separation Canyon, the 12,000 boaters mentioned would be displaced to other sections of the lake or other lakes. The opportunity to see part of the Grand Canyon by hard hulled motorboat would be lost. The significance of this loss can only be speculated on, since these same activities can be enjoyed elsewhere.

river and corridor be designated a wilderness area. Are motorboats to be allowed to travel right up to the edge of the wilderness area? If so, surely potential motor noise and wind-borne pollution could be carried miles up the canyon into the wilderness area. Will the National Park Service (N.P.S.) enforcement effort be strong enough to prevent power boaters from straying over that thin line that would divide wilderness from non-wilderness? I see nothing in the Draft River Management Plan to suggest that enforcement proposed would prevent all of these incursions, or even most of them. In addition in the Draft Environmental Statement I see very little discussion of the potential effects to lake-based recreational power boaters should they not be allowed to travel in the Lower Grand Canyon/ Lake Mead backwater area. The Draft Environmental Statement notes the elimination of motors above Diamond Creek would affect 12,000 power boaters a year, but does not detail the multitude of possible potential effects of this alternative on recreational boaters in this area. Would this alternative deny recreational (power) boaters opportunities for fishing, sight-seeing, etc. that are unavailable elsewhere? I suspect not, but there is no comment on this in the Draft Environmental Statement.

1

In connection with the above comments, it almost goes without saying that I support the proposed elinination of motors from Lee's Ferry (River Mile 0.0) to Separation Canyon (River Mile 240). In addition I would support the proposed three-year phase out schedule. However, one can see from the above that I would go further, and eliminate motor use also from Separation Canyon through the Lake Mead backwater to Pierce Ferry.

2

In connection with the above discussion of wilderness designation, I feel obligated to comment on the subject of the number of desired contacts (with other river running parties) per day within a wilderness setting. It is my personal feeling that the upper limit of three or less contacts per day cited in the reports is too high. I realize that the elimination of motor use in the canyon will automatically limit the number of contacts with the area, but I would favor an upper limit of no more than two contacts per day, with an avarage of 1.0 to 1.5 contacts per day. This feeling will be reflected in my recommendations for use allocations later in this letter.

3

In regard to noise pollution, especially from aircraft of all types, I would be in favor of not merely studying it or discussing it, but eliminating it in so far as is possible. I see no concrete alternative in the River Management Plan to do so, and in this I feel disappointed. It would seem that at least certain sections of the Colorado River through the Grand Canyon and the surrounding use lands are on the verge of being declared a Wilderness Area. This I see as totally inconsistant

2. No response required to the phase out of motors from Lees Ferry to Separation Canyon. See response number one as to elimination of motors below Separation Canyon.

3. The desired number of contacts stated in the FES are based on research that included opinions supporting lower contacts as mentioned in this comment. The decision to manage for more or less contacts per day is based on the fact that most people preferred this level of contact. Consideration was also given to reasonable launch schedules, group size, trip length, and other public input.

[redacted] declared a Wilderness Area. This I see as totally inconsistant

with the almost continuous drone of aircraft noise: "fixed wing and helicopter tour planes, private planes, military aircraft and high-altitude commercial craft." I do not see why most of this aircraft use over the Grand Canyon and environs could not be eliminated. As for fixed-wing and helicopter tour planes, I see no reason why these could not be eliminated, even though it would certainly affect a segment of the population that wishes to see the sights from the remote vantage point of a few thousand feet up and have the money to enable them to do so. This would probably also be to the detriment of the local air tour operators, but in my opinion they are making an unsolicitad profit from the use of public lands, which are being held in trust for all of the American people. 4

As to commerical flights, I suspect that most of these heard are from transcontinental or long - distance flights with routes from the West Coast to parts of the East Coast, the South, or the Southeast. The cooperation of the commercial carriers and a slight change in the flight routes should serve to mitigate this problem. Private flight patterns could be regulated and restricted by appropriate governmental agencies, as they already are in their ability to fly over or through many areas.

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On other topics, I would support the plan to establish designated trails to archeological/ historical/ geographical interest sites to lessen the damage done by multiple trailing. I would also support the proposal to stabalize, test, excavate and protect many sites with historical and archeological resource materials. 5

I would strongly support the elimination of burros from the river corridor and environs. In my mind they are an exotic species that has been demonstrated to do harm to the ecological and cultural resources in this area. It is my belief that they should be eliminated by the most efficient means necessary, with some small consideration being given to humane measures, if possible. 6

In general I support the proposed measures for carrying out of all human wastes from the canyon area, or at least I see the necessity for this procedure. However, I have a few stipulations before I can give my unqualified support to this proposal. First, even though the "ammo can system" seems simple and economical enough, I believe people should be given alternatives for human waste containerization. In this regard I feel the N.P.S. should contract a minor study to establish alternative methods, or issue a call for public proposals on waste containerization, a procedure which might cost the taxpayers less money than a study, and might generate more ingenious ideas.

4. The proposal to eliminate the use of helicopter takeouts has been changed in the FES to allow this activity to continue. There will be limitations to minimize impacts from this use and there is a study in progress on the entire general aircraft overflight situation. See also Bureau of Indian Affairs, Washington, D. C. response number 5, and Bureau of Indian Affairs, Truxton Agency response number 7.

5. No response required.

6. A draft burro management plan has been released and is currently being reviewed by the public. This plan proposes to eliminate burros by direct reduction; however, no final decision has been made at this time.

A second stipulation develops from the fact that I see no specifics in either the Draft River Management Plan or in the Pre-Trip Fact Sheets as to exactly where the human wastes are to be dumped or deposited at the end of a river trip. There is a definite statement about where such wastes cannot be dumped, but the general impression given is that the river runner must carry this containerized human waste back to his point of origin, whether it be California or Alaska. If this is indeed the case, I cannot see that it will work either in theory or in practice. After a long river trip of from 12 to 21 days, the last thing, in my mind, that the average river runner will want to do is to carry the container (s) of human wastes a minute or a mile longer than necessary. In many cases, what we are dealing with here are taboos and traditions about avoiding human wastes that are as old as human kind. Then too, what many persons would put up with and carry on a rugged river trip through a primitive area they would not consent to carry in their personal automobile or vehicle, especially on a long hot trip across the desert lands. I believe what we are dealing with here is more a psychological burden than a physical burden, but that burden may be very real for many persons. The waste disposal system may prevent all dumping of human wastes in the environs of Grand Canyon National Park, but may result in unauthorized dumping of bags of human waste in many road-side locations along the major roads between the park and, say, California. It is my feeling that the N.P.S. should establish sanitary and environmentally secure sites near the common take-out points where this estimated 20 tons of human waste anually may be deposited. If this is not feasible, I should like to see a confired list, printed by the N.P.S. and distributed with the Pre-Trip Fact Sheet, of disposal areas, public and private, that are close and convenient to the common take-out points, and may be used by river runners. I do not feel that noncommercial river runners should be charged for dumping at these facilities, since they will have already expended a certain amount of money and a great deal more in time and effort in helping the N.P.S. achieve its goals in maintaing the river corridor as a wilderness area. Commercial river users may be charged or not, since any charge for dumping can be recovered by them by upping their fees to passengers by a few dollars.

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7

My strongest objections to the Draft Management Plan are reserved for the proposed allocation system of commercial versus noncommercial river users. I even question some of the premises that would seem to me to be the under-pinnings of the entire allocation system. The first premises would be that the running of the Colorado River through the Grand Canyon is the absolute right of the American people, or is an absolutely necessary experience for the enjoyment and appreciation of Grand Canyon National Park. Therefore, this

8

7. The human waste carry out system was voluntarily tried by about half of the commercial companies in 1977, and was required for all river runners in 1978. The system worked well both years. Several companies have innovated improved containers that work better for their particular boats in terms of rigging. Noncommercial river runners have generally used the ammo can containers because of their economy and durability. For these reasons it does seem necessary to study improvement in container systems.

Receptacles for deposit of containerized waste have been placed at Pierce Ferry beginning with the 1979 season. For those people taking out at Diamond Creek there is no receptacle available, and these trips will have to continue hauling their wastes to an acceptable sanitary landfill. Permit conditions and commercial operating requirements list those locations within the area that will accept the containerized waste materials. Those local areas are Flagstaff, Lees Ferry, Fredonia and Kingman, Arizona.

8. See Professional River Outfitters response number 4 as to allocation response.

Obviously there are people who cannot afford to pay the price for a river trip either commercial or noncommercial and the cost of merely getting to Grand Canyon is prohibitive to some. Therefore, there are inherent costs over which we have no control that prevent some people from taking river trips. However, insofar as possible, river trips must be available for anyone who wants to take one within the limits of acceptable use.

that the running of the Colorado River through the Grand [redacted] an absolutely necessary experience for the enjoyment and appreciation of Grand Canyon National Park. Therefore, this

premise says, as many people who wish to run the river, within certain limits, should be permitted to do so. Although I would agree that the river corridor is the property of the American people, it is obvious that even today and especially in the future years, all who wish to run the river will not be able to do so: this premise breaks down already in practice, in that some persons are already eliminated by the physical carrying capacity of the river manifested in enforced N.P.S. scheduling of trips; by the fact that some persons have money enough to take commercial trips while others do not, etc.

8

We see that the absolute carrying capacity of the river by N.P.S. standards is 323,232 user days or 27,000 visitors a year. We see also from Tables 6 and 8 (II-40 and II-42 of the Draft Environmental Statement) that in a very short span of years the numbers of people desiring to run the river would meet and exceed the absolute figures cited above, and more and more people would have to be turned away in any case. We see already that many private river trip applicants, who have as much investment in taxes in Grand Canyon National Park and the National Park Service as the commercial passengers, are being denied access to the river.

9

I feel that a great part of the appeal of the Grand Canyon area to the American public, and one of the main reasons it was set aside as a public preserve, has always been its mystery and inaccessibility. I feel that running the Colorado River through the Grand Canyon should almost return to what it once was: a once-in-a-lifetime experience: accessible to all (not merely to those who have money and may run the river on that basis as many times as they want), but a trip that will be made not too many times in a lifetime.

10

The second premise I would call to question is the premise that states that commerical Colorado River trips are necessary to the American people for the enjoyment of the Grand Canyon area. It follows from the above that if I do not believe that running the river is an absolute right of every person, then I certainly do not believe that running the river for money is an absolute right or absolute necessity for the enjoyment of Grand Canyon National Park. In point of fact, I think it is rather unnecessary to find that some twenty "concessioners" are profiting (and quite well, from the information cited in N.P.S. study) from this use of public lands, and have in fact long since contributed to the ecological disaster that marks past Colorado River management, and are in fact the major reason why the N.P.S. and other federal agencies are absorbed in this current major ecological planning process, at the cost of countless taxpayer dollars. All of this is in spite of the fact that the commercial river runners do not contribute much to their local or regional economies, and do not contribute much in the way of state, federal or local taxes.

11

9. Maximum capacity of 323,232 user days is based on a study conducted by the late Dr. Yates Borden of Penn State University. The capacity proposed in the FES is 209,150 user days and includes 22,230 user days of winter use, compared to no winter use in the Borden study figures. It is true that demand currently far exceeds the allowable use and is expected to increase beyond that in future years. It does not seem that the amount of taxes paid by commercial passengers compared to noncommercial participants is relevant to allocation of use question.

10. No response is required as to the reasons for the appeal of the Grand Canyon. Under the proposal it appears that people may return quite often for trips on the river. It is quite possible that as the demand for river trips increase the river trip experience may become a once-in-a-lifetime experience. See response number 11 as to the accessibility of river trips on the basis of paying for them.

11. Concessioner guided river trips are to remain available for those members of the public who want to take a river trip but have neither the equipment nor expertise to do so on their own. The question of whether a noncommercial river runner has priority over a commercial passenger is being questioned in two separate pending court cases. The decision on this issue will be made in court and, therefore, will not be discussed here.

Concessioners in the past several years have contributed to the improvement of environmental conditions in the canyon. As a case in point, over half of the concessioners voluntarily agreed to carry out human waste in 1977 prior to this becoming a requirement. As noted in the FES, since implementing the human waste carry out, fire management and trail alignment conditions have improved along the river corridor. This has been with the aid of concessioners.

Concessioners do contribute to the local economies but when compared to other imputs to these economies the proportion related to river running is not that significant.

12 While I feel that in certain ofour national parks limited concessioner services (essential food and lodging services) may be a necessary evil so that a larger segment of the American public might enjoy our natural wonders, I do not see the necessity of these serwices, especially on the current scale, in running the Colorado River through the Grand Canyon. Therefore I would support any lawsuit or sign any petition or contribute to any cause which challenged the right of these concessioners to make a profit from the use of public lands, Any move to limit or eliminate the use by concessioners on the Colorado River through the Grand Canyon. In this regard I would especially support the elimination of the larger of the concessioners that are based in distant states and are in the business of running many other rivers besides the Colorado River: there is even less reason to "subsidize" these organizations than the local concerns, and it would be much easier for them to absorb the loss of Colorado River trips.

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13 In terms of the proposed allocation system, I am not in favor of increasing the user days available on the river to the point of the 225,320 proposed. I realize that a great portion of this 62% increase is due to the elimination of motor power from the river and the longer trips necessitated by the "opening" of the Winter Season. While I am much in favor of these two latter proposals, I would be in favor of keeping the total number of wisitors at the 11,000 level (versus the 12,800 proposed) and raising the number of available user days only proportionate to this figure.

14 The proposed increase of the noncommercial allotment to 30% of the total number of user days available I find to be tokenism of the worst sort, and like most tokenism, I do not believe it will satisfy the demands of the interest group (the noncommercial sector of the river running public in this case) for very long. I find it shameful that, according to the Draft Environmental Statement itself, that every person who wanted to pay some profit-making business to run the river was allowed to do so, and will be continued to be allowed to do so, while hundreds of ordinary citizens who wanted to run the river on their own were denied the opportunity to do so by permit denial.

15 My suggestion would be to base the entire allocation system on a 50 - 50 % division between commercial and noncommercial potential users <u>denied</u> permission to run the river in any given year. This would be based on either the total numbers of persons desiring access or on the total number of user days denied in any given year. The total allocation permitted (12,800 or 11,000 persons; 225,320 or other user days) would remain constant each year, but the numbers of people and user days that exceeded this allocation

12. The 1965 Concessions Policy Act (Public Law 89-249) provides that concessioners are entitled to the opportunity for a reasonable rate of return on their investment.

13. The proposed action has been modified to allow for 209,150 user days. The absolute number of people on the river for summer river trips will be no more than 11,895. Any increase in the number of people above that figure is through the availability of partial river trips.

14. The draft environmental statement also pointed out that this did not provide a complete picture of demand for commercial trips. The proposed demand is based on the number of turnaways as described in Professional River Outfitters response number 4.

15. The proposed allocation system is based on an equal proportion of turnaways. This appears to be the same thing that is being suggested by the comment. See number 14 above.

15 total numbers of persons desiring [illegible]ess or on the total num[illegible]f u[illegible]ays [illegible]d i[illegible] giv[illegible]ar. [illegible]ota[illegible] all[illegible]ation [illegible]ted ([illegible],800 [illegible] 11,00[illegible] persons, 225,32[illegible] or other user days) would remain constant each year, but the numbers of people and user days that exceeded this allocation

each year (numbers denied permits) would be, in as far as possible, be split each year 50 - 50 % between commercial and noncommercial potential users. Thus the data base would
15 have to be adjusted each year, based partly on previous years figures, and for the first year of the plan the N.P.S. would probably have to set a rather arbitrary figure based on projections. It is anticipated that this system would not of necessity be any more complicated that the proposed plan.

In closing, I note no discussion in either the Draft River Management Plan or the Draft Environmental Plan, as to alternatives to the highly damaging and supposedly irreversable effects of Glen Canyon Dam. The studies seem to gloss over the whole subject as if the dam were not open to discussion. I would at least like to see studies produced as to alternatives to the current operation of the Glen Canyon Dam: whether the dam in its current form and mode of operation is really necessary; whether the water and power needs of the region might at least be partially ful-
16 filled through other means. I would also like to see study on whether it is possible to release water from the surface layers behind the dam, thus raising the water temperature again, and whether artifical means could be devised to carry silt into the river again, thus mitigating the current erosionaleffects of the clear river. From the brief glimpse of dam operations we are given in the reports, we see that the Glen Canyon Dam has done more to change and to damage the river corridor than the effect of man on the river ever has. I would expect that any environmental study would first concentrate its attention on the most destructive element, and I do not believe this has been done.

I thank you for the opportunity to comment on aspects of these two documents proposed for acceptance and implementation. I share with you the wish for better and more ecologically sound management of the Colorado River corridor in the future.

Sincerely,

Robert A. Quinn

16. It is true that according to research reports, the operation of Glen Canyon Dam has had more adverse effect on the river corridor through the Grand Canyon than has river running activity. However, this plan is to guide the use of the river and its related environment for river-running purposes.

MARGA RASKIN
1966 Herbert Avenue, Salt Lake City, Utah 84108
(801) 582-6396

February 28, 1978

No response required.

Superintendent Merle Stitt
Grand Canyon National Park
P.O.Box 129
Grand Canyon, Arizona 86023

Dear Superintendent Stitt:

Although more than five years have passed since my husband David and I floated down the Grand Canyon, I can recall the almost palpable stillness of the gorge, a silence occasionally broken by the cry of a bird or the slap of an oar. I can still evoke the sensation of being forcefully propelled down the Colorado River by its strong current and remember squinting against the brightness of sun-drenched ancient rock walls as we strained to hear that telltale distant rumble, the warning sound of a cataract. As we approached, the roar would become perceptibly lower in tone and increasingly complex yet distinct. Our oarsman related how the size of a rapid can be predicted by its sound long before the eye has an opportunity to judge.

Although we reluctantly accepted that the Canyon is no longer pristine, we imagined and hoped that perhaps the sounds of the River had not changed all that much since it was first travelled by Major Powell and his companions. Just as our leader wished to instruct us on some salient aspects of running a river, the whine of a "baloney boat" precluded further conversation. As it zoomed by, laden with a cheering crowd, I tried to shrug off a feeling of profound exasperation.

Is the Grand Canyon National Park (GCNP) not a wilderness in spirit, if not by proclamation? How can the quality of a riverine community be savored if motor trip concessioners are allowed to impinge on a sublime sense of solitude?

Over the years I have pondered these and similar questions because I intend to return to the Grand Canyon in a few years when my children graduate from high school. I am concerned that perhaps their trip, their graduation present, will be marred as it had been for me by the unacceptable noise of motorized craft. Therefore, it was with relief and pleasure that I read the results of numerous studies commissioned by the GCNP and discovered that the majority of river runners feel as I do.

The study by Dr. Joyce M. Nielsen and Dr. Byron Shelby entitled "Sociological Carrying Capacity of the Grand Canyon - Colorado River Area" found that:

3. Over 40 percent of all users thought the canyon would be more of a wilderness if use was more restricted and if motor travel was banned.

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that?

3. Over 40 percent of all users thought the canyon would be more of a wilderness if use was more restricted and if motor travel was banned.

7. Motor noise is detrimental to normal relaxed conversation and frequently affects interpretation of park resources. Oar trip passengers knew more names of places and features in the canyon than did motor trip passengers, supporting the conclusion that motor noise decreases the amount of information a boatman on motor trips is able to provide. (The possibility of differences in pretrip knowledge or amount of available written material about the river and canyon between motor and oar passengers is ruled out.)

11. Passengers who had experience with motor and oar travel in the canyon preferred the oar trip (79 to 91% chose oar, 4 to 6% chose motor, in response to four different questionnaire items).

12. Combination trip passengers preferred the oar trip because of the slower, more relaxed pace; the quiet, more sensitive (the river or canyon) trip environment; and the smaller, more comfortable, social groupings.

13. The motor and oar trips were perceived as equally safe by combination trip passengers. Twenty-five percent considered the oar trip safer, 25 percent the motor, and 46 percent felt there was no difference.

[In March, 1973, Assistant Secretary of the Department of the Interior Nathaniel Reed disagreed with the contention that motor travel provided more safety and convenience. Secretary Reed stated that there was "very little indication that motors are indispensible to a safe passage down river." He also added that convenience "in the context of wilderness travel is not a compelling consideration. In fact, ...ease in the Canyon trip can impair its full flavor and character." I understand that when "baloney boats" become swamped in a rapid they can lose their power, thereby becoming totally inoperative; something that isn't likely to happen to an oar-powered craft. Thus, motor travel is much riskier. It is especially hazardous when "baloney boats" flip, trapping passengers underneath, who can become enmeshed with ammo cans and other heavy gear.]

20. Eliminating either motor or oar trips would not appear to exclude any specific group, as described by measured demographic variables...

24. Private users differ from the commercial group as a whole in thier attitudes and perceptions. However, they share many ideological positions with the commercial oar group. That is, they were more likely to object to motor noise and show strong preference for oar travel.

According to the study by Dr. Michael Parent and Dr. Franklin Robason entitled "Economic Study of Float Trip Concessions in Grand Canyon National Park," concessioners concentrating on motor travel will not be unfairly penalized economically by converting their operations to oar travel for the following reasons:

5. Float trip companies are more labor intensive than capital intensive.

6. Because investment is not sizeable and cash flows are excellent (several concessions have large cash reserves), most concessions have been able to self-finance investment in new equipment in current (less than one year) time periods.

7. Most firms would be financially capable of making the shift from motor to oar operations.

9. Any concession which is adversely affected in any large measure by the oar/motor decision or by an administrative decision to cut user/days would be so affected due to the poor overall financial position of the firm due to market situations in other than the Grand Canyon environment.

15. A 3-year phase out of motors would allow most concessions to fully depreciate their remaining investment and allow a gradual conversion to oars.

16. It is conceivable that some motor concessions could retool for oar trips within 6 months and show no economic hardship in so doing...perhaps even profit.

And finally, according to the study by Don N. Thompson, A.J. Rogers, Jr., and Dr. F. Yates Borden entitled "Sound-Level Evaluations of Motor Noise from Pontoon Rafts in the Grand Canyon," my intuitive perceptions regarding the detrimental effects of motor noise are proven correct:

1. Noise levels of motors near boatmen are near the national health standards maximum allowable limits.

2. Significant temporary shifts in the hearing threshold of boatmen and passengers occur.

3. Vital boatmen to passenger communication is possible against a motor noise background, but the reverse is difficult.

4. Noise levels are such that they may have adverse effects on the performance of boatmen.

5. The motor noise is detrimental to normal, relaxed conversation and presents a safety hazard and health hazard.

Since there is a plethora of negative impacts caused by motorized travel, and since the phasing out of motors will have negligible economic effects upon concessioners, it seems reasonable to expect that within a short period of time (to quote descriptive phrases from R. Roy Johnson's "Synthesis and Management Implications of the Colorado River Research Program")"the excellence and beauty of the natural surrounding" of the GCNP will no longer be degraded by motor travel and that future oar travel concession operations will be better able to "match the beauty of the environment or at least not detract from the natural setting."

My husband and I are looking forward to returning to a GCNP - a unique and fragile environment - that is managed by the NPS "consistent with preservation of a natural resource."

Respectfully yours,

Marya Rasken

Jane C. Rasken, M.S.

xc: James L. Isenogle, Assistant Regional Director

10 March 1978; 2°C

Superintendent
Grand Canyon National Park
National Park Service
Grand Canyon National Park
Grand Canyon, Arizona 86023

Dear Mr. Stitt:

Thank you for sending me copies of the Draft Colorado River Management Plan and Draft Environmental Statement for the proposed Colorado River Management Plan, as per my request. I find both documents to be comprehensive and well done, and believe they will satisfy NEPA and CEQ requirements. Also, as management plans and environmental statements go, they are very readable, a not insignificant accomplishment.

I have spent five weeks on the Colorado River within the Grand Canyon on two separate oar-powered trips and have visited the Rims on six different occasions. I am a resource geographer with a research interest in the Colorado Plateau and my master's thesis was an environmental assessment of the potential effects of oil shale development on national parks in the Upper Colorado River Basin. My comments on these two documents follow:

The Plan

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1 I support the proposed Colorado River Management Plan as detailed in the Draft document. There are considerable management and logistics problems that will develop as a result of this plan and I am not certain that it is really any more fair to noncommercial users. But noncommercial users present an order-of-magnitude difference to park management as far as use and safety is concerned, so perhaps entirely different management procedures will have to be instituted for these users.

2 The Plan does not state how the Park Service patrols of the river corridor will be powered. As the River Management Plan is part of the overall Wilderness Management Plan, I assume that patrols will also be oar-powered. But this should be made explicit in the Plan and Statement.

3 While user-days will increase under the Plan, actual annual numbers of river-runners will decrease. Park managers should be aware of a hidden dilemma here. Fewer people enjoying the river experience will mean fewer people being educated about free-flowing rivers and the need to preserve them. There is a significant lobby that has become established because of people experiencing motorized as well as oar trips, and these people write letters to their congressmen when issues develop regarding destruction of free-flowing rivers. The Plan and Statement should address the potential effects of fewer people learning about wild rivers on future preservation and management.

4 One of the goals of the Plan is to even out peak use periods. While many user-days will be available during the winter, I do not think that there will be many trips at that time, either commercial or private. While the Canyon is beautiful

Response To: David L. Schein

1. No response required.

2. NPS patrols will be in oar-powered craft. An exception would be, after motors are phased out, a motor-powered boat may be used occasionally to haul materials to or from Phantom Ranch. During the phaseout, motorized craft may be used occasionally to provide NPS and other government personnel the opportunity to experience both motor and oar-powered boats on the same trip.

3. The plan actually provides for more people to experience a river trip than under the previous situation. Therefore, there is actually more opportunity for people to gain firsthand information from which to form an opinion relative to the merits of maintaining free-flowing rivers.

4. The proposal for redistribution of use primarily involves April and September, rather than winter months. In fact, the allowable winter use is being kept at a low level to provide a more in-depth wilderness experience and allow for natural cleansing action to continue.

Statement should address the potential effects of fewer people [redacted]

4 One of the goals of the Plan is to even out peak use periods. While many user-days will be available during the winter, I do not think that there will be many trips at that time, either commercial or private. [redacted] beautiful

4 during winter, most people will not have vacations available and children will be in school. Do not expect much even-ing out of the seasonal peaks.

5 Does management expect to lift the ban on driftwood collection for campfires in the future when stocks are replenished by natural processes, so once again the wood campfire can become part of the Canyon experience (other than in winter)?

6 The Plan states that contained human wastes as carried in boats is not hazardous. Carrying wastes, some of which may be pathogenic, in small boats, along with food supplies, posses the contamination problem. It will be most difficult to isolate all wastes and materials that come in contact with wastes on small boats for over two weeks. The longer the wastes are around, the greater the chance for contamination. I support the requirement of taking all wastes out of the Canyon, but strict measures must be taken (perhaps approved crash-resistant containers can be supplied to all trips) to ensure public health, as well as environmental health.

7 Present use of Colorado River water by trip parties (while the NPS recommends treatment) often leads to illness, which can spread in camp. Slow oar-powered trips, especially in the smaller boats, just cannot hold enough water collected from safe tributary sources for long periods, so Colorado River water is often used for drinking and utensil washing and rinsing. Water quality can be expected to increase with implementation of the Plan, but improvement will be gradual. The Plan should state the NPS guidelines for using water under the proposal and treatment required. (Treating water with chlorine can cause gastric distress in itself, as treated water kills normal intestinal bacteria required for normal food metabolism.)

8 The Plan makes no mention of a specific rescue plan by the NPS. More boats and more people on the River at any one time will increase the chance for accidents or illness requiring evacuation. And, with the proposed ban on Canyon overflights, who will see distress signals from river parties? The River is only visible from a few places along the Rims. Both Grand Canyon and Scenic Airways have been instrumental in the past in spotting distress signals from river parties and have contacted park management for rescue efforts. This valuable "service" will be foregone in the proposed Plan. The potential impacts of this should be addressed in the Statement.

9 The Plan would continue to permit motorized travel upstream into the Park from Lake Mead to Separation Canyon. While this is a traditional use of this reach of River, the NPS has the authority to ban motorboats from the entire length of the Colorado River within Grand Canyon National Park. The reasons for allowing this use within the national park should be detailed.

The Statement

10 Page II-4, regarding the Bureau of Reclamation's control of the Colorado River, it is stated that the possibility exists of opening the spillways of Glen Canyon Dam during high water years to provide more water in the river channel. Don't count on it.

5. Modification of use of driftwood will depend upon information gathered from monitoring. If driftwood resupply exceeds winter use requirements, we will re-evaluate the policy and possibly make some changes.

6. The requirements for human waste carry out specify that the containers must be durable and leak proof. There is no guarantee that a spill of the materials will not occur, although it is extremely unlikely. The human waste carry out system was used by over half of the companies voluntarily in 1977 and by all companies in 1978 with no contamination problems. It is true that a potential does exist for this kind of problem although it is unlikely to develop.

7. To the best of our knowledge, illness that has occurred on river trips has been from improper food handling in almost all cases. Treatment of water has taken care of problems related to impurities in the water with only few exceptions. The potential for illness through improper or non-treatment of water does exist. This is the reason for the health and sanitation guidelines (Appendix C.).

8. The proposed action has been modified to include a reference to the park search and rescue plan. The draft plan did not propose to ban aircraft overflights. It only proposed to eliminate helicopter takeouts from river trips. The FES has been modified to allow helicopter takeouts to continue. See also Jeffery Zimmerman response number 2.

9. The reasons for continuing motorized travel below Separation Canyon are detailed in the FES. Primarily, motorboating is a traditional use of long standing, and the lake covers this portion of the river, thus eliminating its free-flowing character.

10. Informal conversation with Bureau of Reclamation personnel indicates the possibility that spillways could be used in the next few years, depending upon water flow above Lake Powell and other conditions relative to the purposes of the Colorado River Storage Project. Maximum flow through the dam at this time is 32,000 cfs. This could increase to upwards of 50,000 cfs if spillways are used.

10 The potential evapotranspiration of the reservoir surface and shoreline is so great that, even in a "surplus water year" (of which none are expected this century), so many acre-feet evaporate that spillway operation will not be necessary. The more water in the reservoir, the more that evaporates. Don't count on a "flush" on occasion from SurRec, unless it comes from the dam's penstocks during high power-demand days, like a hot spell lasting for weeks.

11 The Statement correctly states that the endangered humpback chub and Colorado River squawfish are severely restricted in their distribution within the Grand Canyon and protective measures are required. But both these species occur above the Grand Canyon in the Colorado River and its tributaries, and the possible elimination of these two fishes in the national park would not necessarily mean extirpation of the species, and this should be noted. Will signs be posted ½ mile from the mouth of the Little Colorado River to warn river parties of the restrictions?

12 The Plan and Statement make no mention of proposals to manage Sloth Cave (Rampart Cave) in the Lower Canyon. This valuable resource must be protected and interpreted. Difficult access should help protect this site but perhaps some water-level information can be presented to river parties as they pass the cave. Has this site been nominated to the National Register of Historic Places?

13 Emory Falls is an especially sensitive portion of the Lower Canyon and it receives high visitation from both motorboat parties and river-runners, with the subsequent accumulation of litter, human wastes, and associated resource degradation. Special management procedures may have to be established to deal with heavy use from both motorboat and river-running parties at sites accessible via both means, such as Emory Falls, Quartermaster Canyon, Spencer Canyon, Bat Cave, etc.

14 Present and proposed plans prohibit the use of soaps in the clean tributary streams. Most bar soaps and all shampoos contain detergents, which cause most of the impact from "soaps." Local detergent "blooms" can be expected at popular bathing sites. The Colorado is too cold for bathing thruout most of its length within the national park and this prohibition is largely ignored, as tributaries are warmer and more comfortable. While desirable, this prohibition may make more sense to river-runners if eddies are specified for bathing as well. They and pools along the beaches are the only waters in the main channel that are warm enough for bathing for the first two hundred miles.

15 Both the Plan and Statement expect short one, two, and three-day trips to be offered by concessioners. What evidence is there that these short trips will actually be offered? Exceptional logistical problems will occur with short trips (vehicle transport, connections, baggage, etc.) and the impacts of these additional activities on park resources should be addressed.

16 It is supposed that all oar-powered trips will allow fewer contacts and shorter contacts between river parties. This is not necessarily so. More and longer contacts could occur. Boats will be travelling at the same speed and will not get out of sight or earshot as quickly as some mix of motorized and oar-

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11. It is true that extirpation of the rare and endangered fish species from the Colorado River in Grand Canyon National Park would probably not totally extinct the species. However, mandate and policy for the park requires that we do all possible to maintain natural conditions, which include these fish species. It is to that end that the protection measures proposed are aimed. We do not anticipate signs for closure at the Little Colorado River mouth. Anyone at the mouth of the Little Colorado River should have either a river-running permit or a hiking permit, except someone who hiked down the Little Colorado River Canyon, camped on Navajo Tribal lands, and day hiked to the mouth of the river and back to their camp. We are considering a sign at the boundary of the park in the Little Colorado River Canyon. For other hikers and for river-runners, a condition of their permit will include no fishing at the mouth of the Little Colorado River.

12. Rampart Cave has been included on the list of sensitive areas in Section II of the FES. This and other areas listed will receive special attention in monitoring and patrol activities. There is now and has been for many years a steel barred, locked gate at the entrance to Rampart Cave. It is closed to access. Consideration will be given to the suggestion for interpretation of this resource at water level.

13. Emory Falls is also listed as an ecologically sensitive area and will receive special attention. Other areas mentioned will be monitored routinely.

14. Experience of the past few years indicates that most people do comply with the requirement to use no soap in side streams. There have been no algal blooms in the past few years. However, should this become a problem, the plan is so written that modifications can be made to take care of the situation.

15. There is little current demand for short 1-, 2-, and 3-day trips. However, a few of these kinds of trips are offered, at the present time.

16. Fewer intergroup contacts are expected under the proposed action than occurred previously since there will be fewer trips on the river at any given time. However, your point is well taken that contacts could be of a longer duration since motors will not be available to separate trips rapidly; as they have done in the past. There are other methods available to separate trips such as simply pulling into a back eddy while another trip passes or making arrangements to pass another trip while it is stopped at an attraction site or for lunch, etc. Oar-powered trips do pass each other under existing conditions.

activities on park resources should be addressed.

16 It is supposed that all oar-powered trips will allow fewer contacts and shorter contacts between river parties. This is not necessarily so. More and longer contacts could occur. Boats will be travelling at the same speed and will not get out of sight or earshot as quickly as some mix of motorized and oar-

16 powered boats. The river corridor could become a 277-mile "no-passing zone."

17 Page III-24 says that "the purpose of Glen Canyon Dam is to satisfy water and power demands of the region's growing population." Rubbish. The purpose of Glen Canyon Dam is to store water so the Upper Basin States of the Colorado River Compact of 1922 can meet downstream release requirements in low water years. It does not supply one drop of irrigation water to the "region" and very little drinking water. Over 95% of its meager power production is transported out of the region for use by out-of-state demands. It produces so little power that a huge coal-fired power station (the Navajo plant) had to be built adjacent to the dam! This statement should be corrected in any Final Environmental Statement as it is misleading and clearly wrong.

18 The Statement says that certain beaches will be monitored for resource evaluation during the Plan to ascertain the effects of mitigating measures. How will control plots be managed and where will they be? If control plots are not on the same beach with the same aspect, attitude, etc., any results may be invalid.

19 Appendix "C", Boating Safety Standards (already in effect) make no mention of inflatable canoes and kayaks and their use on the River. Are such small craft permitted if accompanied by support boats? What about crash helmets for noncommercial parties?

Thank you very much for the opportunity to review and comment on these documents.

Sincerely,

David L. Schein

David L. Schein

5219 North Reserve Avenue
Chicago, Illinois 60656

20 P.S. One more comment. Thruout the Plan and Statement, the term "immediately adjacent" occurs. This is redundant. Adjacent means "next to" so you are saying "next to next to." Something is either adjacent, or it isn't, so there is no reason to use the incorrect "immediately adjacent."

17. Additional information was provided by the Bureau of Reclamation in their comments on the draft environmental statement. These comments have been included in the FES.

18. Procedures for beach monitoring have been developed and provided to the NPS by the Museum of Northern Arizona scientific staff who are currently under contract to initiate the studies. Details are not provided in the FES, but could be made available to individuals upon request.

19. The FES has been modified to include the fact that inflatable kayaks are acceptable as supplemental craft. Regular kayaks and whitewater canoes that have been approved in the past were included in the draft as approved craft and are included in the FES as approved craft. Crash helmets are not required for noncommercial river trips, but are left up to the individuals involved.

20. The FES has been edited to remove this double positive.

February 23, 1978

Peter S. Winn
405½ N. Beaver
Flagstaff, AZ
86001

William Wheelan
(copy to:
Inner Canyon Unit Manager
Grand Canyon National Park
Grand Canyon, AZ, 86023)

RE: Public Input on Colorado River Management Plan

Dear Public Servants:

I am a retired Grand Canyon commercial guide and an ex Grand Canyon National Park River Ranger; I have run a number of private river trips through the Canyon and several research trips as well. I have been on over 40 trips, ranging from ten to twenty-four days long. Only three of my trips have been on motorized craft - the rest were in oar boats, paddle boats and via kayak. I have been following the development of river management throughout the West and particularly at Grand Canyon for over ten years.

The Grand Canyon first introduced itself to me as wilderness. Over the years it has lost this quality, particularly during the summer. The question "What is wilderness?" is one each person must answer for herself/himself. I see two major aspects - the social environment and the natural environment. To me a wilderness is an area of minimal encounter with other people and minimal human impact. Each of us sees a different value to wilderness. For me, to lose the opportunity to experience wilderness is to lose sight of the human place in our universe. To fill the Grand Canyon with people takes away from us the essential perspective of solitude; to trample the Grand Canyon is a short step away from trampling ourselves.

Fifty-nine years ago the American People, through our representatives in Congress, chose to make the Grand Canyon a National Park for us and our children to learn form and enjoy. In the present management Plan and reactions to it I see that most of us have forgotten why our parents and grand parents wanted the Canyon to be protected. In our selfish shortsightedness we are forgetting our own children's needs.

The present level of use of the Colorado River through the Grand Canyon (over 110,000 user days per year) has turned the Canyon into a playground - it is no longer a wilderness, in spite of past[illegible] attempts on the part of the Park Service to protect it from ourselves. Only time and the forces that created the Canyon in the first place can return it to a wilderness state, but perhaps we can aid in the creation of a semi-wilderness.

created the Canyon in the first place can return it to a [redacted] a semi-wilderness.

1 First, motors are incompatible with wilderness and must be removed from the Canyon.- partly because of their effect on non-motorized craft, but largely because of their effect on the people on the motorized craft itself. Motor noise and large group size limits social interaction and growth inspired by the Canyon. Speeding down the River, regardless of trip length, divorces one from the feel of the current and eddies - the flow of time - making one always feel like you're going somewhere, that where you are isn't worth being - somewhere else, down-river, is more important than being where you are - the rush of the city we came to avoid. Too bad people who are sold commercial motor trips don't know any better until they've been on an oar trip. It's unfortunate that 80% of the people who float through the Canyon are unknowingly offered only the "choice" of a motor trip. If they can't afford two weeks time or can't hike in or out at Phantom Ranch, they should wait until they can - those are the terms of the Canyon wilds. To believe otherwise is to see the Canyon as a back-country Disneyland!

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2 Second, and equally important, to increase use to double the present use, regardless of scheduling to avoid crowding, is to have no awareness of the fragility of the Canyon. The research leading to the conclusion that the Canyon can handle the increase without deteriorating (irrespective of dam and burro damage) was limited to only a few aspects of a complex geo-ecosystem. If nothing else, implement the resource protecting elements of the Plan but hold use to its present levels for a few years and monitor the effects. I'll bet the Canyon is still trampled. This feeling is based not only on personal experience but also on Howard and Dolan's report "Alteration of Terrace Deposits ..." (#7, Colorado River Research Project Reports, pp 16-25): beyond that small and critical rate of visitation which results in destruction of soil and vegetative cover, allowing aeolian and alluvial degradation of terrace deposits (campsites, etc.), the downslope transport (erosion) of pre and post dam terrace deposits will increase in direct proportion to increases in use! This conclusion was ignored in the Plan proposal to double current use.

There should be a reduction in overall use, coupled with an intensive "Care of the Canyon" training program for commercial guides and private trip leaders (as outlined in the Plan)

I propose the following changes in the Plan:

3 For trips other than NPS administrative and patrol trips, minimum trip length (Lee's Ferry to Diamond Creek) should be 12 days and maximum trip length should be 24 days.

4 From April 1 - September 30, a maximum of 20% of the private and educational allotments (see below) and of each concessionaire's allotment may be used in any one month. This concentrates most use during half the year, giving the Canyon a chance to

Response to: Peter Winn

1. No response required.

2. The proposed use increase in user days is based on consideration of all research reports, public input and legislative requirements. With the redistribution of launches and resource protection requirements included in the proposed action, associated impacts are expected to be within acceptable limits. Monitoring of existing use has been ongoing for two seasons with indications that beaches are improving. It is true that the study of Alteration of Terrace Deposits by Howard and Dolan (1976) states that increase in downslope transport of pre- and post-dam deposits will increase. However, the total matter transported does not appear to be excessive at this time. Training programs for noncommercial and commercial river runners is part of the proposed action.

3. Trip length has been modified to a minimum of 8 days for the motor phaseout period. Maximum trip length for summer is 18 and for winter is 21. These trip lengths will be evaluated on a continual basis beginning with the motor phaseout and will be adjusted as needed.

4. Daily launch schedules will replace the need to have a monthly limit on proportion of allocation that a concessioner can use. The monthly allocation use limit was used under the previous management system to spread use more evenly over the season.

recover during the wet season. Summer daily departure levels as outlined in the Plan are adequate. From October 1 - March 31 a maximum of 1 trip per week, regardless of kind of trip (including NPS) should be allowed, not exceeding any allotments (see below).

5

Total yearly use should be a maximum of 85,000 user days , divided as follows:

36,000 Private
36,000 Commercial
10,000 Educational
1,500 Research
1,500 NPS

The recommendation in the Plan to increase use to 225,000 UD (based on the assumption that mitigating proposals to carry out human waste, charcoal and ash, eliminate summer fires and construct unobtrusive trails at heavy visitation sites will prevent further degradation of the Canyon) does not consider the heavy trampling occurring at campsites and lunch stops with the present level of use. The effects of continued trampling are irreverable and inconsistent with the Congressional mandate to leave the resource unimpaired for future generations. To comply with this mandate use would have to be cut drastically - there is no way to unobtrusively construct trails in 150 campsites and lunch stops. 85,000 UD/yr. is too high, but the Canyon may at least survive as a semi-wilderness rather than the trampled recreation area that it is becoming and will certainly become if its use is increased to 225,000 UD/yr.

6

Private use should be limited to 36,000 UD/yr. The decision in in the Plan to increase private use to 58,000 UD/yr., based on actual (anticipated?) demand, ignores the need to protect the Canyon from further deterioration by trampling.

Private use should be at least the same as commercial use. The 1916 Act establishing the National Park system states that where there exists direct competition between commercial activity (the concessionaires) and public, self-conducted non-commercial activity, the public non-commercial activity enjoys a priority of right and the commercial activity must give way. No "natural curiosities, wonders or objects of interest shall be leased, rented or granted to anyone on such terms as to interfere with free access to them by the public." Granted, patrons of licensed commercial outfitters are also members of the public, but those members of the public who meet the qualifications specified in the operating conditions for conducting their own trips have priority over those members of the public who are willing to provide a profit to commercial outfitters for the service of being conducted on a trip (given limitations on use as necessary to protect the resource so that our children can enjoy it unimpaired).

7

Commercial use should be limited to 36,000 UD/yr.

8

The number of River concessionaires should be reduced to 6.

9

5. No response required on summer daily launch schedule. Three trips per week will be allowed during the winter season, for a total of 78 trips each winter.

6. Total yearly launch schedule has been adjusted to 209,150 user days. See response number 2 as to measures to mitigate impacts at this use level. Trampling does occur at attraction sites and lunch sites. However, this trampling is accelerated by the problems of crowding and congestion that will be mitigated by redistributing use, and single trail alignment will materially aid in reducing the past problems of multiple trailing. Congressional mandate requires that resources be left unimpaired for future generations but also requires that they be available for visitor enjoyment. Any use at all will impair the resources within the river corridor to some degree. The balance of use and unimpairment is the underlying objective of this plan. Trails already exist at most attraction sites. One of these existing trails will be selected and plainly identified and others will be obliterated. There will be very little construction. Trail alignment was initiated in the 1978 season and has so far proven largely successful.

7. Noncommercial use is presently estimated at 54,450 user days annually. This includes winter use of 10,530 user days. See response numbers 2 and 6 relative to resource protection. Noncommercial use demand compared to commercial use demand is discussed in Section II of the FES. Data available at this time does not support an equal allocation for noncommercial and commercial river runners. There is pending litigation at this time on the question of free access being impaired by river-running concession permits. Therefore, we will not respond to this comment at this time. This will be resolved in the courts.

8. Commercial use allocation will be in number of passengers rather than user days as has been the past practice. However, expected user days for concessioner guided trips is expected to be approximately 121,500 annually. Summer commercial use will be approximately 109,800 user days which compares to 89,000 user days under the previous situation and is an increase of 20,800 user days. This increase is spread more evenly over a longer season by approximately 2 months.

9. Ease of administrative management is not a sufficient reason to reduce the number of concessioners. Based on past experience, approximately 15 to 18 river-running concessioners would be desirable for the Grand Canyon. This would provide an adequate number of concessioners to maintain the variety of trips desired and yet would not be so many that use allocations would be too small to maintain concessioner economic viability. Economic viability is essential to maintaining quality of service.

en [redacted] uni[redacted]ed).

8 Commercial use should be limited to 36,000 UD/yr.

9 The number of River concessionaires should be reduced to 6.

9 This is a much more managable number, yet variety of trip length, boat size and trip character is quite feasible. The 1965 Concessions Act states that only as many concessions as are necessary to provide essential services should be allowed to make a profit from the resource. Those present outfitters who do not comply with NPS operating and concession conditions (violation of safety and sanitations conditions both in the Canyon - life jackets and human waste removal - and out of the Park - vehicle and warehouse area safety and false advertising) should be eliminated.

10 Allot 6,000 UD/yr. to each outfitter. Of the 6,000, 4,700 should be the maximum amount of passenger use (this is higher than the present average commercial UD allotment per outfitter and is sufficiently high to provide an adequate financial base for an efficient operation). 1,300 should be the maximum amount of staff UD. This prevents commercial outfitters from taking unfair advantage of no repeat rule (see below) by loading trips with staff "free loaders."

11 Maximum commercial trip size should be 30. Of that 30, 24 is the maximum number of passengers. If there are fewer than 24 passengers on a trip, the number of staff may be increased, keeping within the 30 person maximum and 1,300 UD/yr. staff allotment. From these constraints the minimum number of commercial trips (on the average) per outfitter, assuming full trips and 14 day average trip length, would be about 14 per year.

12 Create an educational allotment of 10,000 UD/yr. These UD must be granted only to institutions with an educational orientation. The institutions may conduct their own trips (if qualified) or may seek the service of a concessionaire (providing the concessionaire reduces the trip fare for an equivalent length and style commerial trip by 25%, the user days will not be taken from that concessionaires own allotment). All members of educational trips are subject to the same no repeat restrictions as private trip members and commercial passengers. An institution may apply for only one permit per year. No permanent permits will be issued.

13 Reduce NPS administrative and patrol use to 1,500 UD/yr. More than 8 people (really more than 6) on an administrative or patrol trip is a boondoggle and so are trips longer than 12 days - I was a Grand Canyon National Park River Ranger - I know! These limits result in about 15 NPS trips per year. This is more than adequate. When NPS personel (as such) take commercial trips, these UD should be charged against NPS UD allotment.

14 Reduce research use to 1,500 UD/yr. Maximum trip size should be 12, for most purposes 8 would be adequate. When researchers make use of commercial trips, those UD should be charged against the research allotment. All members of research trips must have a justifiable role in fairness to those members of the public who are subject to the no repeat rule.

10. See response number 8 as to concessioner allocations. The no-repeat rule has been eliminated from the proposal.

11. Maximum trip size for concessioners will be 25. Crew will be in addition to that number but not specifically limited. Concessioners will be allowed, as a make-up provision, to increase passenger group size to 30. Make-ups are allowed for no show and cancellations. Number of trips to be made by each concessioner annually will depend on the number of passengers alloted. Passenger allotments will be in increments of 25 to correspond to trip group size.

12. No educational allocation is provided for in the proposed action. Educational trips for noncommerical groups are allowed through the noncommercial permit process. Concession permit renewals will be granted with consideration given to proposals that provide for educational type of trips and trips to other similar groups.

13. A specific use allocation is not identified. NPS patrol and administrative trips will be limited to those necessary to accomplish the required job. The number of expected patrol and administrative trips is outlined in the proposed action.

14. Research trips have been fairly limited in the past. There have usually been about a half dozen each year. These trips will be limited in the future to the approximate number outlined in the proposed action. However, there will not be a specific limit so that needed research for management of park resources can be accomplished.

15 Reduction of yearly use to 85,000 UD/yr. may require limiting a person (private, commercial passenger or educational) to one trip every third year (or more as time passes). There are other wild rivers, other wilderness areas where one can recharge himself/herself.

16 Reduce encouragement of back country hiking in the Plan. Do not extend commercial concession permits to cover back country hiking. To do so is only encouraging greater use of a fragile environment that is already showing signs of being "loved to death." Natural increases in private use of back country trails is already reaching the point of requiring requlation and will require greater restriction in the future.

17 Eliminate all use of helicopters below the Rims except for emergency use. Scenic, patrol and adiministrative (fires) use of helicopters should be limited to areas above and behind the Canyon Rims. Cross canyon flights should be made over areas with no trails and limitad to one per day except in case of emergency.

18 Present Plan proposals to carry out all human waste, garbage, charcoal and ash, eliminating summer fires, and construction of unobtrusive trails at heavy visitation sites should be put into effect immediately, regardless of the total use settled upon.

Listen.....listen to the Canyon.....

Thank you for your attention.

Peter S. Winn

15. The no-repeat rule has been dropped from the proposed action.

16. The opportunity for hiking to attraction sites and side canyons accessible from the river corridor is an important part of the overall river trip experience. Refer to response numbers 2 and 6 for discussion of related impacts.

17. Helicopter takeouts will be retained at least for the immediate future. See also Bureau of Indian Affairs, Washington, D. C. response number 5 and Bureau of Indian Affairs, Truxton Agency response number 7.

18. Proposals mentioned were implemented in 1978.

3/4/78

Dear sir,

I have been reading over your Draft Environmental Statement and Colorado River Management Plan, and would like to respond to them. Although I am not officially speaking for these groups, I am a member of the Arizona Wilderness Coalition, and am Conservation Chairman of the Arizona Mountaineering Club, both of which have an interest in wilderness action throughout the state.

I attended your public meeting in Phoenix on February 14, 1978, but did not have the opportunity to respond at that time. Although I was familiar with your Draft Plan, the pre-meeting notices didn't describe the kind of public participation that would be allowed.

1 In general, I support your Plan. There are several features of it that particularly appeal to me. First, the elimination of motorized watercraft seems to me to be essential to retain the wilderness experience aspect of each trip, commercial or non-commercial, through the Grand Canyon. The noise of a motor doesn't seem to me to be compatible with a true wilderness experience. For me, even the noise of ever-present aircraft far overhead when I'm backpacking in a "wilderness" is annoying and detracts from my enjoyment.

2 For this same reason, I support the elimination of the use of helicopters in ferrying passengers out of the Grand Canyon when they wish to run only half of the river. Neither the noise nor the sight of helicopters is compatible with the idea of "wilderness" in the Grand Canyon.

3 The part of the Plan calling for scheduling of trips so as to avoid congestion at camping and attraction sites sounds interesting. I support this with the reservation that the real effects which it has on the river and wilderness experience environment should be closely monitored, and scheduling should be amended if necessary. This seems to be provided for in your Plan; I hope that it will be carried out vigorously.

4 The education of commercial river-runners as to the geologic and historic aspects of the Canyon and its attractions also seem to be a very good idea. I hope that this information will be made available directly to each participant in all river trips, if they would like to learn it.

The education of all river-runners in the protection of the river and its environment is a very good idea. All participants in commercial and non-commerical trips should be clearly shown how their actions can affect the Canyon environment, and how they can avoid damaging this environment.

Response to: Jeffery Zimmerman

1. No response required.

2. Use of helicopters will be allowed to continue for routine river trip takeouts provided that landings take place outside of park boundaries, and that timing and location of takeouts are arranged so as to be a minimum impact on other river running parties. Use of helicopters is being studied in connection with all other aircraft overflights and their related problems of noise. As a result of these studies, a management plan will be prepared along with proposed regulations to the Federal Aviation Administration to reduce impacts.

3. No response required.

4. No response required.

The last phase of your Plan that really interests me is the monitoring program which you hope to establish to determine the effects of visitor use on the Canyon environment. Hopefully, this information can be used to amend the Plan as necessary to protect the Canyon itself and the wilderness experience that can be enjoyed there. 5

As you know, the overwhelming majority of the speakers at the public meeting on Feb. 14 were against parts of the Plan, particularly the part which calls for the elimination of motorized trips through the Canyon. It could be expected that the opposition would focus on this particular issue, as it's the only one which involves money.

As one gentleman pointed out, river-running is not an industry like other industries, at least in the Grand Canyon. This makes the call for protection of "free enteprise" absurd. River-runners operating within the confines of Grand Canyon National Park are merely concessioners, to whom is let the privilege of making money by providing a service for the visitors which the Park Service itself might otherwise have to provide. If, as the Park Service has indicated, it wishes this concession to be for a "wilderness" river-running experience, then this is what the river-runners must provide. If motors are not compatible with that experience, then river-runners must not use them.

There was a general theme running through the statements of people opposing the Plan, a very curious theme at that. These people seemed to have a general misunderstanding of the meaning of wilderness. They seemed to expect that "wilderness" means having lots of trees and animals and cactusses, or a river, or whatever, but just seeing these things--seeing them from a position of total comfort and security. If the river is a little too slow for them to see the whole Canyon in one week, then they would like to use a motor to accelerate the pace. If it's a little hot sitting on the back of a mule for a few hours, or walking, to leave the Canyon, then they would like to have a helicopter come down and pick them up. And most of all, they wouldn't want to take any risks. After all, this is 1978. Even if they would like to ride down one of the wildest rivers in the western United States, they expect to be able to do it without the chance of even getting wet in the rapids. As one man suggested, the Park Service really should do something about the problem of flash-floods in those narrow side canyons, or about getting hurt while you're on a river trip. Maybe he would like the

5. No response required.

those narrow side canyons, or about getting hurt while y[redacted] on [redacted]er t[redacted] Ma[redacted]e wo[redacted]ike [redacted]

Park Service to replace all the trails in the Canyon with sidewalks so he won't accidentally trip on a rock?

There was a sort of "Disneyland" approach to wilderness expressed in the statements of virtually all the opponents of the Plan. They wanted lots of exciting things to happen in a very short time, and then get moving on to somewhere else, so they could see the whole country before their vaction was up. They didn't seem to consider the qualities which make wilderness areas, particularly desert wilderness areas, what they are--a sense of time, of quiet, and of peace. Maybe it's because these qualities are not measurable, and growing up in cities has made most people forget not only how important these qualities are, but even what these qualities are. Maybe it's possible that most of the people in our cities don't really know what wilderness means.

There was a general sound of righteousness in people's voices when they spoke of the elimination of motorized trips. Many pepple claimed that they would not physically be able to participate in a non-motorized trip, because it would be too rigorous. This is not true. On a non-motorized commercial trip, the passengers will still do the same things that they do now--they'll sit and look at the scenery, they'll hold on tight through the rapids while the boatmen steer, they'll get out of the boat in the evening and have their campsite and meals prepared by the crew. If they run the river halfway, they can ride a mule out, and if they ride to the end of the Canyon, they can be picked up in an air-conditioned car. Physically, it would be no more demanding than any present commercial trips. I think that many of these people were confusing in their minds commercial non-motorized trips with "participation" trips, where each of the participants does his fair share of the work. Most participation trips, it's true, are non-motorized--but only because more people are needed to handle the boat, and no handling of motors is needed. "Non-motorized" should not be confused with "participation". They are two distinct groups of trips--and perhaps the Park Service should point this out to the public in future literature concerning the Management Plan.

There were several misconceptions of this type presented at the public meeting, and perhaps future literature on the Plan could take into account all of these. For instance, people disregarded the statement in the Draft Plan that statistics show no difference in safety between the motorized and non-motorized trips. Perhaps if this were stated more emphatically, it might reduce general public fears. Another point would be the status of river-runners. It should be

emphasized that river-runners are not a part of the ordinary private sector of business, and therefore are not "entrepreneurs" who need to be protected from government interference. They are, instead, basically groups which have been sub-contracted by the government to provide a particular kind of service. Those groups which successfully provide this service to the public will be rewarded by future contracts; those groups which fail to meet government requirements will not have their contracts renewed. And in this case, the priorities are preservation of the Canyon environment, and presentation of a "wilderness experience". The contention of these river-running groups that the new rules will bankrupt them is therefore not even a main consideration of the Plan, nor should it be. Furthermore, I feel confident that the interest of the public in river-running will not diminish under the new rules, particularly because the river-runners, to survive, will make the new trips as comfortable as possible and will advertise them in this manner so as to attract business.

Again, I support the new Colorado River Management Plan. I was quite surprised to see such an all-embracing and ambitious plan result from your past studies. I believe that it will set up an effective apparatus to preserve the quality of the Grand Canyon environment. I stress, as my only reservation, that I hope you will maintain a continuing reassessment of the effects of this new Plan as it is put into operation, and will adjust it as soon as any problem becomes apparent which might affect the wilderness quality of the Grand Canyon or the quality of the experience for river trip participants. I also anxiously await your new allotment for private river trips, as I have already been turned down on an application for this year. With five years of study behind your Plan, I hope that it will be able to withstand the controversy which was apparent at the Phoenix public meeting. In my opinion, much of that controversy was based on ignorance, or on a misreading of the facts and of the Park Service's intentions in formulating this Plan. I hope that it can serve as a precedent for the management of other Parks and Monuments, as regards the preservation not only of their resources, but of the quality of the experience which their visitors receive.

Sincerely,

5024 N. Chiquita Lane
Scottsdale, Arizona 85253

X. REFERENCES

Aitchison, S. W. and S. W. Carothers, 1974. An ecological survey of the Colorado River and its tributaries between Lees Ferry and the Grand Wash Cliffs. Colorado River Research Technical Report #10, Grand Canyon National Park.

Blinn et al., 1976 (See Czarneki et al., 1976).

Borden et. al., 1976 (See Weeden et al., 1976).

Borden F. Y., 1976. Carrying capacity for river running the Colorado River in the Grand Canyon region. Colorado River Research Technical Report #9, National Park Service, Washington, D. C.

Bowman, E. G., 1975 and 1976. Survey of noise levels in Grand Canyon National Park. Unpublished Research Report, Grand Canyon National Park, Arizona.

Carothers, S. W. and S. W. Aitchison, 1976. An ecological survey of the riparian zone of the Colorado River between Lees Ferry and the Grand Wash Cliffs, Arizona. (Reports by S. W. Aitchison, S. W. Carothers, M. M. Karpisak, G. A. Ruffner, N. J. Sharber, P. L. Shoemaker, L. E. Stevens, M. E. Theroux, and D. S. Tomko.) Colorado River Research Technical Report #10, Grand Canyon National Park.

Carothers, S. W. and R. R. Johnson, 1975. Recent observations on the status and distribution of some birds of the Grand Canyon region. Plateau 47(4):140-153.

Carothers, S. W., J. H. Overturf, D. S. Tomko, D. B. Wertheimer, W. Wilson, and R. R. Johnson, 1974. History and bibliography of biological research in the Grand Canyon Region and emphasis on the riparian zone. Unpublished Colorado River Research Report, Grand Canyon National Park, Arizona.

Cole, G. A. and D. M. Kubly, 1976. Recommendations following a limnology study of the Colorado River and its major tributaries in the Grand Canyon. Unpublished Colorado River Research Report, Grand Canyon National Park, Arizona.

Czarneki, D. B., D. W. Blinn, and T. Tompkins, 1976. A periphyton microflora analysis of the Colorado River and Major tributaries in Grand Canyon National Park and vicinity. Colorado River Research Technical Report #6, Grand Canyon National Park, Arizona.

Deacon, J. E. and J. R. Baker, 1976. Aquatic investigations on the Colorado River from Separation Canyon to the Grand Wash Cliffs, Grand Canyon National Park. Colorado River Research Technical Report #15, Grand Canyon, Arizona.

Dolan, R., B. Hayden, A. D. Howard, and R. R. Johnson, 1976. Man's impact on the Colorado River fluvial deposits within the Grand Canyon. Paper for the First Conference on Scientific Research in the National Parks, New Orleans, Louisiana.

Dolan, R., A. Howard, and A. Galleson, 1974. Man's impact on the Colorado River in the Grand Canyon. Amer. Sci. 62(4):392-401.

Howard, A. D. and R. Dolan, 1976. Alterations of terrace deposits and beaches of the Colorado River in the Grand Canyon caused by Glen Canyon Dam and by camping activities during river float trips. Colorado River Research Technical Report #7, Grand Canyon, Arizona.

Johnson, R. R., 1976. The Colorado River Research Project, a multi-disciplinary research project for management alternatives. Proceedings of visitor capacity symposium, NPS, Santa Fe, New Mexico.

Kilgore, B. M., 1973. A call for proposals: the river contact study. National Park Service, San Francisco.

Knudsen, A. B., 1976. A bacteriological analysis of portable toilet effluent at selected beaches along the Colorado River, Grand Canyon National Park, Arizona. Unpublished Colorado River Research Report, Grand Canyon National Park, Arizona.

Minckley, C. O. and D. W. Blinn, 1976. Summer distribution and reproductive status of fishes of the Colorado River and its tributaries in Grand Canyon National Park and vicinity during 1975. Colorado River Research Technical Report #14, Grand Canyon National Park, Arizona.

Shelby, B. and J. M. Nielsen, 1976. River contact study. Colorado River Research Technical Reports #1-4, Grand Canyon National Park, Arizona.

Sommerfeld, M. R., W. N. Crayton, and N. L. Crane, 1976. Bacteria, phytoplankton and trace chemistry of the Colorado River and tributaries in the Grand Canyon National Park. Colorado River Research Technical Report #12, Grand Canyon National Park, Arizona.

Suttkus, R. D., G. H. Clemmer, C. Jones, and C. R. Shoop, 1976. Survey of fishes, mammals, and herpetofauna of the Colorado River and adjacent riparian areas of the Grand Canyon National Park. Colorado River Research Technical Report #5, Grand Canyon National Park, Arizona.

Thompson, D., F. Y. Borden, and J. Rogers, 1974. Sound level evaluations of motor noise from pontoon rafts in the Grand Canyon. Unpublished Research Report, National Park Service.

U.S. Fish and Wildlife Service, 1973. Threatened Wildlife of the United States. Resource Publ. 114, U.S. Government Printing Office, Washington, D. C.

Weeden, H. A., F. Y. Borden, B. J. Turner, O. N. Thompson, C. H. Strauss, and R. R. Johnson, 1975. Grand Canyon National Park campsite inventory. Unpublished Research Report, National Park Service, Washington, D. C.

APPENDIXES

A. Colorado River Research Program

B. Private Trip Affidavit

C. Health and Sanitation Guidelines

D. 1980 Operational Requirements

E. Breeding Birds of the Colorado River

F. Mammals of the Colorado River

APPENDIX A

COLORADO RIVER RESEARCH PROGRAM

Grand Canyon National Park

A series of research investigations relating to the natural resources of the Colorado River within Grand Canyon National Park and visitor recreation uses was initiated in 1973. These studies were conducted under contract with educational institutions and a professional research firm to provide scientific information to serve as the basis for a management plan for the Colorado River from Lees Ferry to Grand Wash Cliffs.

Final reports on all of these projects have been received by the National Park Service and have been professionally reviewed and analyzed. Basic findings and recommendations from each report will be consolidated into a synoptic report which the National Park Service managers responsible for the Colorado River will use in the implementation of the river management plan.

Each project is listed below with: the title of the project, the contract or purchase order number; the organization to which the contract was issued; the principal investigator, and the period covered by the study.

1. Ecology of the riparian zone of the Colorado River including (1) vegetation mapping, (2) interrelationships of visitors with plants and animals, (3) successional changes in plants as a result of Glen Canyon Dam, (4) population densities, home ranges and demography of important vertebrates, (5) impact of wild burros on beaches, (6) impact of burros on vegetation, (7) an inventory of insect species; CX821550007; Museum of Northern Arizona; Dr. Steve Carothers; FY 75 and 76.

2a. Sociological carrying capacity of the Grand Canyon-Colorado River area (commercial use); CX821040104; Human Ecology Research Services, Inc.; Drs. Eugene Haas, Joyce Nielsen, and Bo Shelby; FY 74 through FY 76.

2b. Sociological carrying capacity of the Grand Canyon-Colorado River area (private use); change order; Human Ecology Research Services, Inc.; Drs. Eugene Hass, Joyce Nielsen, and Bo Shelby; results incorporated into the final report of the commercial use; FY 75 - 76.

3. Grand Canyon National Park campsites inventory; CX000-3-0061; Penn. State University; Dr. F. Yates Borden; FY 75; Dr. Borden has completed a physical carrying capacity model.

4. Human waste disposal analysis (porta-potty) along the Colorado River; CX821060029; University of Arizona; Dr. Robert Phillips; FY 76.

5. Analysis of human waste disposal with special reference to public health and bacteriology; Dr. Bruce Knudsen and Grand Canyon National Park science staff; FY 75.

6. Sound level evaluations of motor noise from pontoon rafts in the Grand Canyon; CX0001-3-0061; Penn. State University; Don Thompson; FY 75.

7. History with bibliography of biological research in the Grand Canyon region with emphasis on the riparian zone; PX821040040; Museum of Northern Arizona; Dr. Steve Carothers; FY 74.

8. Riparian feasibility study; CX821050079; Museum of Northern Arizona; Dr. Steve Carothers; FY 74.

9. Number and distribution of burros in the Grand Canyon: PX821050830; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

10. Burro follow-up study; damage and recommendations for protection of the Grand Canyon ecosystem; PX821060722; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

11. Status survey of vertebrates and associated plants of the riparian area and Inner Gorge of the Grand Canyon, with emphasis on fishes; CX821060006; Tulane University; Dr. Royal Suttkus; FY 76.

12. Aquatic investigations on the Colorado River from Separation Canyon to the Grand Wash Cliffs; PX821060350; University of Nevada at Las Vegas; Dr. James Deacon; FY 76.

13. Survey of fish and their breeding status in the Colorado River; PX821060298; Dr. Royal Suttkus; FY 76.

14. Study of the status of fish in the Colorado River; collaborator; University of Michigan; Dr. Robert Miller; FY 76.

15. A preliminary survey of fishes of the Colorado River in the Grand Canyon (feasibility study); PX821050965; Dr. Royal D. Suttkus; FY 75.

16. Limnologic studies on the Colorado River in the gorge of the Grand Canyon, Grand Canyon National Park (feasibility study); PX821050862; Arizona State University, Dr. Gerald Cole; FY 75.

17. Continued studies on the limnology of the Colorado River in Grand Canyon National Park; PX821060263; Arizona State University; Dr. Gerald Cole; FY 76.

18. Periphyton microfloral analysis of the Colorado River-Lake Powell to Lake Mead; CX821060008; Northern Arizona University; Dr. Dean Blinn; FY 76.

19. Analyses of periphyton and certain physico-chemical parameters from the Colorado River system between Lakes Powell and Mead (feasibility study); PX821050861; Northern Arizona University; Dr. Dean Blinn; FY 75.

20. Survey of phytoplankton, bacteria and trace chemistry of the lower Colorado River and tributaries in the Grand Canyon (feasibility study); PX821050863; Arizona State University; Dr. Milton Sommerfeld; FY 75.

21. Survey of bacteria, phytoplankton, and trace chemistry of the lower Colorado River and tributaries in the Grand Canyon; CX821060007; Arizona State University; Dr. Milton Sommerfeld; FY 76.

22. An annotated bibliography of limnologically related research on the Colorado River and its major tributaries in the region of Marble and Grand Canyons; PX821041350; Arizona State University; Dr. Gerald Cole; FY-74.

23. An inventory of large and small bird bones from Stanton's Cave PX821050967; University of Arizona; Dr. Amadeo Rea; FY 75 - FY 76.

24. Camelthorn control; no contract; NPS-GRCA; Dr. Roy Johnson.

25. The establishment of bench marks and GCNP techniques for measuring erosion along the Colorado River; PX821060262; University of Virginia; Dr. Alan Howard; FY 76.

26. Changes in fluvial deposits of the Colorado River in the Grand Canyon; continuation of Washington-funded project CX821060009; University of Virginia; Drs. Alan Howard and Robert Dolan; FY 76.

27. Hydrology and sedimentology of the Colorado River; CX821060030; University of Arizona; Dr. Emmett Larsen; FY 76.

28. Analysis of backcountry trail use in Grand Canyon National Park; CX821060027; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

29. Economic analysis of river companies running the Colorado River in Grand Canyon National Park; CX821060028; Utah State University; Dr. Michael Parent; FY 76.

APPENDIX B

NONCOMMERCIAL RIVER TRIP AFFIDAVIT

Your signature on this affidavit indicates that you have considered the permit conditions and that your trip is organized in the spirit, as well as the intent, of the following conditions (36 CFR 5.3, Business Operations; 36 CFR 7.4(h), Grand Canyon National Park, Colorado Whitewater Trips). Failure to abide by these conditions will jeopardize future applications and will result in permit cancellation.

1. A private river trip must be participatory. Trip preparation (including logistics, food purchase, equipment assembly, transportation and vehicle shuttle) and conduct of the trip (including food preparation and sanitation) must be shared by members of the group. Collecting a set fee (monetary compensation), payable to an individual, groups or organization, for conducting, leading, guiding or outfitting a private river trip is not allowed. The trip leader should delegate responsibility (financial and otherwise) for various aspects of trip preparation and conduct.

2. The purpose of the trip must be for its recreational and/or educational values. The trip will not be conducted for monetary gain (either as a direct or indirect result of the trip) or acquisition of new equipment to the advantage of an individual, groups or organization or for the purpose of amortizing equipment.

3. Media or direct mail or other advertising is not permissible.

4. Estimated overall trip cost:
_____ (based on _____ trip members)

5. A complete itinerary including off-river days and a list of boatmen, their experience, equipment, and other information ensuring compliance with the Appendix A of the permit application criteria must be provided at least sixty (60) days prior to trip launch. A National Park Service form will be provided for this purpose.

I have given complete and accurate descriptions and answers to all questions. I agree to comply with all park rules and regulations as stated in Appendix A of this application, and appropriate parts of the Code of Federal Regulations, AND ASSUME FULL RESPONSIBILITY FOR THE CONDUCT OF MY ENTIRE PARTY IN OBEYING THESE RULES AND REGULATIONS. To the best of my knowledge, my name and those of the trip participants appear on only one application and I understand that duplication of names or incomplete answers will make my permit application invalid. I also acknowledge that I have read and agree with all terms in the above noncommercial river trip affidavit.

It is unlawful to knowingly and willfully falsify or conceal by any scheme or by any false, fictitious or fraudulent statements or representations or to make use of any false writings or documents knowing them to contain any false, fictitious, or fraudulent statement or entry. Violators will be subject to a fine of not more than $10,000.00 or imprisonment for not more than five (5) years or both (18 U.S.C. 1001, 1970).

Applicant's Signature _____

APPENDIX C
HEALTH AND SANITATION GUIDELINES

I. Human Waste Removal

With the porta-potti burial system of human waste disposal, over 5,000 burials took place in the river corridor each year.
It is now required that all solid human wastes be carried from the canyon because of resource impact and the hazard to human health. The cheapest and, so far, most effective means of transporting solid human waste out of the canyon is by the use of air-tight surplus ammunition boxes and plastic bags. The necessary items are:

1. Surplus ammo cans (rocket boxes) that measure 18" x 8" x 14".

2. A toilet seat.

3. Large, heavy duty plastic garbage bags.

4. Deodorant chemical, such as Aqua Chem, chlorine bleach, or quick lime.

5. Toilet paper, water dispenser and hand soap.

The system is set up as follows: one of the rocket boxes serves as the toilet container. It is first lined with one of the heavy duty large garbage bags with the excess folded around the edge of the can. Pour the deodorant into the open bag and place the toilet seat on top of the can. The water dispenser and the hand soap can be placed nearby. Used toilet paper, tampons, and sanitary napkins can be placed directly in the toilet. After use, the toilet should be covered with a large heavy duty garbage bag to discourage flies. To dismantle the toilet, squeeze the excess air out of the bag and tie it off. This may be done by placing the lower part of the bag into a wash bucket and allowing the water to force out excess air. Then place the bag into another bag and store subsequent waste bags with it. Tie off the storage bag and place it into the rocket box. After the lid is sealed, the container is ready for storage until the next use. The toilet seat, plastic bags, toilet paper, and deodorant are then stored in another rocket box. It is necessary to remove only two cans from the boat each time the toilet is set up.

The amount of chemical needed depends on the type used and the number of people on the trip. With liquid deodorant, a few ounces at the bottom of the bag is sufficient for six or seven people. With bleach, approximately twice as much is required. Quick lime should be sprinkled over the waste after each use. The deodorant reduces bacterial growth and the production of methane gas. The number of rocket boxes needed is

dependent on the number of people and the length of the trip. We have found that it is possible to containerize about 70 to 90 person-days of human waste in one rocket box for feces and one for equipment are needed

A human waste receptable is provided at Pierce Ferry. Human waste contained in plastic bags may be deposited in the receptacle at Pierce Ferry. There are no receptacles at any other of the take out locations. Therefore, trips taking out at locations other than Pierce Ferry are required to deposit the containerized human waste in an approved solid waste landfill. Locations that will accept this material are, Flagstaff, Arizona; Kingman, Arizona; Fredonia, Arizona; and Lees Ferry, Arizona.

Toilet paper is a significant source of litter along the river corridor. When the toilet is set up, all paper will be put in the toilet bag. At other times, place all toilet paper in a small pastic bag or other container and place it later in the toilet bag. Numerous fires have been caused by the careless burning of toilet paper. River guides are responsible for any fires caused by any member of their group by burning toilet paper.

II. Food and Water Sanitation

Certain sanitation practices are necessary to prevent the contamination of food and subsequent human illness. These are:

1. Before handling and preparing foods after going to the toilet or handling raw meat or poultry, wash hands with soap and water.

2. Cooked or other prepared foods should come in contact only with clean and sanitized surfaces, equipment, and utensils. Equipment used for raw foods should be washed and sanitized before using it on cooked foods.

3. Persons with communicable diseases, infected wounds on the hands and arms, or boils, should not prepare food.

4. Perishable foods should be kept at temperatures below 45 degrees F.

5. Foods such as meat and poultry products should be well cooked to destroy disease organisms.

6. After preparation and prior to serving, keep hot foods hot and cold foods cold.

7. Leftover perishable food should be discarded or refrigerated immediately in clean and protected containers.

8. Leftover perishable food should be thoroughly reheated before eating.

The most effective means of sanitizing dishes and utensils is the three-bucket system. The system is as follows:

1. Use three buckets large enough to immerse the largest utensils with one bucket heated to near boiling.

2. Add detergent to the heated bucket. Fill the second bucket with clear water for rinsing. Add chlorine to the third bucket at the rate of two teaspoons per gallon of water.

3. Wash dishes and utensils in the first bucket to remove grease and food particles. Water temperature should be 120 - degrees F.

4. Rinse by dipping in the second bucket.

5. Immerse articles in the third bucket for sixty (60) seconds, twice as long if towel dried. The effectiveness of chlorine for disinfection is directly related to the time of exposure. Be sure to allow time for the chlorine to act.

6. Use a rack for air drying or wipe dry with clean paper towels.

Store the articles in a clean, dry location.

For safe drinking water, follow these two steps:

1. Add eight (8) drops of chlorine per gallon of water, adding a few drops more if the water is muddy.

2. Mix the water and chlorine and let stand uncovered in a wide-mouthed container for 30 minutes. Proper standing time will disinfect as well as dissipate the objectionable chlorine taste.

APPENDIX D
1980 OPERATIONAL REQUIREMENTS

The following are the operational requirements for 1980 river trips. The requirements are subject to annual revision as resource monitoring and experience dictate and as the phaseout of motor-powered craft continues.

I. WATERCRAFT

A. Types

Type of boats and their capacities will be established for each commercial outfitter. Noncommercial trips must use one of the types listed below unless special approval is granted by the Superintendent or his appointed representative.

1. The minimum size of an approved inflatable raft will normally be 12' x 5'. However, each request will be considered on its own merits and smaller boats may be allowed depending on the particular raft and the skill or experience of the boatmen. For river trips consisting of a single boat, it is strongly suggested that the minimum size be 15' x 7'. Any river trip of a single boat must demonstrate the ability to carry the required equipment for resource protection, safety, repair, and other gear plus food. Experience of the participants will also be considered.

2. The hard-hulled boat or dories must be able to carry the required equipment for resource protection, safety, and repair as well as food and other gear. A minimum of two boats should travel together for this purpose. Single dory trips may be allowed if all requirements are met and the people involved have sufficient experience to conduct the trip.

3. Whitewater canoes, kayaks, and sportyaks may also be allowed. Such boats should generally be accompanied by support craft. Proposals for trips using these boats, without support craft, will be considered and may be allowed if equipment for resource protection, safety, and repair can be carried and the experience of the people involved appears to be adequate. Single boat trips may be allowed based on this same criteria.

B. Capacities

No combination of people will exceed these totals (per craft) unless special approval is granted by the Superintendent or his appointed representative:

1. Dories, 5 people including crew
2. Inflatable rafts and pontoons:

a. G-Rig and J-Rig, 37 feet long - 20 people including crew.
Pontoon rafts, 33-37 feet long - 15 people including crew.

b. All other rafts and pontoons 27 feet long:
- with outriggers - 12 people including crew
- without outriggers - 8 people including crew

c. Rafts and pontoons 22-27 feet long:
- 8 people including crew

d. "Snouts" - 22 feet long, 8 people including crew.

e. Rafts 17-18 feet long with 21-24 inch tubes - 6 people including crew, triple operation - 18 people including crew

f. Rafts 15-17 feet long with 19-21 inch tubes - 5 people including crew, triple operation - 15 people including crew

g. Rafts 22 feet long with 24-28 inch tubes - 7 people including crew

C. Registration

All watercraft on the Colorado River within Grand Canyon will be registered and will display numbers and decals and otherwise comply with all applicable Arizona State Laws.

II. EMERGENCY EQUIPMENT PROCEDURES

A. Life Preservers and Regulations

1. Each passenger MUST have a U.S. Coast Guard (USCG) personal flotation device (PFD), approved for commercial use, (Type I or V). Commercial river guides or noncommercial participants may use a USCG, PFD approved for personal use (Type II or III). One extra PFD for every ten passengers or a minimum of one extra PFD per boat or raft must be carried. They must be in serviceable condition in compliance with USCG standards, and must be worn and properly fastened at all times while in whitewater. Trip leaders will be held accountable. A court appearance is mandatory for failure to comply with this regulation. PFD's will be tested prior to departure at Lees Ferry, and those found to be defective will be marked and set aside or discarded. Each commercial passenger will be assigned a jacket with an identifying mark to be fitted and worn for the entire trip.

2. Each boat must carry and have available a USCG approved Type IV PFD if the boat is greater than sixteen feet in length.

B. First Aid

A major first aid kit shall be carried on each trip with a smaller kit on each additional boat. (See Guide and Leader, Section III, for first aid training requirements).

C. Communications and Signalling

1. Emergency signalling equipment will include a signal mirror of the United States Air Force type and a set of signal panels, 3' x 10', one international orange and one white. In the event of an emergency, the symbol "X" marked or placed on the ground by any means will signify that help or emergency aid is needed. Upon notification by observers, a helicopter will be dispatched by the National Park Service. (See Part F, Helicopter Evacuation.)

2. Additional recommended equipment is a ground-to-air radio transceiver on frequency 122.9 MHz, which is generally for plane-to-plane communication but may be used by boat operators. Frequency 122.05 MHz is the local frequency used by Scenic Airlines.

D. Other Emergency Items

1. A minimum of one extra set of oars must be carried on each oar-powered boat or raft. An extra set of paddles are acceptable, in lieu of oars, for small craft listed in Section I.A(3) and other cases where specifically approved.

2. On motorized trips, an extra motor must be carried for each raft. Also required are spare parts of the types most commonly needed, such as propellers, water pumps, shafts, lower units, etc.

3. Each river trip will carry an air pump when neoprene rafts or pontoons are used.

4. Every river trip will carry a boat repair kit.

5. All motorized craft are required to carry fire extinguishers which conform to current USCG regulations.

6. An adequate supply of ropes and canteens should be carried.

7. One or more of the following maps or guides should be carried on each boat: The Les Jones Scroll Map of the Colorado River Trip from Lees Ferry to Temple Bar; Grand Canyon River Guide by Buzz Belknap; Pictorial Color Map of Grand Canyon by Jack Currey; appropriate U.S.G.S. quadrangles; Brigham Young University Guidebooks to the Colorado River Part II and III by Kenneth Hamblin and J. Keith Rigby, or the Colorado River Guidebook by Troy L. Pewe.

E. Incident Reports

Section 2.22, Title 36 of the Code of Federal Regulations (36 CFR 2.22) states: "All incidents resulting in injury to persons or damage to

property (other than those specified in Parts 3 and 4), must be reported by the person or persons involved as soon as possible to the Superintendent. This report does not relieve persons from the responsibility of making any other accident report which may be required under State Law."

Section 3.13(b) (36 CFR) also applies: "A report of collision, accident, fire, or other casualty that results in property damage or any personal injury or death to any person must be made by each operator of the vessels involved to the Superintendent as soon as possible, and in any event within 24 hours. This report does not relieve the responsibility of making boating accident reports as may be required by States or the U. S. Coast Guard."

Incident forms or reports must be given to a National Park Service ranger at the time of evacuation or to a park ranger at Phantom Ranch or Pierce Ferry. Incident forms will be supplied by Grand Canyon National Park and carried on each trip.

F. Helicopter Evacuation

1. In the event of an emergency, the trip leader or guide will contact the National Park Service. 2. The National Park Service will arrange for the helicopter evacuation and notify the home office of the river concessioner. 3. The concessioner will be responsible for the cost of the evacuation.

When the helicopter evacuation of a passenger is requested by a friend or relative (as in the case of an emergency at home), arrangements will be made through Grand Canyon National Park. The National Park Service will not bear the cost of such evacuations.

III. TRIP LEADER AND GUIDE REQUIREMENTS

A. Certification

The following requirements must be met before guiding or leading a commercial trip on the Colorado River through the Grand Canyon.

1. Commercial Guide

An individual who meets the following qualifications:

a. Must be age 18 or older.

b. Must have made at least three river trips through Grand Canyon on the Colorado River as a trainee under a qualified guide. Must have run every rapid in Grand Canyon at least twice in the type of craft to be used.

c. Can demonstrate ability to navigate the river and operate a boat accordingly.

d. Has operated the emergency communications equipment carried on the trip.

e. Knows National Park Service, State, and USCG regulations applicable to river running.

f. Demonstrates a knowledge of the natural and human history of Grand Canyon National Park and, in particular, the river corridor. Has the ability and shows a willingness to impart this knowledge to passengers.

g. Has a working knowledge of safety, sanitation, and equipment repair.

h. Has an American Red Cross Standard First Aid Certificate or equivalent.

2. Commercial Trip Leader

Individuals in charge of river parties shall possess the character, personality, and capabilities of responsible leaders. They must also:

a. Have made at least three additional river trips through the Grand Canyon of the Colorado River as a guide running the entire trip in the type of craft to be operated as a leader.

b. Hold a current American Red Cross Advanced First Aid certificate or the equivalent.

c. Give an accurate orientation talk to all passengers. This orientation will cover life preservers, boating safety, swimming, hiking safety, drinking water, sanitation, cultural and natural history, and resource management.

3. Noncommercial Trip Leader and Participants

Must have experience navigating the type of boat to be used on one or more of the other western whitewater rivers or the equivalent. Because of the unique nature of the Grand Canyon portion of the Colorado River, the trip leader, or another member of the party, must have made a previous trip. Controlled water releases from Glen Canyon Dam result in daily water fluctuations between 1,000 and 32,000 cubic feet per second, a considerably greater fluctuation than most whitewater rivers.

The severity of the rapids, water temperatures ranging from 42° to 48° degrees F., 100-plus degrees F. air temperatures, and the degree of isolation require that the trip leader and guides have a working knowledge

of whitewater safety, first aid, and repair of river equipment. Also needed are the techniques of whitewater navigation and map reading.

IV. ENVIRONMENTAL PROTECTION AND SANITATION

A. Refuse

All refuse must be carried out. Cans, rubbish, and other refuse MAY NOT BE DISCARDED IN THE WATER OR ALONG THE SHORE OF THE RIVER. This restriction applies to any portion of Grand Canyon National Park. Refuse cannot be left at Phantom Ranch, Diamond Creek, Pierce Ferry, or South Cove. Refuse and garbage attract red ants, flies, and animals, and result in fouled beaches. Liquid garbage such as coffee, soup, and dishwater must be strained; solids should be placed in garbage bags, and liquids dumped into the river. Grease must be carried out. The trip leader must make sure that participants are aware of proper disposal of all litter including pop tops and cigarette butts.

B. The Use of Soap

Biodegradable (low phosphate) soap may be used in the Colorado River only. Use of any soap or detergent in side streams or within 100 yards of any side stream is prohibited.

C. Portable Toilets

It is the responsibility of each boat party to remove its solid human waste from the canyon. The system that must be used is described in Appendix B. Other systems must be approved by the Superintendent, or his appointed representative. These facilities will be set up upon arrival and remain until the party breaks camp. No toilet paper should be burned; it should be placed in a plastic sack and deposited with other human waste. Between camps, when the toilet is not set up, people are encouraged to defecate or urinate as far away as possible from potential camping areas. When unavoidable, urination should take place in the wet sand below high water mark.

D. Fires

Gas stoves (propane, white gas, etc.) for cooking are required on all trips. Charcoal briquettes may also be used for cooking. Diminishing driftwood, destruction of native vegetation and deposition of charcoal on beaches make this restriction necessary. Wood fires may be used for warmth or esthetics, but not for cooking. However, from April 1 through September 30, all wood for fires must be carried into the canyon from an outside source. From October 1 through March 31, driftwood from beaches may be used for warming and esthetic fires. Within the park, gathering of wood from standing or fallen trees (dead or alive) is prohibited.

All fires must be contained in a fire pan that is at least 2 feet by 2 feet with a 3-inch-high lip around its edge. Smaller fire pans (12" x 12" x 3" minimum) may be used for charcoal briquettes. A fire permit is required and all fire pans must be approved by the Lees Ferry ranger. All ash and charcoal residue must be carried out of the canyon, not left on the beach or dumped in the river as in the past.

The kindling of open fires is prohibited at any time when away from beaches. Gas stoves for cooking are required for overnight trips away from the river.

E. Public Health All river trips will comply with the requirements found in the Public Health Supplement in Appendix C.

V. RESTRICTED AREAS

Areas along the Colorado River closed to either camping, open fires, or visitation:

A. Redwall Cavern no camping and no fires.

B. Little Colorado - no camping from River Mile 60.5 to River Mile 65.0 on the south side of the river. The Sipapu is a Hopi religious site. Please honor it as such and do not disturb.

C. Hopi Salt Mine - no visitation is allowed on the east side of the river from River Mile 63 to River Mile 64. This area contains another Hopi religious site.

D. Phantom Ranch - no camping or fires are allowed one-quarter mile upstream from Kaibab Bridge to one-quarter mile downstream from Pipe Creek (Garden Creek). Emergency camping in this area may be approved by the Phantom Ranch ranger. Passengers exchanging on trips at Phantom and wishing to camp at either Bright Angel Campground or Indian Gardens must have an overnight permit (which requires advance reservations) for these areas.

E. Elves Chasm - no camping or fires within one mile of Royal Arch Creek's confluence with the river.

F. Deer Creek Falls - no camping or fires within one-half mile of the confluence of Deer Creek and the Colorado River.

G. Matkatamiba Canyon - day use only, no camping or fires.

H. Havasu Creek - no camping or fires within one-half mile of Havasu Creek's confluence with the river. Overnight use is permissible at the Havasupai campground only. (See Part VIII.F. Backcountry or

Off-River Camping.) For reservations at Havasu Campground, call or write the Havasupai Tourist Enterprises, Supai, Arizona (telephone: 602-448-2121). A $5.00 fee is charged for any hiking on the Havasupai reservation. An additional fee of $2.00 per person, per night is charged for camping.

I. Emergency closures - as listed on the bulletin board at Lees Ferry.

VI. COMMERCIAL LAUNCH DATES

Launch dates for river trips are available on a first-come, first-served basis. Requests should be made after July 1, 1979 for the 1980 season. No preference will be given to early postmarks. Notification of approval will then be given monthly.

VII. OTHER RIVER TRIP LIMITATIONS

A. The maximum number of commercial passengers per trip is 25. River trips traveling or camping together may not exceed 25 passengers. See Part VIII.F. for off-river camping information.

B. Fifty commercial passengers may depart from Lees Ferry daily. A maximum of 15 noncommercial passengers may depart daily.

C. No person shall operate a vessel engaged in predominantly upstream travel between Lees Ferry and Diamond Creek. No vessel shall be operated that has more than 55 horsepower.

D. Subjects that must be covered in mandatory orientation talks are outlined in VIII. H.

E. Subletting of Commercial Allocations

Use allocations belong to the United States and may not be sublet for commercial or noncommercial purposes. To avoid subletting charges, commercial river companies should follow these guidelines:

1. All monies must go directly to the concessioner. A booking agent can advertise and organize, but not operate the trip. A person or organization may not collect fees for a trip and then pay a concessioner a franchise fee to physically run the trip.

2. All trip participants must be under the regular insurance coverage of the concessioner company. Additional insurance may be provided by charter groups, etc.

3. A river concessioner using rental equipment must not have any company names on the boats, gear boxes, etc., other than its own or another authorized concessioner or the name of the equipment manufacturer.

4. In order to avoid the appearance or charge of sublet, all crew must be salaried or paid employees. Freelance river guides must be paid in a similar manner as all other company employees. All commercial crew members must meet the standards outlined in Section III and must be registered with the National Park Service prior to their arrival at Lees Ferry.

In summary, a sublet exists when persons operate a trip with their own equipment, personnel, and insurance, and pays a river concessioner a fee for its use allocation.

VIII. MISCELLANEOUS PROVISIONS

A. A fee is charged for each person, boat and truck using the Diamond Creek Road. Permits are required in advance. For further information contact:

Monroe Beecher, Director
Hualapai Wildlife & Outdoor Recreation Department
P. O. Box 216
Peach Springs, Arizona 86434

B. Rafts and boats operating at night must comply with USCG and State of Arizona requirements for running lights.

C. No cats, dogs, or other animals are permitted on river trips.

D. River parties will, when possible, avoid heavily used campsites.

E. A copy of the current Operational Requirements must be carried on each trip and all river guides must have a sound knowledge of them.

F. Overnight permits are necessary for off-river camping in all areas of Grand Canyon National Park. All backcountry areas have group and individual overnight limits. The maximum number in any one group is fifteen (15) people, with camping in one spot limited to two nights.

There is a reservation system for the Phantom Ranch, Cottonwood, Indian Gardens, Deer Creek, Tapeats Creek, and Thunder River areas. Advance notice and an overnight permit is necessary for all overnight use.

Permits will be issued by the Backcountry Reservations Office through the River Unit manager. The written permit must accompany each off-

river party. To receive permits mail your requests to the River Unit Manager. A letter of confirmation with the overnight permits will be mailed back to you if the requested areas are available.

G. All land on the south side of the canyon above the river high line on its south bank, between Mile 165 and 273 is Hualapai Tribal land. Any activities in this area such as hiking or camping requires the permission of the Hualapai Tribe.

H. An orientation at the beginning of each trip is required. It may be given on the bus while going to Lees Ferry, at a motel the night before the trip, on the launch ramp, etc.

The orientation talk must cover the fact that the trip will be traveling through Grand Canyon National Park and that all resources are not to be disturbed in any way. In addition, the following points must be addressed; life jacket wearing and related safety procedures, other aspects of boating safety, sanitary food handling and preparation, availability of purified drinking water, human waste carry out equipment and procedures, litter collection, importance of single trail use, proper use of fires (when allowed), and the availability of boatmen for information and interpretation.

APPENDIX E

The Breeding Birds of the Colorado River From

Lees Ferry (Mile 0) to Diamond Creek (Mile 225)

Species 4/	Preferred Habitat 1/	Status 2/	Relative Density	Average Absolute Density Pairs/ 225 mi. 3/
Turkey Vulture	B	SR	0.76	6.8
Cooper's Hawk	A	SR	0.11	1.0
Red-Tailed Hawk	B	PR	0.50	4.5
Golden Eagle	B	PR	0.25	2.3
Prarie Falcon	B	PR	0.15	1.4
Peregrine Falcon	B	PR	0.15	1.4
American Kestrel	A	PR	0.84	7.5
Spotted Sandpiper	A	SR	6.44	57.0
Morning Dove	A	SR	9.92	87.8
Greater Roadrunner	B	PR	0.11	1.0
Great-Horned Owl	B	PR	0.11	1.0
Black-Chinned Hummingbird	A	SR	1.32	11.7
Ladder-Backed Woodpecker	A	SR	0.11	1.0
Ash-Throated Flycatcher	A	SR	1.09	9.7
Black Phoebe	A	SR	0.92	8.2
Say's Phoebe	A	SR	2.71	24.0
Willow Flycatcher	A	SR	0.11	1.0
Common Raven	B	PR	3.31	29.3
Dipper	A	PR	(not on river, in flowing tributaries)	
Canyon Wren	B	PR	11.45	101.3
Rock Wren	B	PR	8.98	79.5
Blue-gray Gnatcatcher	A	SR	1.27	11.3
Phainopepla	A	SR	0.22	2.0
Starling	A	SR	(only in heavily populated areas)	
Lucy's Warbler	A	SR	19.67	172.5
Yellow Warbler	A	SR	1.86	16.5
Common Yellowthroat	A	SR	0.92	8.2
Yellow-Breasted Chat	A	SR	2.03	18.0
House Sparrow	A	PR	0.11	1.0
Northern Oriole	A	SR	0.22	2.0

Species 4/	Preferred Habitat 1/	Status 2/	Relative Density	Average Absolute Density Pairs 225 mi. 3/
Brown-Headed Cowbird	A	SR	1.01	9.0
Blue Grosbeak	A	SR	2.88	25.5
Indigo Bunting	A	SR	(only in Tapeats, Deer and Havasu Creeks)	
Lazuli Bunting	A	SR	(only in Tapeats, Deer and Havasu Creeks)	
House Finch	A	SR	15.25	135.0
Lesser Goldfinch	A	SR	0.41	3.7
Black-Throated Sparrow	B	PR	0.11	1.0
TOTAL			100.00	884.7

1/ A = riparian vegetation
B = desert scrub, talus slopes and vertical cliffs

2/ SR = summer resident; PR = permanent resident

3/ Average absolute density determined from field data gathered in April, May and June

4/ Three species which prefer the vertical cliff areas for nesting, the white-throated swift, the violet-green swallow and the cliff swallow are locally colonial and their densities have not been determined. (after Carothers and Aitchison, 1976)

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APPENDIX F

The Mammals of the Colorado River Area
(Lee Ferry to the Grand Wash Cliffs)

Species	Preferred Habitat	Rel. Abundance
BATS		
California Myotic *Myotis californicus*	A	R
Long-eared Myotis *Myotis evotis*	A	R
Small-Footed Myotis *Myotis subulatus*	A	R
Long-Legged Myotis *Myotis volans*	A	R
Western Pipistrelle *Pipistrellus hesperus*	A	C
Big Brown Bat *Eptesicus fuscus*	A	FC
Red Bat *Lasiurus borealis*	A	R
Lump-Nosed Bat *Plecotus townsendii*	A	UC
Pallid Bat *Antrozous pallidus*	A	UC
RACCOON RINGTAIL AND SKUNKS		
Spotted Skunk *Spilogale graulis*	A	FC
Raccoon *Procyon lotor*	A	R
Ringtail *Bassariscus astutus*	A	C
COYOTES AND FOXES		
Coyote *Canis latrans*	A & B	UC
Gray Fox *Urocyon cinereoargenteus*	A & B	UC

Species	Preferred Habitat	Rel. Abundance
CATS		
Bobcat *Lynx rufus*	A & B	UC
Mountain Lion *Felis concolor*	A & B	UC
SQUIRRELS, GROUND SQUIRRELS, CHIPMUNKS, PRAIRIE DOGS		
Cliff Chipmunk *Eutamias dorsalis*	B	UC
White-Tailed Antelope Ground Squirrel *Citellus leucurus*	B	UC
Rock Squirrel *Citellus variegatus*	B	UC (except popular campgrounds)
MICE AND RATS		
Western Harvest Mouse *Reithrodontomys megalotis*	A	UC
Brush Mouse *Peromyscus boylii*	A	UC
Canyon Mouse *Peromyscus crinitus*	B	A
Cactus Mouse *Peromyscus eremicus*	A & B	A
Deer Mouse *Peromyscus maniculatus*	A	FC
Pinyon Mouse *Peromyscus truei*	A	R
White-Throated Wood Rat *Neotoma albigula*	A	FC
Desert Wood Rat *Neotoma lepida*	A & B	FC
Long-Tailed Pocket Mouse *Perognathus formosus*	A & B	UC
Rock Pocket Mouse *Perognathus intermedius*	A & B	FC

Species	Preferred Habitat	Rel. Abundance
UNGULATES		
Bighorn Sheep *Ovis canadensis*	B	FC
Mule Deer *Odocoileus hemionus*	B	FC
BEAVER		
American Beaver *Castor canadensis*	A	C

A = Riparian Habitat; B = Desert Scrub, Talus Slopes; R = Rare;

UC = Uncommon; FC = Fairly Common; C = Common; A = Abundant