

**CANYONLANDS NATIONAL PARK**  
**RIVER MANAGEMENT PLAN**

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## I. Introduction

### A. Description of the Area

Cataract Canyon of the Colorado River is one of the wildest and most exciting of whitewater rivers remaining in the country. Cataract Canyon begins four miles below the Confluence of the Green and Colorado Rivers and runs into Lake Powell. Where once there were 32 miles of whitewater, Lake Powell has covered all but about 12 miles of the Cataracts. The section within the park will remain unaffected by Lake Powell. The river flows from an elevation of 3,870 feet down to 3,450 feet for an average drop of 9.5 feet per mile. Individual rapids drop as much as 25 feet with a maximum fall rate of 113 feet per mile.

Above the Confluence, the Green River flows quietly through Labyrinth and Stillwater Canyons and the Colorado is only a little less serene. From the Confluence to the north park boundary on the Green River, it is 47 miles and to the town of Green River, it is 120 miles. From the Confluence to the north park boundary on the Colorado River it is 31 miles and to Moab, Utah, 69 miles.

Float trips through the canyons usually begin at Moab or Green River, Utah. Other starting points which shorten the river trip are from Potash, 20 miles south of Moab and Mineral Bottom, 63 miles downstream from Green River. Hite Marina is the first accessible point of debarcation.

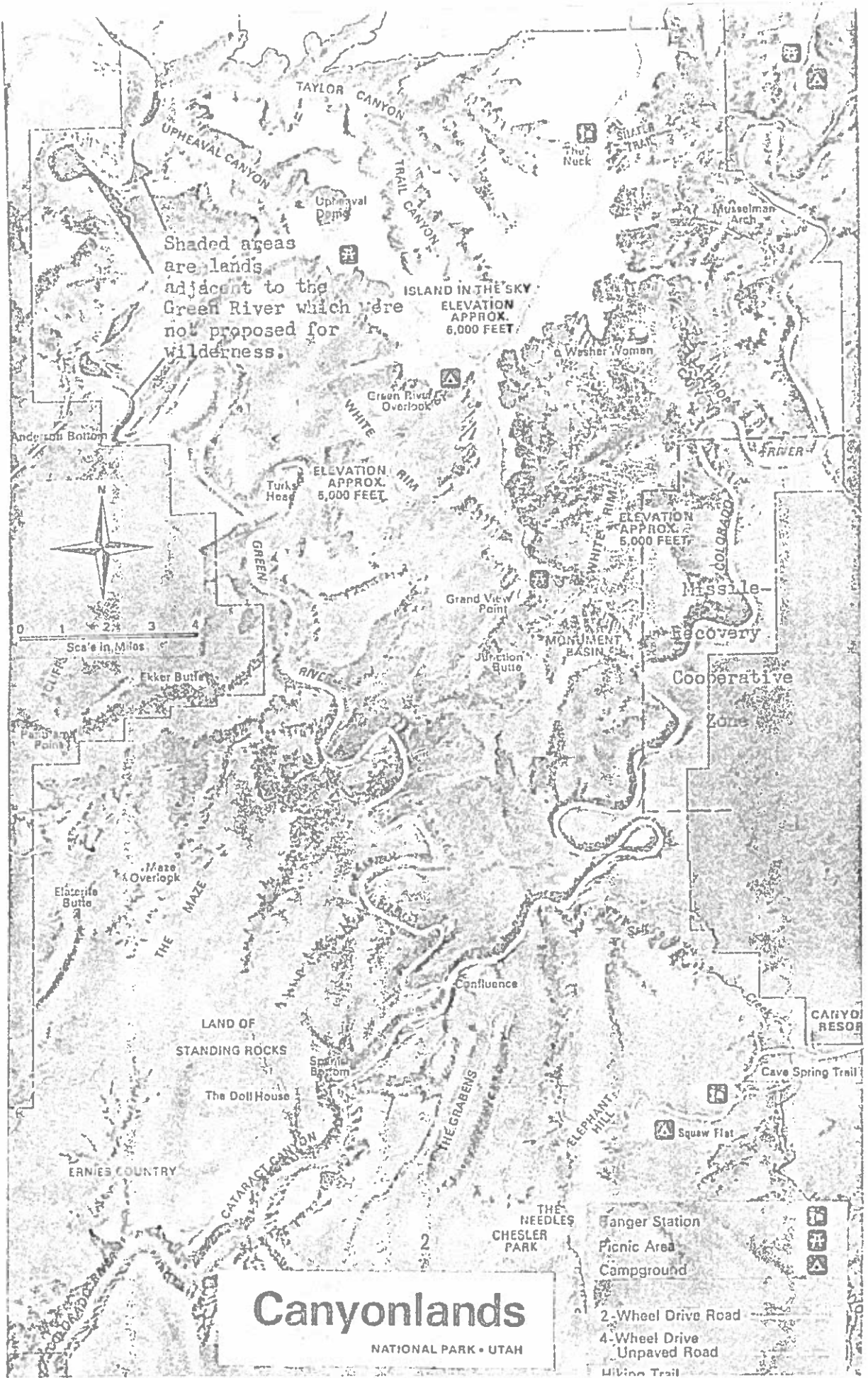
In addition to float trips bound for Cataract Canyon, other forms of boating occur on the rivers above the Confluence. These include private boating of various types, commercial boating tours, and a one weekend annual event, the Friendship Cruise.

### B. Physical Development

The rivers are almost entirely free of physical development excepting limited access via jeep and hiking trails. Anderson Bottom and other bottoms retain some evidence of past development by white man, such as farming, mining, and drilling. Such activity no longer occurs and the environment is slowly returning to its natural state. Some very minimal development will be allowed to remain at Anderson Bottom to serve the Friendship Cruise.

### C. Land Classification

How the rivers and the lands next to them are classified depends on Congressional approval of the Canyonlands National Park Wilderness Proposal. The Colorado River from the Confluence to the south park boundary is proposed for wilderness, and more than 90% of the land adjacent to the rivers is proposed for wilderness.

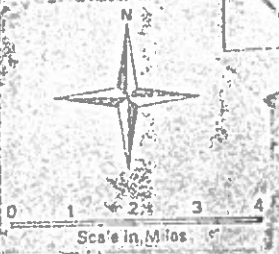


Shaded areas are lands adjacent to the Green River which were not proposed for wilderness.

ISLAND IN THE SKY  
ELEVATION APPROX. 6,000 FEET

ELEVATION APPROX. 5,000 FEET

ELEVATION APPROX. 5,000 FEET



# Canyonlands

NATIONAL PARK • UTAH

- Ranger Station
- Picnic Area
- Campground
- 2-Wheel Drive Road
- 4-Wheel Drive Unpaved Road
- Hiking Trail

## II. Management Objectives

### A. General Management

1. Operate and manage the river environment as an entity (sub-district, district, or special unit) within Canyonlands National Park, 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.
3. Limit administrative development to that which is absolutely necessary to protect the park resource and the park visitor.
4. Seek and maintain an open dialogue 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 with similar problems in order to get a more diverse input into river management.

### B. Resource Management

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 primitive 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 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.

### C. Visitor Use

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 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.

### III. Public Use

#### A. Statistics: Tables and Graphs

The visitation statistics are derived from three sources:

1. Cataract Canyon summaries. These figures were in turn derived from:
  - a. Commercial permittee reports, which are a condition of their permits.
  - b. Private party permits.
2. Commercial motorboat tour permittee reports (non-Cataract).
3. Boat registrations for the Friendship Cruise as received from the Canyon Country River Marathon Association.

These three sources present categories that were recorded as a required condition of Special Use Permits of various kinds. Data collection procedure is therefore standard and data is considered reasonably complete in each category of use.

Other river use occurred but was only partially recorded. That which was recorded included estimates and uncontrolled variables. This precludes using the data and it is omitted here for that reason. The data used is estimated to be 95% of the total actual use.

The earliest dates shown in the tables are the earliest dates for which the pertinent statistics could be found.

Table 1. Boat visits. Number of people visiting the park by boat or raft.

<u>Year</u>	<u>No. People*</u>
1968	3,506
1969	2,817
1970	3,802
1971	5,300
1972	4,780
1973	6,245
1974	5,571

\*Number of people is the total number tabulated from Tables 2, 3, and 4.

Table 2. Number of people through Cataract Canyon by year.

<u>Year</u>	<u>No. People</u>
1968	330
1969	585
1970	889
1971	1,670
1972	2,439
1973	4,422
1974	4,078

Table 3. Friendship Cruise, Memorial Day Weekend.

<u>Year</u>	<u>No. Boats</u>	<u>No. People**</u>
1966	581	2,324
1967	612	2,448
1968	529	2,116
1969	400	1,600
1970	495	1,980
1971	492	1,968
1972	484	1,936
1973	388	1,552
1974	384	1,536

\*\* The number of people has been calculated at 4 people per boat.

Table 4. Commercial Motorboat Tours (non-Cataract).

<u>Year</u>	<u>No. People</u>
1967	724
1968	1,060
1969	732
1970	1,113
1971	1,602
1972	581
1973	255
1974	157

Table 5. Comparison of Private and Commercial Use Through Cataract Canyon

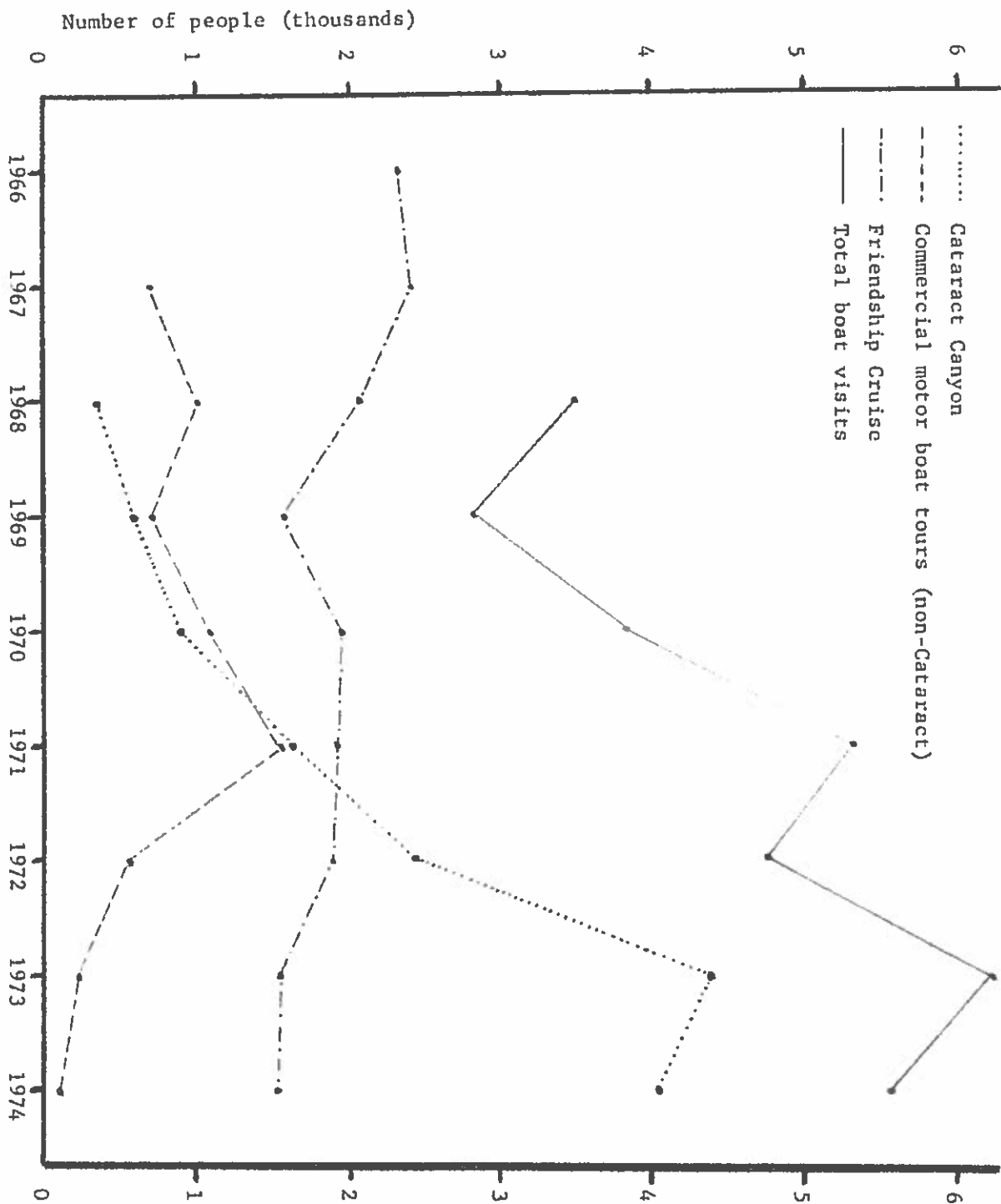
<u>Year</u>	<u>Private</u>		<u>Commercial</u>	
	<u>No. Trips</u>	<u>No. People</u>	<u>No. Trips</u>	<u>No. People</u>
1969	12	154	28	431
1970	15	174	--	715
1971	16	167	68	1,503
1972	13	147	129	2,292
1973	--	225	169	4,197
1974	28	311	214	3,767



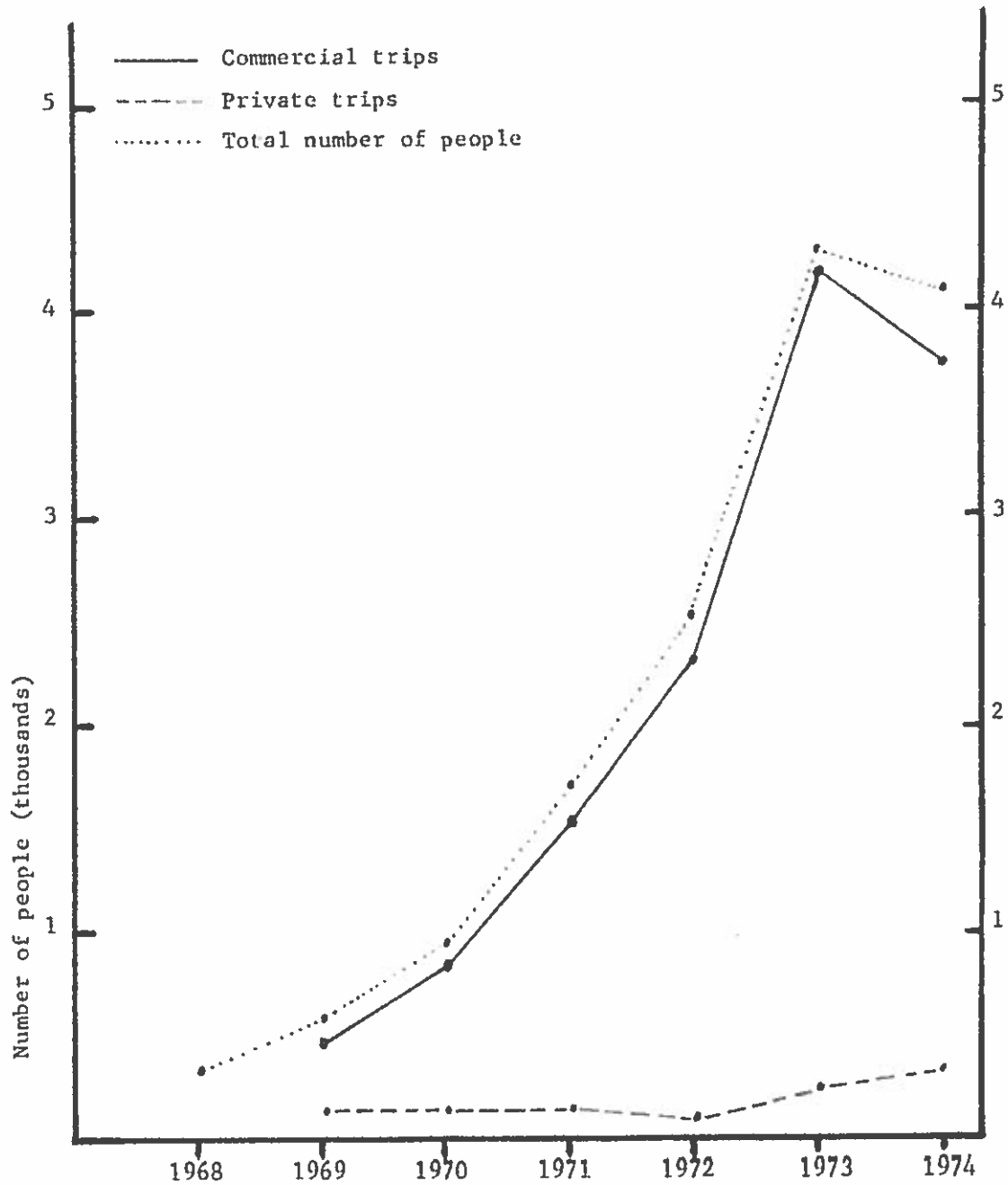
Table 6. Number of People Through Cataract Canyon by Month

<u>Year</u>	<u>Month</u>									
	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
1971	0	226	153	311	282	403	295	0	0	0
1972	48	93	330	374	679	575	301	12	17	0
1973	40	223	351	1112	1338	975	346	34	0	3
1974	12	103	364	1189	983	875	414	122	16	0

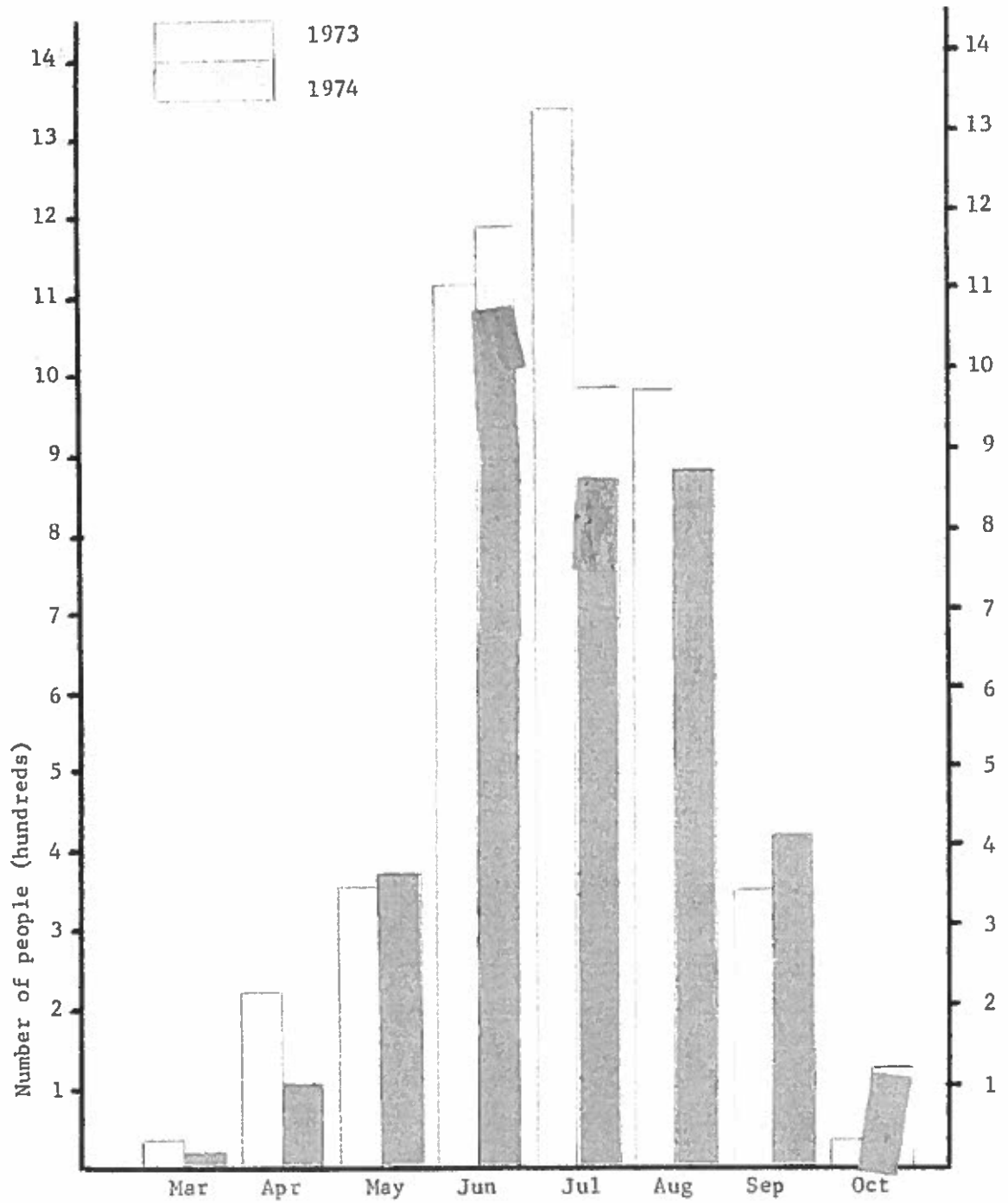
Graph 1. Visits by type of use



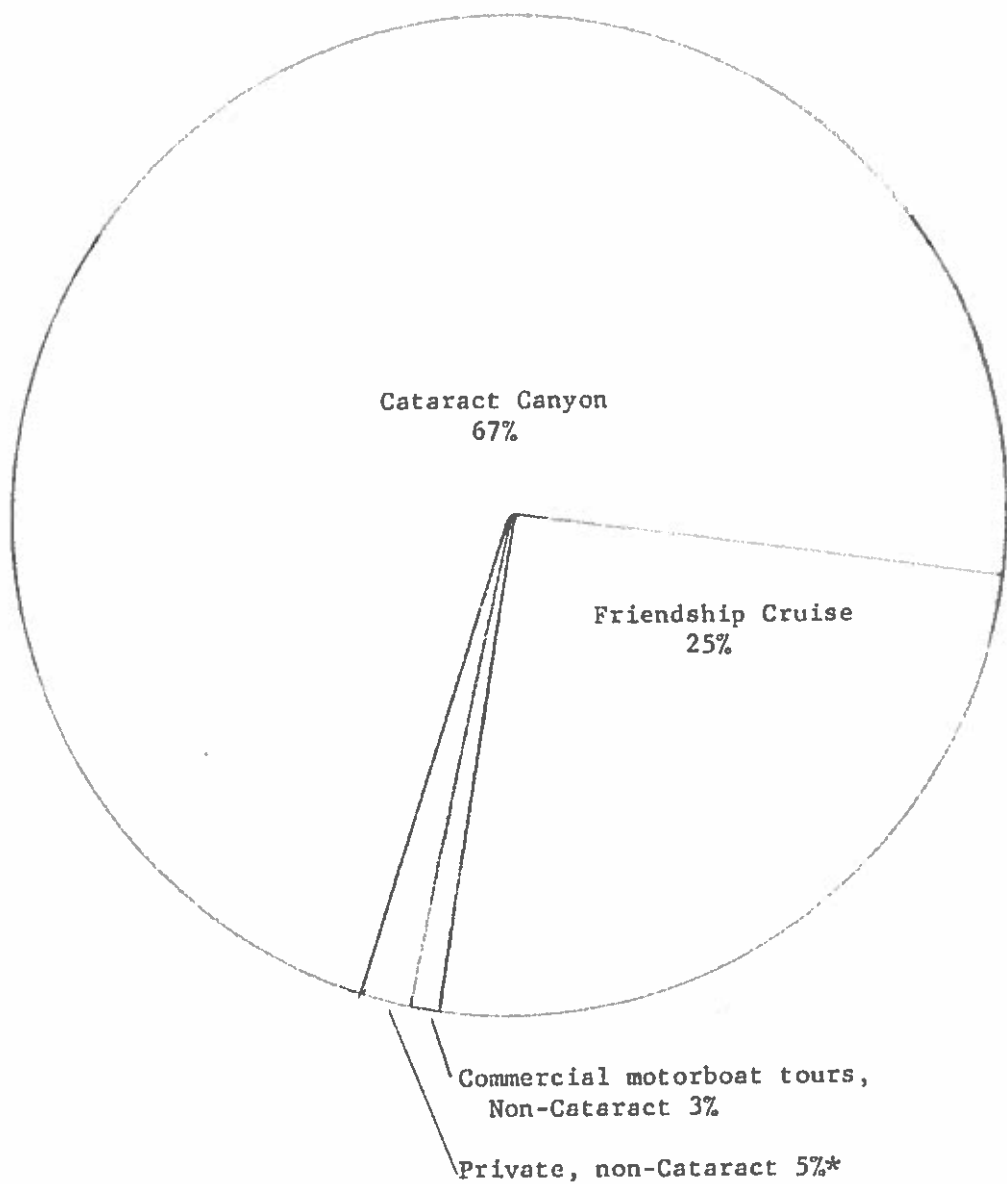
Graph 2. Number of people through Cataract Canyon by year



Graph 3. Number of people through Cataract Canyon by month



Graph 4. Types of use by percentage in 1974



\* This 5% figure is an estimate. This being so the other figures are rough percentages only.

## B. Types of Use

1. Whitewater float trips, the major part of river use (roughly 67% in 1974), is contributed by whitewater float trips. Length of the commercial trips varies from two to six days, with most of them being four or five days. Private trips are generally longer. While the rafts are on the river, the environment is subject to little or no adverse impact. Some small percentage of environmental impact occurs at hiking or sightseeing stops during the day. At the present time, impact at archeological sites is a major worry. At least some of the commercial outfitters seem to be very conscientious about preserving the ruins. Probably 90% of the environmental impact occurs at the overnight campsites.

Almost all trips utilize motors to some extent on the river system prior to entering Cataract Canyon. Within Cataract Canyon the use of oars without motors increases, but the percentages of motors versus oars is unknown at present, but can be determined by feedback from commercial and private party permittees. The Action Plan section of this document outlines a proposal to retrieve this information.

2. Commercial motorboat tours (non-Cataract) comprise roughly 3% of river use. Impact from visitors occurs at sightseeing stops. Very few of the tours stay out overnight. Almost all of these tours operate out of Moab on the Colorado River.

3. Private boating above the Confluence is an unknown quantity, probably in the vicinity of 5%. (Friendship Cruise not included.) The types of watercraft used include motorboats, canoes, kayaks, and inflatable rafts. Because of a lack of exit points below Gin Pole on the Green River and Lathrop Canyon on the Colorado, non-motorized craft often make arrangements for one of the commercial boat tour operators to retrieve their craft.

4. The Friendship Cruise is an annual boating excursion that takes place each Memorial Day weekend. The Canyon Country River Marathon Association sponsors the event. Route of travel is from the town of Green River down the Green to the Confluence and up the Colorado to Moab. All participating boats are motorboats.

This event placed roughly 25% of the total usage on the rivers in the one weekend of Memorial Day, 1974.

## C. Access

1. Access to the park via the rivers is essentially uncontrolled. Almost 100% of the river visitors utilize launching sites outside of the park. The principal sites are located as follows:

On the Green River:

Green River State Park  
San Rafael River

Ruby Ranch  
Mineral Bottom

On the Colorado River:

Moab  
Potash

2. Possible launch sites within the park are unimproved and accessible only by jeep roads:

On the Green River:

North boundary of the park  
Gin Pole

On the Colorado River:

Lockhart Canyon  
Lathrop Canyon

Currently these sites are not used for launching.

D. Influence of Public Use Outside the Park

The existence of outside-the-park influences is recognized, but little has been done to gather information or evaluate those influences. During calendar year 1975, such information will be gathered and evaluated by a person designated by the Superintendent.

Some of these areas of concern are:

1. Possible air and water pollution.
2. Dams on the rivers upstream.
3. Missile-recovery Cooperative Zone.

#### IV. Carrying Capacity

The number of people going through Cataract Canyon has increased about thirteen-fold since 1968. Had this trend been allowed to continue, severe ecological damage would have been sustained by the river environment. The increase in use was so rapid that time did not permit the establishment of a carrying capacity with scientific basis. No carrying capacity has been established. Instead, a ceiling on use and an allotment system have been put forward as a means of control until the park is able to establish a carrying capacity.

Research is now under way through an agreement with Utah State University that should enable the park to establish a carrying capacity. Refer to Section VIII., Research.

Thrust of concern on overuse is directed toward whitewater tours and Cataract Canyon, but because all of the river system is used by whitewater tours, the carrying capacity will apply to the entire river system within the park, regardless of type of use.



V. Other Factors Influencing River Management

A. Western River Guides Association, Inc.

The WRGA is an organization of river guides, outfitters, and boatmen who run whitewater rivers in the West. Their purpose is to:

1. Advance the general interests of its members.
2. Promote and safeguard the profession of guiding.
3. Advance safety on the rivers.
4. Promote the preservation of wilderness and wildlife areas of the western United States.
5. Promote legislation favorable to the best interests of members and oppose unfavorable legislation.

Almost all the Special Use Permittees are members of this Association and have major impact on river use.

Address: 994 Denver Street  
Salt Lake City, Utah 84111

B. Canyon Country River Marathon Association

The CCRMA was organized in 1957 by the Chambers of Commerce of the towns of Green River and Moab for the purpose of promoting boating on the rivers. Originally the Association sponsored an annual boat race, but the event has been discontinued. The Association sponsors the Friendship Cruise which has taken place each year since 1958 on Memorial Day weekend. The number of boats and people attending the Friendship are a major factor to be considered in river management.

Address: Box 105  
Moab, Utah 84532

C. Interagency Whitewater Committee

The IWC is composed of river managers from (1) Bureau of Land Management, (2) National Park Service, and (3) U. S. Forest Service. It was formed for the purpose of establishing and revising river management guidelines, and to maintain communications between managing agencies on river management problems and progress.

D. Private Permit Action Committee

This Committee was set up in 1974 to consider the welfare of the non-commercial river runner and to make recommendations on the same. Ten recommendations were submitted to WRGA and approved by the Board of Directors. The report was sent to the Interagency Whitewater Committee. Assistant Superintendent Thomas Hartman was a member of that Committee. See Appendix 1 for the recommendations.

E. U. S. Coast Guard

The USCG may become more involved in boating regulations, licensing, etc., as it relates to whitewater. What they do will have effects on river management and the commercial operator.

F. River Running Policy Statement

The Director's memo and policy statement dated August 20, 1974 outlines an interim policy for river management in the National Park Service. See Appendix 2 for the statement.

G. Commercial Permittees

There are 18 commercial permittees operating in Cataract Canyon and 2 which operate motorboat tours on the rivers outside Cataract Canyon. See Appendix 3 for listing of these permittees.

H. Professional River Outfitters

This is another organization of river runners similar to WRGA. Some of its members operate in Canyonlands National Park. To date, the park has had little or no contact with this organization.

Address: c/o Jack Currey, Chairman  
P. O. Box 6339, Salt Lake City, Utah 84106

I. Bureau of Reclamation

BOR, in operating its dams, modifies the natural flow of the rivers within the park.

J. Utah Division of Parks and Recreation

The Division of Parks and Recreation enforces the state laws governing river running in Utah and has input into the content of proposed laws and regulations which may be placed in effect by the legislature. See Appendix 13 for "Highlights of the Current Laws and Regulations" for Utah.

Address: 1596 West North Temple  
Salt Lake City, Utah 84116

## VI. Action Plan

### A. Agreement with Glen Canyon National Recreation Area

This river management plan also applies to that part of the Colorado River lying within Glen Canyon National Recreation Area and above Lake Powell. It does not apply to the lake or any other part of Glen Canyon National Recreation Area. This provision is made by mutual agreement between the Superintendents of the respective areas. Refer to Appendix 7 for copy of memorandums.

### B. Allotments and Limitations

#### 1. Review of past measures

When it became evident that overuse might endanger park resources, park management introduced controls on the use of the river system. Initially, the number of operators who could be granted permits was limited to 20 and the total number of passengers for all operators was limited to 10,000. This was placed in effect for the 1972 season. Because of the limitations, it was necessary to allot passengers to permittees. The allotments were made on an equal basis of 500 passengers per operator primarily because at that time there was little business history or any other considerations of past performance to serve as a rational basis for discriminating among operators. Moreover, actual usage was far below the initial limitation and the number of permittees likewise had not reached the limit of 20.

One permittee, however, was able to book more passengers than the then existing limitation of 500, and with informal park approval was allowed to carry 800 passengers in 1972 only. No other operator came close to his own allotment and total usage was far below the total limitation.

With a year's experience at Canyonlands and because environmental problems at Grand Canyon and on other river systems throughout the West, park management in December, 1972 reevaluated the total allowable commercial use of the rivers. Total allowable use was reduced from 10,000 passengers to 6,000 passengers. The number of operators was frozen at the existing number of 18. Allotments were reduced from 500 to 333 passengers. Because this allotment was smaller than the actual passengers carried by the largest operator in 1972, that operator was allotted two permits of 333 passengers each.

#### 2. Commercial allotments

a. The current allotment system remains unchanged. Each allotment limits the operator to 333 passengers per calendar year. With 18 commercial operators and 19 allotments (Canyonlands Expeditions has two), commercial use is limited to 6,327 passengers per calendar year.

b. Boatmen are not included in these limitations.

c. The number of allotments and the number of commercial permittees is frozen at the current level until a carrying capacity can be established. This hinges on the results of a river study now under way. See Section VIII. Research.

d. Transfer of an allotment or any portion of an allotment is prohibited without prior approval, in writing, from the Director of the National Park Service or his designated representative.

### 3. Allocation to the private sector

The total number of passengers, including boatmen, involved in private trips through Cataract Canyon each calendar year is limited to 333.

### 4. Passenger pool

Because all commercial permittees do not utilize their total allotment and some permittees desire an additional allocation, a passenger pool has been created for the redistribution of allocation surplus.

The redistribution will not affect the permittee's allocation for future years, nor will it form any basis for a claim for additional base passenger allocation in the future.

The passenger pool is a voluntary procedure and permittees are not required to participate.

#### a. Allocation status inquiry

The Superintendent shall, during May of each year, inquire of each permittee:

(1) Who will not use their full allocation and how many passengers they will make available for the pool?

(2) Who could use additional passengers and how many?

(3) Who plans to stay with their base allotment?

#### b. Method of redistribution

The passenger pool is the number of surplus passenger allocations turned in by the permittees for redistribution. If the passenger pool is adequate, all requests for additional allotments will be granted in full. If the pool is inadequate to meet all requests, the redistribution of available surplus will be divided equally among all requesting permittees, up

to the individual requests. If deemed necessary, a portion of the passenger pool may be allocated for private trips or vice-versa.

### C. Profiles on Commercial Operators

The park will develop a profile on each permittee. The following areas will be considered for inclusion in the profile: (1) history of the company, (2) why formed, (3) growth desired, (4) financial data, (5) insurance, (6) employee programs, (7) training, (8) equipment, (9) warehousing and other overhead, (10) sanitation methods and equipment, (11) safety records, (12) accident prevention programs, (13) emergency equipment and methods, (14) rates, (15) advertising, (16) operating programs, (17) past use, (18) trip size, (19) launching procedures, (20) typical schedules while on the river.

Other items may be considered for inclusion. Target date for completing profiles on all commercial permittees is December 31, 1975. Responsibility for assembling the profiles is assigned to the Assistant Superintendent.

The intent of the profiles is to assist the park administration in improving the river management program. Information not relevant to this goal will be excluded from the profiles.

### D. Permits

#### 1. Commercial permits: Cataract Canyon and motorboat tours

The sole purpose of Special Use Permittees in Canyonlands National Park is to provide the park visitor with services and accommodations otherwise unavailable, and necessary for the visitor's full enjoyment of the park.

a. No person shall conduct, lead, guide, or outfit a commercial river trip without a business permit, contract, or written agreement with the park. Such an agreement is required under Part 5, Title 36, Code of Federal Regulations before commercial or business activity can be conducted within the park.

b. Currently, there are 18 Special Use Permits issued for Cataract Canyon and two Special Use Permits issued for motorboat tours on the river system above Cataract Canyon. Refer to Appendix 3 for listing of permittees.

c. Transfer or assignment. The permittee shall neither transfer nor assign his permit, nor grant any interest or privilege therein without prior approval, in writing, from the Director of the National Park Service or his designated representative.

d. The Superintendent, through his designated representatives, will maintain a continuing inspection service to determine that the permittees are complying with all provisions of their permit

e. See Appendix 4, Whitewater Tours Special Use Permit Provisions, which is an attachment to the permittee's Special Use Permit. This attachment specifies, in addition to provisions discussed in this plan, other provisions not discussed.

f. Violation of any of the provisions of the permit by the permittee may result in any of the following actions by the Superintendent:

- (1) Limiting or reducing the number of passengers and/or trips into the park by the permittee.
- (2) Closing of areas to operation by the permittee.
- (3) Revocation of Special Use Permit.

g. Special Use Permits for whitewater tours shall be valid for the duration of one calendar year only and must be renewed each year.

## 2. Private trip permits - Cataract Canyon

a. A permit must be obtained from the Superintendent before any person conducts, leads, or guides a river trip through Cataract Canyon.

b. A private permittee is subject to all the regulations and provisions that are required of commercial permittees with the following exceptions:

- (1) A Utah Boatman's Permit is not required, provided other conditions are met regarding experience and competent leadership.
- (2) Insurance coverage is not required.
- (3) Any other provisions that could only apply to commercial operations. This would include rates, nondiscrimination hiring, etc.

c. A river trip is not commercial if:

- (1) There is a bona fide sharing of actual expenses.
- (2) The trip does not include any costs for payment of salaries or expenses of any person to help with the logistics of the trip.

Costs shared by the trip members may include the cost of damaged or lost equipment, renting or buying minor equipment needed for the trip, etc., but which will not result in amortization of equipment to the advantage of an individual or an organization.

d. As with the commercial permit, private permits are not transferable.

3. Private permits for river trips exclusive of Cataract Canyon

a. A permit has not previously been required for private trips on the park river system above Cataract Canyon. Beginning calendar year 1975, a permit will be utilized for this sector of river visitation, but it will not be mandatory.

b. The Canyonlands Backcountry Permit will be the permit used. See Appendix 5 for permit format.

c. The permit's purpose is not yet that of regulating use. Its function will be to gather and record pertinent data and to monitor river usage heretofore largely neglected.

d. Directions for using the permit are included in the Backcountry Management Plan, of which this plan is considered a part.

E. Operational Requirements: Cataract Canyon

1. Regulations

Proposed special regulations govern vessels and persons operating on the Colorado River system within Canyonlands National Park. Refer to Appendix 6 (Special Regulations, 36 CFR 7.95) for the complete proposal.

Other park regulations pertinent to visitor use of the river system are listed in 36 CFR 2 and 3.

2. Size of party

Groups are not to exceed 40 persons using any one campsite or facility at one time. This figure does not include boatmen.

3. Watercraft requirements

a. Rowboats of the Galloway-Stone, Cataract, Improved Cataract, Sadiron types, or variations will be approved if all other conditions are met.

b. Neoprene rafts and pontoons of the 10-man size (14 feet long X 7 feet across the beam) and larger will be approved if all other conditions are met.

c. Foldboats, canoes, kayaks, or conventional rowboats, or neoprene rafts smaller than the 10-man size must be accompanied by a qualified party using an approved neoprene raft or pontoon support boat. Specific written permission must be secured in advance from the Superintendent for trips using this type of watercraft.

d. Maximum loading capacity will be one person plus attendant gear not to exceed 600 pounds per air chamber.

e. All craft must be properly registered and display numbers and decals in accordance with applicable State and Federal laws.

4. Boatman qualifications

a. Leader. The boating party must be in the charge of a responsible leader who has good understanding of park rules and regulations, knowledge of the Canyon geographically, and sufficient previous experience on the Colorado River through Cataract Canyon to provide competent leadership necessary to conduct such expeditions. Private trip leaders may demonstrate experience on other whitewater than Cataract Canyon.

b. Boatmen and apprentice boatmen on commercial operations must have a valid permit from the State of Utah.

c. Private trip leaders and boatmen, to be considered, must have:

(1) Experience on any of the following western rivers:

Middle Fork, Salmon, Idaho  
Main Fork, Salmon, Idaho  
Grand Canyon  
Green or Yampa, Utah  
Gray or Desolation Canyons, Utah  
Stanislaus, California  
Rogue River, Oregon  
Cataract Canyon

(2) or must have a Utah Boatman's Permit.

5. Personal flotation devices

a. Each passenger must have a U. S. Coast Guard Type I personal flotation device, No. 160.002 or equivalent. One extra life preserver for every 10 passengers must be carried. Vessels carrying fewer than 10 persons must carry one extra life preserver.

b. They must be worn at all times while traversing the river.

c. Boatmen may wear special life jackets which allow freedom of movement necessary to their tasks. Such jacket must be U. S. Coast Guard approved and must be approved by Canyonlands National Park prior to the beginning of the season.

6. Emergency equipment



a. Each party should have scroll maps of the river or the U.S.G.S. topographic sheets of the following 15' quadrangles: (1) Orange Cliffs, (2) Needles, (3) Browns Rim, (4) Mouth of Dark Canyon.

b. First aid supplies will include a 24-unit first aid kit of the MSA, Johnson & Johnson type or equivalent. Kits must be available in more than one boat on multiple-boat trips.

c. Minimum emergency signalling equipment will include a signal mirror of the U.S.A.F. type and a set of panels 3 feet X 10 feet, one orange and one white.

d. A minimum of one extra set of oars - not paddles - must be carried on each boat or raft using oars. If a motor is to be used, a spare motor must be carried with each unit. A spare motor may be substituted for a spare set of oars.

e. If using neoprene rafts or pontoons, each unit must have: (1) one air pump, (2) an adequate boat patching kit, and (3) if a motor is used, an adequate motor repair kit.

f. Minimum escape equipment is as follows: (1) ropes, (2) maps, (3) canteens, and (4) a knowledge of escape routes.

g. Enough drinking water to insure one gallon per passenger per day must be carried in emergency situations.

#### 7. Environmental protection and sanitation

a. All applicable park regulations whose intent is protection of park resources must be complied with.

b. Cans, rubbish, bottles and other refuse may not be discarded in the water or along the shore of the river, or any other portion of Canyonlands National Park and Glen Canyon National Recreation Area. All trash and rubbish, or other materials must be carried out. Biodegradable liquid only may be disposed of in the same manner as human wastes.

c. Portable sanitary facilities must be carried and used. All accumulated solid human waste may be disposed of along the river by digging a pit above the high water mark and burying it so that not less than 24 inches of soil covers the waste. A preferred alternative, when possible, is to dispose of wastes in the park approved sanitary dumping station at Hite.

d. Public health standards. All food and water handling will conform with the guidelines contained in Appendix 8.

e. Fires. The permittee shall provide all campfire fuel from sources outside the park or shall utilize only drift-wood or tamarisk.

All fires will be left in a safe condition and preferably allowed to burn completely down to ashes. The ashes must then be carried out of the park areas or scattered in the main stream of the river current.

All fires must be built in a fire pan or blanket, or a similar system used to protect the sand bars.

8. Safety and inspections

a. Any incidents resulting in personal injury or property damage must be reported to the nearest Park Ranger. Unless previously reported, this must be done immediately following the conclusion of the trip.

b. Equipment used and services rendered shall at all times be subject to inspection by the Superintendent or his duly authorized representatives to assure that the operation is safe.

9. Reporting river usage; commercial

a. The permittee is required to inform the Unit Manager, Canyonlands National Park (1) of each trip seven days in advance of the trip, (2) of the dates and places of beginning and ending of the trip, (3) of the number, type, and size of boats, (4) of number of passengers, (5) of names of leaders and boatmen.

In the event a "walk-in" trip is put together, notice must be given before the trip leaves.

b. The permittee shall furnish monthly data on travel within the park no later than the 28th day of each month for the current month. Data sheet form submitted by the permittee is located in Appendix 9.

10. Reporting river usage; private trips through Cataract Canyon

A complete passenger list, including name, age, and complete address of all passengers will be provided to the park when permittee makes application for the permit.

11. Emergencies

a. The permittee shall do all within his power to cooperate with and assist the Park Service in emergency situations such as fire, accident, or search and rescue.

b. In the event of an emergency requiring helicopter evacuation, arrangements will be made for the rescue service by Canyonlands National Park and the outfitter shall assume financial responsibility for said rescue.

12. Motors versus oars

a. Motorized use. For the present, where motorized craft are presently used, there will not be a mandatory elimination of motors; nor shall there be an increase in motorized use and those people using motors shall be encouraged to voluntarily reduce that use.

There shall be no permanent decision made about motorized boating until additional data on safety and pollution has been obtained.

b. Information retrieval. Currently, the number of trips through Cataract Canyon using motors and using oars is unknown. Since the use of motors versus the use of oars is a controversial subject, we need to know more about it. If possible, a system will be initiated prior to the 1975 season that will inform us about the number of trips with motors and with oars, both in Cataract Canyon and above it. The retrieval system might be incorporated into the current reporting system we require for the permittee. If it is not possible to get a system in action prior to the 1975 season, it will be put into effect prior to the 1976 season.

F. Operational Requirements; Other than Whitewater Tours

1. Commercial motorboat tours. Refer to Appendix 10.
2. Friendship Cruise. Refer to Section VI. H.
3. Private use above Cataract Canyon. The user in this category is governed only by the Code of Federal Regulations. See Appendix 6 and 36 CFR 2 and 3.

G. On-Site Management and Protection

1. Organization

The river is managed as a part of the Island in the Sky District, but in essence functions as a separate sub-unit of the park.

2. Base of operations

The river operation operates out of the Island in the Sky District Headquarters.

3. Current staffing and funding

a. The Island in the Sky District Ranger manages the operation, but because this is only one part of his duties, his role is not reflected in the river funding.

b. The basic operation is staffed with one permanent GS-5 Park Technician and with one seasonal GS-4 Park Technician.

c. Funding is as follows:

(1) Salaries	\$14,648
(2) Supplies, equipment & other	<u>3,481</u>
(3) Total funds	\$18,129

4. Development

a. Signs. Permanent signs will be limited to (1) boundary signs on the Green and Colorado Rivers at the north boundary, (2) a warning sign at the head of Cataract Canyon in Spanish Bottom, (3) possible protective/interpretive signs at archeological sites. No boundary sign is currently contemplated where Cataract Canyon enters Glen Canyon National Recreation Area. Refer to Section VI. H. Friendship Cruise for other temporary signs.

b. A ramp at the north boundary on the Green River will be improved to a minor degree to facilitate putting-in and taking-out on the Green River. Administrative and emergency access is necessary for adequate river management, and park and visitor protection. The ramp will not be open to commercial operations.

c. Anderson Bottom. A minor amount of development will be retained at Anderson Bottom for operation of the Friendship Cruise. See Section VI. H. for details.

d. Vehicular and trail access

(1) Vehicles will have access to the river on primitive, mostly four-wheel drive roads at (1) Lockhart and Lathrop Canyons on the Colorado River, (2) Gin Pole and points north on the White Rim road on the Green River. Roads will continue to receive minimum maintenance.

(2) Maintained trail access is limited to (1) the Lower Red Lake Canyon trail and the Spanish Bottom - Doll House trail which meet the Colorado River just above the entrance to Cataract Canyon, and (2) the trail into Anderson Bottom from the Millard Canyon Benches. The rivers can be reached via foot travel at only a very few other points after arduous cross country travel.

e. Current plans call for maintaining development at its current state. An exception might be some expansion of the backcountry trail system which might reach the rivers in a few instances. No active plans exist at present for such trail expansion, however.

## 5. Equipment and facilities

a. Boats. The park has a 21 foot jet boat and a 19 foot Zodiac inflatable boat for river patrol above Cataract Canyon. The Zodiac could probably be utilized in Cataract in emergency situations. The Zodiac is powered by two 40 hp outboard motors.

For utility use there is a 14 foot aluminum skiff and a small aluminum john boat. The john boat is not considered safe except at lower river levels. The john boat is powered by a 6½ hp outboard motor.

b. Rafts. The park has three Green River rafts which are normally joined to form a triple rig, but which can be used individually as single craft. The triple-rig is the normal raft used in Cataract Canyon patrols.

c. Motors. There are on hand four each 20 hp outboard motors for operating the skiff and the raft. Two are assigned to the raft; one of them a spare. One is assigned to the skiff. The fourth one is a back-up motor. Two of the motors are old and need replacement.

d. Maintenance. A rough estimate of time spent on maintenance of equipment is 1/3 to 1/2 the total time available for the river operation.

e. Facilities. Work and storage space for the river operation were constructed at Island in the Sky in 1972 - 73. Total building space is 1040 square feet. The normal district maintenance function, which shares the same building, needs more space; and space is becoming cramped for the river operation in its quarters. This is due to the increased inventory of equipment since the building was constructed, the Zodiac inflatable boat being the primary addition since construction.

f. Vehicle. One vehicle, a 1/2 ton Power Wagon with winch, is assigned to the river operation during nine months of the year. At present, the cost of this vehicle is funded to the Island in the Sky District, but is not reflected in the funding listed on page 27.

## 6. Operational commitment

It should go without saying that the park's river operation must and will abide by the operating conditions required of commercial operators, except for commercial factors.

## 7. Patrols

a. Upper river system (non-Cataract). Two- and three- day patrols will be scheduled each week during the heavier use

season; June, July, and August. More infrequent patrols will be scheduled at other times. Schedules will provide for patrol coverage to alternate between weekends and weekdays.

b. Cataract Canyon. A minimum of three raft patrols will be made through Cataract Canyon each year. An optimum number of Cataract patrols is presently considered to be five.

c. During these patrols as much visitor contact as possible will be made. To the extent it is possible, contacts will be casual in approach with emphasis on interpretation of the river environment and its history. Inspections and necessary law enforcement are also functions of visitor contact and are not to be neglected.

d. Inspections will be made of all commercial and private parties encountered who are under permit to run Cataract Canyon. One complete and thorough inspection of each commercial permittee during each season will be the minimum goal. Should a permittee fail an inspection for any reason, he should be re-inspected as soon as possible to make sure he has made needed corrections. If the in-depth inspection is satisfactory, later inspections can be more brief and informal.

See Appendix 11 for the inspection checklist utilized. All inspections will be documented on this form. Disposition of copies is as follows:

- (1) One copy to trip or boat leader immediately after inspection.
- (2) One copy to the permittee.
- (3) One copy to the Unit Manager
- (4) One copy to river operation files (optional).

e. Backcountry permit. In order to obtain more accurate data, a backcountry permit will be issued to all river visitors contacted who are not operating under a Special Use Permit. Special effort will be made to make these contacts.

f. Special effort will be made to contact private trip permittees. As a group, private trips with or without a permit have a more adverse impact on the river environment than does the commercial permittee. Contacts should educate and inform, stressing preservation of the resource.

g. Data gathering. A clearly defined program will be developed for data gathering on the natural resources of the river and on human impact. The program will be developed prior to the 1975 patrol season. To be considered: water samples, adverse impacts, campsite conditions, sightings of bighorn sheep and other wildlife and natural phenomena.

#### 8. Launch site inspections

Each permittee will be inspected prior to launching at least once each season if at all possible. It would be preferable if the in-depth inspections mentioned in 7. d. above were performed at the launch site rather than on the river. Other criteria presented in 7. d. above apply equally here.

#### 9. Law enforcement guidelines

a. Casual contact should suffice in most cases to provide assistance to the visitor in complying with State and Federal boating regulations or with park regulations.

b. Violations endangering human life and limb may call for citation or arrest depending on the circumstances. Most other infractions can be handled by friendly verbal or written warning.

#### 10. Safety

Special emphasis is given to safety. Many of the conditions and requirements contained in this plan have been developed for safety reasons.

A written safety plan will be drafted during 1975. The plan should document river conditions and serve as a guide in minimizing safety hazards. Accident records will be maintained and safety inspections will be required by the plan.

#### 11. Emergencies

a. In the event of breakdown of visitor craft, the ranger making contact will radio headquarters and make arrangements for commercial assistance. Towing of visitor craft with a park boat is prohibited except to clear the channel or beach a disabled boat.

b. Transporting visitors in government craft is prohibited except in emergencies.

c. Every effort will be made to maintain Emergency Medical Technicians status for river rangers. Currently both river rangers are EMT's. Other EMT's are also available on the park staff. When EMT training is not obtainable, river rangers will be trained in Advanced First Aid through an American Red Cross course.

d. Each boat will carry adequate first aid kits and when finances permit, each EMT will be equipped with an EMT kit.

e. To facilitate emergency communications, a phone patch has been installed on the radio system at the Moab headquar-

ters. The primary purpose of the patch is to allow a person handling a medical emergency in the field to talk directly to a physician for advice and guidance.

f. An agreement has been made between the park and Moab physicians that allows park EMT's to seek and obtain medical advice and guidance in the handling of emergency medical situations. The physicians serve as Volunteers in the Parks under this agreement. See Appendix 14 for the memorandum of agreement.

#### 12. Reporting visitation

a. In line with General Management Objective No. 1, river visitation data will be submitted to headquarters on its own Monthly Public Use Report. River visitation will no longer be carried on the Island in the Sky reports. During those months when no river visitation occurs, a negative report will be filed.

b. Visitation via commercial permittees will be reported by them on a form provided by the Park Service. See Appendix 9 for a copy of the form.

c. Friendship Cruise visitation shall continue to be the number of boats registered. In the past the number of people has been calculated at 4 people per boat. If the CCRMA registers the actual number of people, that figure will be used. If not, the original calculations will continue.

d. Private visitation will be recorded on the backcountry permit (Appendix 5), or will be actual counts recorded in writing whenever permits cannot be issued.

e. No estimates on visitation will be included in official reports.

#### 13. Historic and archeological site survey

During 1975, a survey will be conducted and an inventory made of all known archeological and historic sites adjacent to the rivers. In addition to on-site search, checks will be made in district records and with persons known to possess the desired knowledge.

#### 14. Glen Canyon reports

The Glen Canyon Ranger stationed at Hite will check as many incoming raft trips as possible for permit compliance, number of passengers, etc. The information collected will be forwarded to Canyonlands National Park.



## H. Friendship Cruise

### 1. Introduction

The Friendship Cruise is an annual boating excursion that takes place each Memorial Day weekend. In 1974, 384 boats and 1,536 people made the trip from the town of Green River down the Green to the Confluence and up the Colorado to Moab.

Some of the boaters leave Green River early in the week, prior to the weekend, and enjoy a leisurely trip. The majority leave Green River sometime Saturday, camp one night on the river, and arrive in Moab on Sunday afternoon or evening. Roughly 100 boats and 400 - 500 people stop Saturday night at Anderson Bottom, where the boaters can attend a steak fry and western dance. The remainder of the boaters camp elsewhere up and down the river.

The "Cruise" is sponsored and organized by the Canyon Country River Marathon Association, operating in the park with a Special Use Permit from the Superintendent. Various parts of the operation are contracted out: rescue operations, gasoline and gas stop operations, vehicle transport, communications, etc. See Appendix 12 for a copy of the CCRMA Special Use Permit.

The only land based operation of the Friendship Cruise occurring within the park is the steak fry and western dance at Anderson Bottom. This operation has been handled by the Moab Junior Chamber of Commerce.

### 2. Anderson Bottom

The bottom was once a primitive farmstead and traces of that activity still remain. Because the Cruise pre-dates the park by several years, there was some development directly related to the Cruise. Much of the development has been removed, but much still remains.

a. Development goals. The current goal is to retain only three major items and to remove the remainder. To be retained are: the dance floor (concrete slab), water source (developed spring), and cave house (for storage of materials used at Anderson Bottom during the Cruise).

All other man-made items (farm machinery, vehicles, etc.,) will be removed. Aspect will be primitive, but development has excluded the bottom from proposed wilderness designation.

b. Clean-up project. A Student Conservation Association "Wilderness Group" is slated to clean up the bottom as indicated above under "Development goals." The group will be working on this project between April 23 and May 14, 1975.

### 3. Communications with CCRMA

Open channels of communication will be maintained between the Park Service and CCRMA. This must be done to (a) solve or prevent problems in connection with the Cruise, (b) reduce adverse impact upon the river environment, and (c) provide the visitor a quality experience in keeping with the natural resources of the park.

Such communication is of mutual interest to both parties. Currently communication is maintained by park personnel attending CCRMA meetings on a monthly basis.

#### 4. On-site operations

##### a. Supervision and coordination

(1) The Unit Manager or his designee has responsibility for the over-all operation and is directly in charge of land based phases of the operation at Green River, Moab, and elsewhere.

(2) The Island in the Sky District Ranger or other person as directed by the Unit Manager shall have responsibility for the on-site, river phase of the operation.

(3) Should any problems arise in connection with the CCRMA portion of the operation, members of the Board of Directors only should be contacted. Contact must be made through the Unit Manager or the District Ranger, Island in the Sky.

##### b. Information

(1) The CCRMA will stress in its literature and contacts the need for litter pick up, proper sanitation practices, and protection of antiquities.

(2) The Park Service will provide the CCRMA with informational handouts. These handouts will contain a map showing features and rest stops in the park and brief information regarding sanitation, litter, protection of antiquities, patrol activities and safety. These will be included in CCRMA mailings and will be handed out at their registration desk in Green River.

(3) A Park Ranger will be assigned at the Green River registration and launch area on the Saturday launch day for informational and other purposes.

##### c. Signs

Temporary signs only will be erected for the Friendship Cruise.

(1) Mile-marker signs at 10 mile intervals.

(2) Anderson Bottom locational signs and traffic control signs.

(3) Lower Unit Rock warning signs.

(4) Moab directional sign at the Confluence.

(5) Lathrop Canyon locational and rest facilities signs.

d. Sanitation

(1) The Park Service will provide CCRMA with sufficient plastic garbage bags for boater use. The CCRMA will number these with each registrant's number, hand them out at registration, and provide for their tally and collection at the Moab boat dock at trip's end.

(2) The CCRMA will make a point of asking each participant to voluntarily carry a Porta-Potti or similar holding facility for holding human wastes.

(3) The Park Service will provide temporary pit privies at Anderson Bottom and Lathrop Canyon and will sign these areas for recognition.

(4) The CCRMA is responsible for clean-up, litter policing, and hauling out of all trash at Anderson Bottom. The Park Service will provide trash bags at selected trash stations.

(5) The water reservoir at the spring must be checked and chlorine treated in advance of the Cruise.

e. Patrols

(1) Both boats, the "D. Julien" and the Zodiac will be utilized for river patrol.

(2) Patrols will stress general visitor contacts, safety checks, environmental inspections, and law enforcement.

(3) Patrols will have no set base of operations and will camp where ever the work day ends. Patrol patterns will be designated by the person in charge of on-site operations.

(4) Safety considerations dictate that two men man each boat if at all possible.

f. Anderson Bottom operation

(1) Manpower needed. If at all possible, one ranger will be stationed at Anderson Bottom beginning on the

Monday before the Cruise. In addition to providing protection, he will contact those boaters beginning their trips early.

One maintenanceman will be assigned over the weekend for sanitation and other duties.

Two rangers are adequate for the weekend assignment except that at least four should be on duty Saturday night only at the dance in the event disturbances occur.

(2) Facilities and equipment of note. A ranger station will be set up during the week prior to the Cruise. The station will be manned at all times between noon Saturday and noon Sunday. Eight pit privies and sufficient trash stations will be provided. The 14 foot skiff will be assigned to the Anderson Bottom operation.

(3) Interpretation. Little interest has been generated in this area in past years despite efforts in that direction. In an attempt to improve the situation, prior announcements will be made of intended programs in the CCRMA and park literature, and at the registration and launching areas at Green River. Interpretive efforts will include a guided walk and an evening camp-fire program.

(4) Patrols will be made as directed by the District Ranger with the emphasis placed on general visitor contacts, informal interpretation, safety, inspection of the area, and law enforcement as necessary.

Special attention will be directed to the dance on Saturday night to prevent or stop any disorderly disturbances.

(5) Anderson Bottom will be cleaned up completely and all temporary facilities removed or stored in the Cave House before the last Park Service person leaves.

g. Lathrop Canyon operation

(1) If possible, one ranger will be present beginning Saturday night. He will remain in the area through Sunday and Sunday night. Circumstances will dictate how long he stays in the area after that time.

(2) One pit toilet will be provided here during the Cruise. It will be removed within one week after the Cruise ends.

h. Boat rescue

Rescue of disabled boats is a function handled only by CCRMA through contract. Park Service boats are not equipped for this operation and will not engage in it.

i. Emergencies

(1) First Aid. Both patrol boats, the Anderson Bottom Ranger Station, and the Lathrop Canyon ranger will be equipped with adequate first aid kits. At least one patrol boat and the Anderson Bottom station will be equipped with a litter for emergency evacuations.

(2) The Island in the Sky emergency vehicle will be on standby for emergency evacuations.

(3) Currently, the two boatmen and one of the District's other rangers are trained Emergency Medical Technicians. Other park personnel are also trained should their assistance be needed.

(4) Boating and other accidents will be investigated and reported.

j. Post Cruise inspection

As soon as possible after the conclusion of the Friendship Cruise, an inspection trip will be made on the rivers by the Park Service in conjunction with the CCRMA. The inspection trip shall be a minimum of two days. Purpose of the trip is to pick up litter, dispose of human wastes, and assess the impact of the Cruise on the river environment.

## VII. Fiscal and Staffing Requirements

### A. Staffing

1. Current staffing
  - a. One GS-5 Technician, permanent.
  - b. One GS-4 Technician, seasonal
  - c. Total salary funded: \$14,648.00
2. Required staffing increases in priority order
  - a. One GS-9 Supervisory Park Ranger, permanent. \$14,000 per annum + 10% benefits: \$15,400.00.

Justification: In line with the management objective to manage the river environment as an entity within the park, it is necessary that one person give full time and attention to supervision and management of the river operation. Currently the operation is being supervised and managed by the Island in the Sky District Ranger. He cannot give the river operation his full time and attention; he has the remainder of his district to manage.

The scope of the river operation has grown tremendously since 1972 in an attempt to meet the rising tide of river visitation. In 1972, river patrols were extremely limited. One seasonal, part-time employee was assigned specifically to duties related to the river operation. In 1973, a full time seasonal was hired and he was assisted part time by a Student Conservation Aide. By 1974, a Part Technician was working full time on the river operation and was assisted by an eight month seasonal technician and in addition some assistance was provided by other seasonal employees. Patrols today are scheduled one per week during June, July and August and less frequent patrols are made in April, May, September and October.

- b. One WG-6 Maintenceman (boat and motor maintenance), seasonal. \$358.40 + 6% benefits for 18 bi-weekly pay periods: \$6,838.00

Justification: A rough estimate of time spent on maintenance of equipment is 1/3 to 1/2 the total time available for the river operation. This cuts into the actual patrol operation and limits potential patrol time available. In addition, the situation at present is such that equipment must often be operated when not up to standard. See Section VI. G. 5. for inventory of major equipment. Other minor equipment needed to support the major equipment must

also be maintained. The inflatable boat, the Green River rafts, and one 20 hp motor have been added to the inventory since 1972. Also, another patrol boat will be requested.

c. Two GS-4 Park Technicians, seasonals, for 17 biweekly pay periods: \$12,700.00.

Justification: It is felt that the number of patrols of various kinds should be increased to provide the added visitor and park protection necessitated by the increased visitation. The bulk of the visitation rise has occurred in June, July and August. These positions would help meet the increased needs generated during this time. Although a quantum improvement in patrols has been made during the past two years, standards still cannot be met in this area of operation.

d. Total staffing increases required:

(1) GS-9 Supervisory Park Ranger	15,400.00
(2) WG-6 Maintenceman, seasonal	6,838.00
(3) GS-4 Park Technicians, seasonals	12,700.00
(4) Total increases required	34,938.00

#### B. Facilities

Facilities required: One building for boating equipment storage and maintenance. Optimum size 36 X 80 feet (2880 square feet). To include four bays and minimal office space. Estimated cost: \$100,000.00

Justification: Currently the river operation is sharing building space of 1040 square feet with the district maintenance function and with the districts land based ranger operation. These operations have been expanding along with the river operation and require more space.

Even if the river operation alone occupied the 1040 square feet, space would still be inadequate. The river operation and the inventory of boating equipment have both grown over the past two years. In order to run an operation at optimum standards, more growth and expansion is necessary. Other parts of the operation cannot function properly without adequate facilities.

#### C. Major Equipment

1. One patrol boat. Type to be determined; perhaps a second inflatable boat powered by outboard motors. Estimated cost: \$6,000.00. Trailer for boat: \$2,000.00.

Priority: Not to be acquired unless manpower and facilities are available to assure adequate use, housing, and maintenance of the vessel. In overall priority it would fall after acquisition of:

- a. Supervisory Park Ranger
- b. Maintenceman
- c. River operations building

Justification: The number of patrols of various kinds need to be increased to provide the added visitor and park protection necessitated by increased visitation. To meet this need an additional patrol boat must be added to the existing inventory of two patrol boats.

2. Vehicle: One ½ ton Powerwagon with winch.

12 months rental	\$ 852.00
Mileage	<u>2,000.00</u>
Total vehicle increase required	\$2,852.00

Priority: With acquisition of Supervisory Park Ranger.

Justification: Currently one truck is assigned exclusively to the river operation nine months of the year. Other vehicles are "borrowed" from time to time as necessary. Borrowing strains other phases of the district operation. The river operation cannot be expanded any further without adding another vehicle.

D. Supplies and Equipment; Increases Required

Provided staffing and major equipment requirements are funded, it will be necessary to increase the funding for supplies and equipment. The increase needed is \$8,000.00.

E. Total Increases Required

1. Recurring increases

Salaries	\$34,938.00
Vehicle	2,852.00
Supplies and equipment	<u>8,000.00</u>
Total	\$45,790.00

2. Non-recurring funding required

Facilities	\$100,000.00
Boat	<u>8,000.00</u>
Total	\$108,000.00



## VIII. Research

### A. River Carrying Capacity

This project was begun in 1973 by Utah State University with initial support provided by the Canyonlands Natural History Association. In May, 1974 the University submitted a report, An Initial Effort in River Use and Management Research for Canyonlands National Park.

Progress on the project was primarily a space inventory conducted in 1973 and an exploration of the directions future research might take. The report recognizes that the output on the project was less than desirable owing to the limitation of research funds available.

In 1974 a research agreement was made between the National Park Service and Utah State University to conduct research on river carrying capacity in Canyonlands National Park and Dinosaur National Monument. Refer to Contract Number :12004B037.

The research project is viewed as a necessary step in determining the amount of public enjoyment the river system can accommodate without impairment of natural values. Results of the research should allow the park to establish a sound carrying capacity for the river system within the park.

The Service-wide River Running Policy Statement of August 20, 1974 directs that carrying capacity research be completed by December 31, 1977.

### B. Other Needed Research

#### 1. Endangered species

Two endangered fish species, Humpback Chub (Gila sypba) and Colorado Squawfish (Ptychocheilus incius), may still exist in park waters. Research is needed to determine if these fish are still present and, if so, to devise a program for their preservation.

#### 2. Beaver - willow- tamarisk ecology

Tamarisk is an invading exotic and may be supplanting native species, such as the willows, on which the beaver depends for food. Research is needed to determine the ecological relationships of this trio. If the results show that tamarisk is crowding out the willows and beaver, further research would be necessary to devise a way to reverse the process.

**IX. Review and Revision**

A critical examination of the river operation is an on-going program so as to identify and correct undetected or developing problems.

This River Management Plan will be reviewed at least once annually by the park administration and will be revised as required. The current revision is dated January 15, 1975.