

**U.S. Department of the Interior
National Park Service
Rocky Mountain Regional Office
Rainbow Bridge National Monument**

**General Management Plan, Development Concept Plan,
and Interpretive Prospectus**

June 1993

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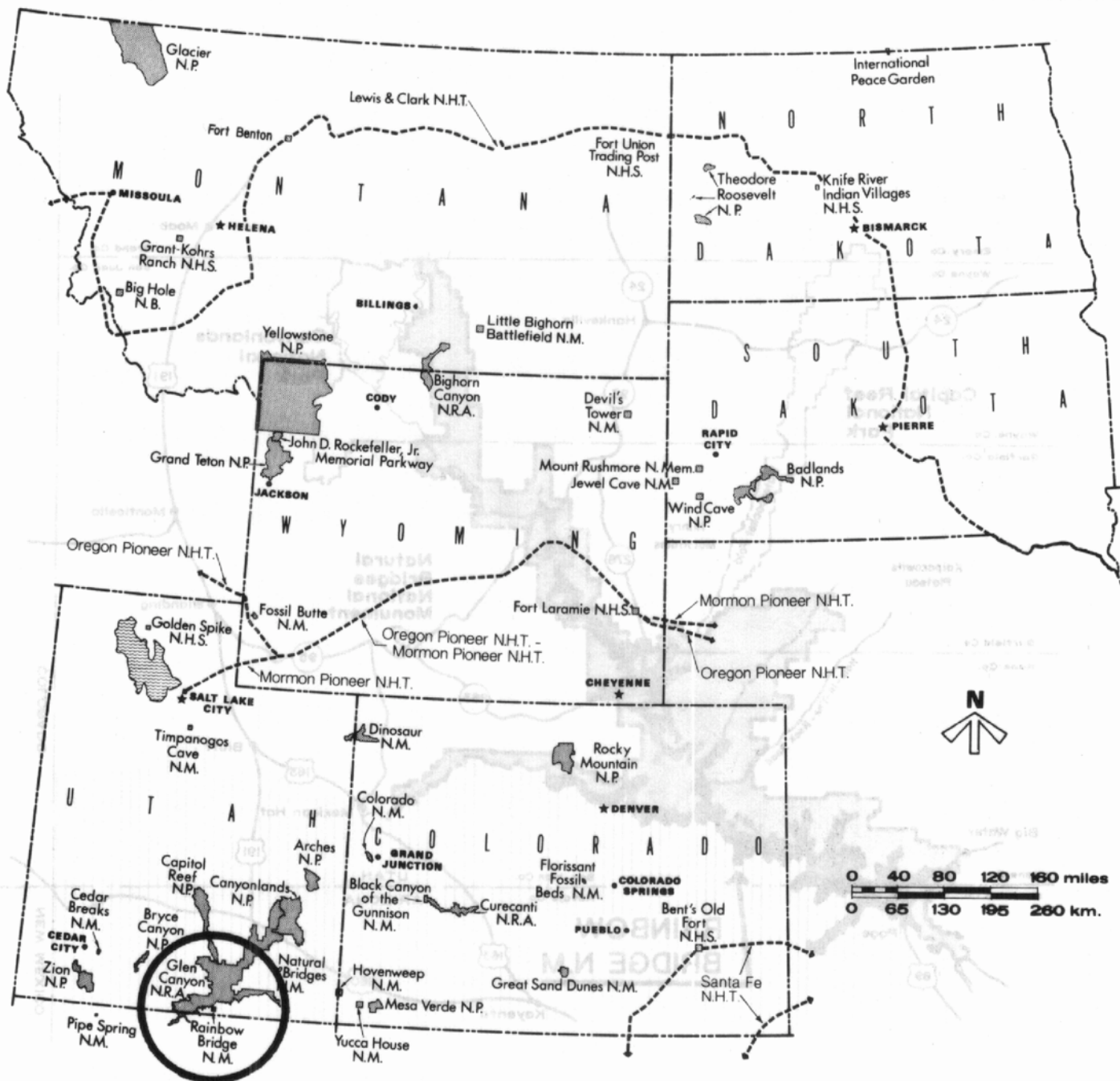
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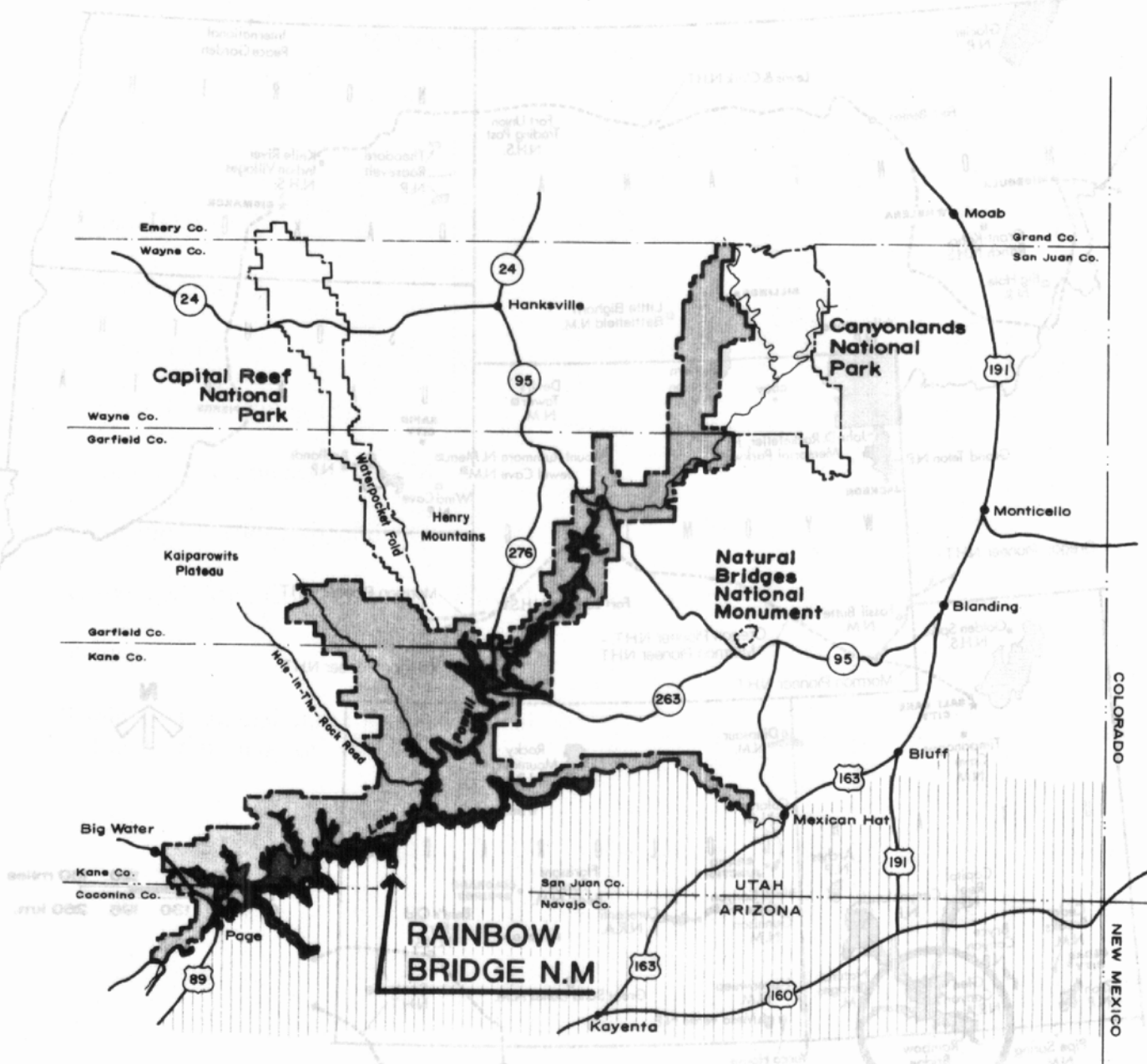
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
ROCKY MOUNTAIN REGION

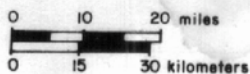
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LEGEND

-  Glen Canyon N.R.A.
-  Navajo Indian Reservation



VICINITY MAP

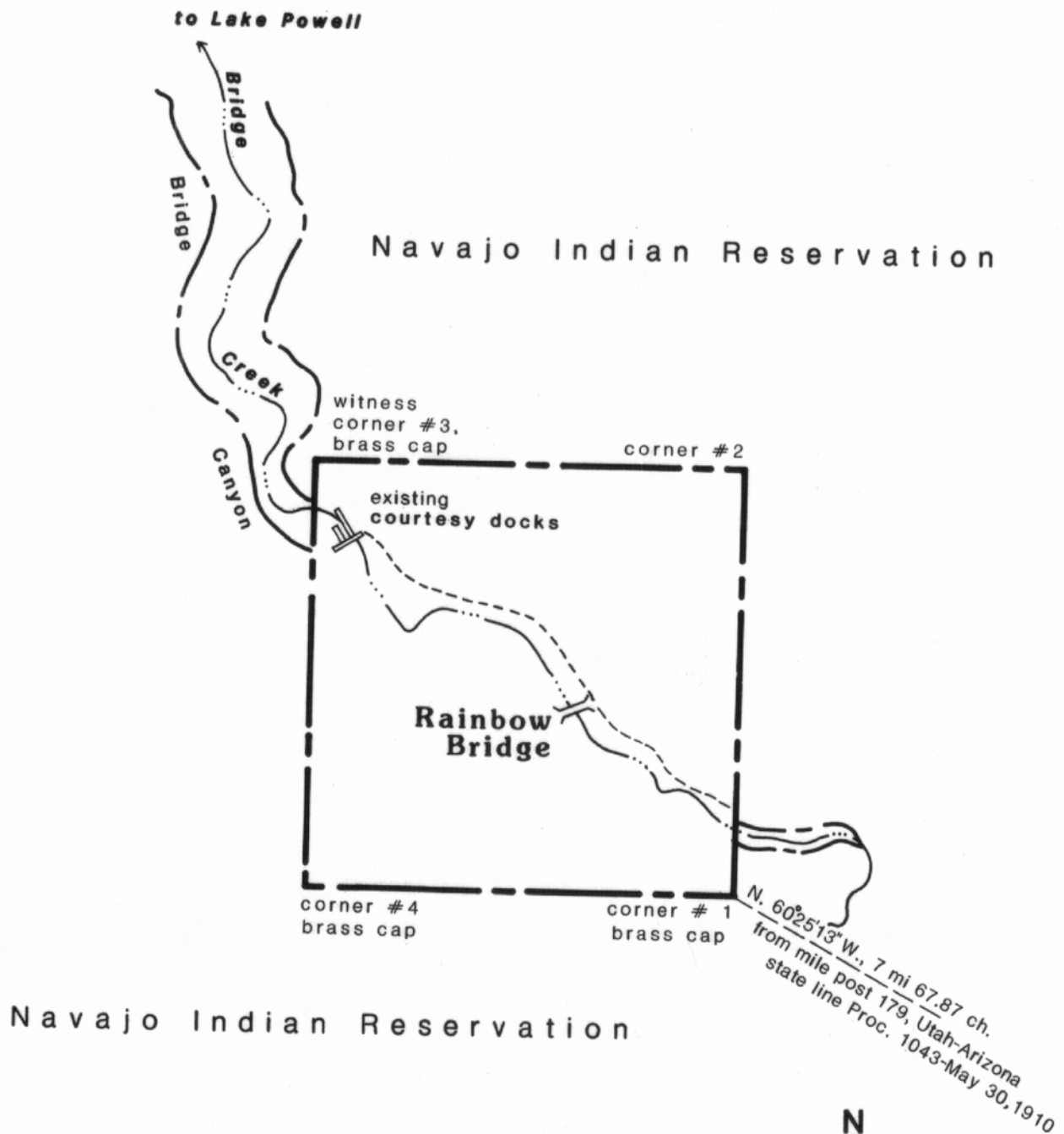
RAINBOW BRIDGE NATIONAL MONUMENT

UNITED STATES DEPARTMENT OF THE INTERIOR

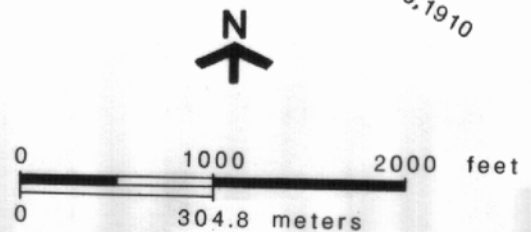
NATIONAL PARK SERVICE

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- legend
- — — monument boundary
 - — — Glen Canyon Canyon N.R.A. boundary
 - - - - - trail



Boundary Map

Rainbow Bridge National Monument

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GENERAL MANAGEMENT AND DEVELOPMENT CONCEPT PLAN

INTRODUCTION

This General Management Plan provides the National Park Service with direction for long-range management, development, and use of the Rainbow Bridge National Monument. The plan is based on the draft *Rainbow Bridge National Monument General Management Plan/Development Concept Plan/Resource Management Plan/Interpretive Prospectus and Environmental Assessment, October 1991*. The final plan displayed in this document responds to public input and comments on a second environmental assessment. Input was received during a 60-day comment period ending February 15, 1991. The plan responds to new issues identified when the draft plan was first published in September of 1990 and again when the plan and environmental assessment were reviewed in December of 1991. The plan addresses the issues of diverse public expectations, visitor experience, protection of natural and cultural resources, access, interpretive services, and facilities. The plan focuses on improvements to the monument, which respond to the planning issues identified during public review of the two drafts.

The final plan modifies the October 1991 proposal in order to reduce the cost of implementation and ensure the protection of Rainbow Bridge through adoption of carrying capacity limits for the monument. It also holds development at the monument to a minimum. The concerns for diversity of visitor experience, alleviation of crowding, and reduction in the high numbers of visitors accessing the limited area of Rainbow Bridge were also considered.

The Colorado River Storage Project Act (Public Law 84-485, 70 Stat. 105, April 11, 1956) changed the direction of access to Rainbow Bridge from land to water, connected it to the recreation area, and, in time, significantly increased visitation because of the easier access. Today's visitor is more oriented to water-based recreation and sight-seeing than to the special importance of the monument. Boat and visitor use have increased in an uncontrolled manner in the physically limiting space of narrow canyons. Modern-day uses of Lake Powell have evolved into unregulated urban/natural recreation experience for most visitors and have brought about current resource impacts. Management to protect resources and control visitor-use levels will be implemented as a result of this plan.

The plan provides a variety of recreational experiences and settings for visitors to the national monument. Management methods used to implement the plan will respond to the need to achieve use levels falling within the monument's natural, biological, physical, and social carrying capacity. A daily mix of visitor experience opportunities will be provided, including opportunities to experience the monument in relative quiet and tranquility. Visitor-use levels during the primary visitor season will be controlled by restricting access

to tours only during a portion of each day and by limiting the dock capacity for those portions of the day when private boats are allowed access. Interpretive services will use a variety of techniques depending on the management period. Developments will be limited to those necessary to meet basic visitor and resource protection needs. The plan allows for a flexible dock location, to adjust to fluctuating lake levels, and minimal development to maintain a natural setting. Developments will be sized, located, and designed to minimize intrusions upon natural, cultural, and social values.

OVERALL MANAGEMENT

The following management guidelines apply:

Inappropriate Visitor Uses

- Inappropriate visitor uses and activities will be prohibited in the monument. The following activities are not considered to be appropriate or compatible with visitor experience, visitor safety, and resource protection of Rainbow Bridge National Monument: water sports of any kind, camping, swimming, climbing, diving, sunbathing, hunting, fishing, overnight use, rock-throwing, feeding wildlife, and special events. Pets will also be prohibited. Monument memorials, except as specifically permitted by the National Park Service, will be prohibited. Commercial filming will be prohibited during the primary visitor-use season, however filming that is compatible with management goals will be allowed in the off-season.

Geologic Hazards

- Geologic hazards exist all along the entrance canyon to the monument from Lake Powell and at the Rainbow Bridge National Monument itself. Before entering the monument, visitors will be informed of the potential hazards of the monument area.

Long-Term Structural Stability of the Rainbow Bridge

- With the inundation of Lake Powell and the establishment of the Glen Canyon NRA, the long-term structural stability of Rainbow Bridge became a major issue. The Bureau of Reclamation (BOR) monitored Rainbow Bridge for stability from 1974 to 1984. The BOR report issued in 1985 summarizing the ten-year study indicated that no movement had been detected. Since this study, the BOR has continued the monitoring program using improved techniques.

Flash Floods

- Details of the Flash Flood Mitigation Plan are contained in appendix C. There are four components of the Flash Flood Mitigation Plan--a wayside exhibit, additional signing, evacuation and emergency preparedness procedures and a warning system. Wayside exhibit information will be provided that will reduce the flash flood hazard to visitors. Signs will alert visitors in the flood hazard zones where to move in case of a flood. Evacuation and emergency preparedness measures will be identified for the monument. A chain of command and responsibilities for specific actions will be identified. Emergency supplies will be stored at Dangling Rope and Rainbow Bridge. Supplies needed, their exact locations, and any necessary support facilities will be identified. A warning system that provides at least five minutes' warning will be installed. Within this time visitors could be expected to be evacuated to areas of safety. Visitors will be alerted to evacuate by warning devices at the dock and signing at land trails within the monument. Signs and warning devices will be sized, located, and designed to minimize intrusions upon natural, cultural, and social values. Ranger assistance will help ensure an expedient evacuation and greater assurance of success.

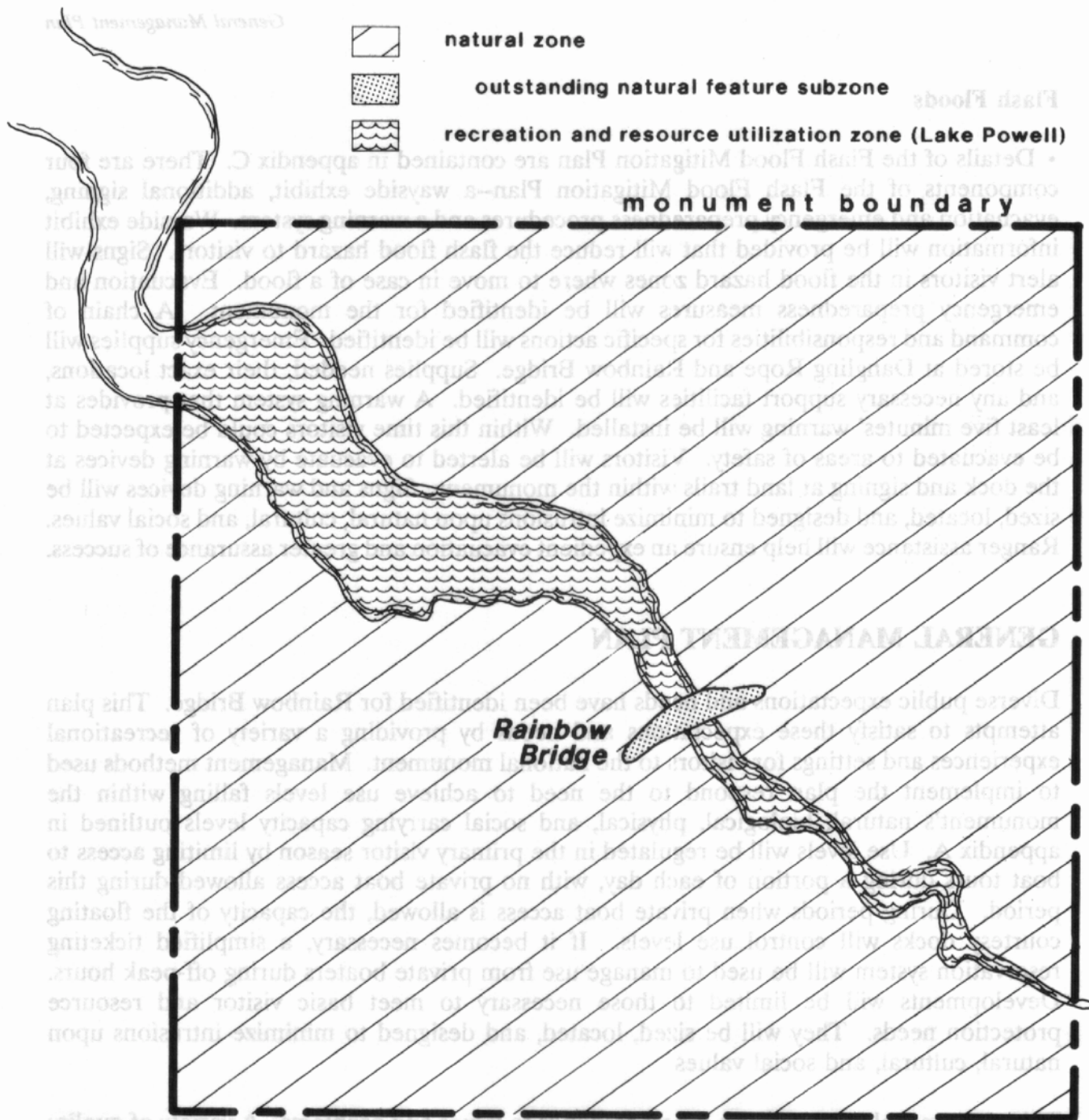
GENERAL MANAGEMENT PLAN

Diverse public expectations and needs have been identified for Rainbow Bridge. This plan attempts to satisfy these expectations and needs by providing a variety of recreational experiences and settings for visitors to the national monument. Management methods used to implement the plan respond to the need to achieve use levels falling within the monument's natural, biological, physical, and social carrying capacity levels outlined in appendix A. Use levels will be regulated in the primary visitor season by limiting access to boat tours during a portion of each day, with no private boat access allowed during this period. During periods when private boat access is allowed, the capacity of the floating courtesy docks will control use levels. If it becomes necessary, a simplified ticketing reservation system will be used to manage use from private boaters during off-peak hours. Developments will be limited to those necessary to meet basic visitor and resource protection needs. They will be sized, located, and designed to minimize intrusions upon natural, cultural, and social values.

This plan was selected because it best responds to issues and problems. A variety of quality recreational experiences will be provided; natural and cultural values will be protected; monument access will be managed to minimize safety concerns; and interpretation will convey to the visitor that Rainbow Bridge is a special place.

Land Use and Management

Management zoning shows the long-term allocation of the land resources within Rainbow Bridge National Monument. Two primary management zones are shown on the



Management Zoning Rainbow Bridge National Monument

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Management Zoning map on page 8 and are identified as follows: 1) a Natural Zone, which contains about 87 percent of the monument area or 139.6 acres, including an Outstanding Natural Feature subzone (0.4 percent of the monument area or 0.64-acre) and 2) the Reservoir Zone, which includes about 20.4 water surface acres to the mean high water mark of Lake Powell (elev. 3,711 feet) within the monument boundary, and which is about 13 percent of the monument area. This area can contain docking facilities during time of high water. The Recreation and Resource Utilization Zone in Glen Canyon National Recreation Area will contain a Development Subzone to accommodate Rainbow Bridge development during periods of low water.

The Natural Zone provides for the conservation of natural resources and processes, and accommodation of uses that do not adversely affect these resources and processes. The Outstanding Natural Feature subzone provides for public appreciation and interpretation of geological or ecological features possessing unusual intrinsic value or uniqueness. The Reservoir Zone is used for the major impoundment of Lake Powell, whose mean high waterline enters the monument's boundary on the northwest corner. The Reservoir Zone will include docks and related facilities required to provide water-based access to the monument. The Development Subzone in Glen Canyon National Recreation Area is land set aside to serve the needs of park management and visitors. This includes areas where park development and/or intensity of use alter the natural environment.

Land Protection/Adjacent Lands

Rainbow Bridge is surrounded by the Navajo Reservation. Trails through Navajo Mountain are used by the Navajos and others to access the monument. The National Park Service will continue its coordination with the Navajo Nation on use of lands surrounding Rainbow Bridge.

The plan will also modify management within Glen Canyon National Recreation Area by restricting use of Forbidding Canyon to ingress and egress to Rainbow Bridge. This will serve to improve safety, reduce noise, and bring visitor experience levels within acceptable limits of the carrying capacity. It is consistent with the management planning outlined in the *Glen Canyon NRA General Management Plan*.

Resource Management

The following strategies for natural and cultural resource management apply to this plan. Details of resource management are described in the Resource Management Plan (RMP), which is updated every two years. The RMP currently in effect was published with the *DGMP/EA* in December 1991.

Natural Resources. The following strategies apply to natural resources:

Long-Term Monitoring of The Monument. Under this plan, cooperation with the Bureau of Reclamation and long-term monitoring will continue.

Exotic Plant Management. Tamarisk, an exotic tree species, whose seed is widely dispersed by wind, threatens to change the character of the monument. This species in a mature state has the potential to influence the developing riparian communities in the monument. Also, it has the potential to alter the natural visual characteristics of the monument. Exotic plant management strategies will strive to eradicate tamarisk from visitor viewing areas through a removal program of cutting and treatment with herbicides. This will require an annual commitment as new plants germinate each year.

Human Impacts Management. Some areas of vegetation, off the designated path system, have been trampled by visitors. The existing trails are also heavily worn. Visitors use a network of paths and trails, established randomly from use, to view the monument area. Human impact management strategies proposed for the monument will provide interpreters to accompany all boat tour groups during their site visit; greatly reduce the numbers of visitors allowed during periods of private boat access; increase staff for interpretation, enforcement and litter management; provide a better delineated trail; restrict visitors to the trail system; discourage visitor use directly below the bridge; completely remove graffiti and restore vandalized rock facing; and institute a rehabilitation program for impacted areas.

Rockfall and Geologic Hazards. Exfoliating rocks falling from Navajo sandstone have created natural geologic hazard areas on the monument, which pose a safety threat to visitors. The water access through the narrow canyon entrance from the main part of Lake Powell is lined with vertical sandstone walls, which are potential geologic hazards. Large pieces of sandstone have been known to fall from the cliffs above into Forbidding and Bridge Canyon waters. Rockfall, where the existing dock abuts the shore, poses a potential threat to the safety of visitors. There is a potential for serious injury or death in the monument area as a result of falling rocks. Strategies to minimize the threat to visitors will move existing signs and interpretive area away from the rockfall area; locate structures, docks, and trails away from rockfall areas to the maximum extent possible; and inform visitors of the hazards before they enter the monument area. The Bureau of Reclamation will continue to perform annual rockfall inspections and the National Park Service will periodically authorize the reduction of high rockfall hazard areas.

Noise Management. There are three types of noise associated with the monument - noise from visitor activities, aircraft, and boats.

Visitor Noise. Each year thousands of visitors are funneled from dispersed recreation areas on Lake Powell to the confined 2,000-linear-foot walkway system at Rainbow

Bridge. Management of this concentrated use requires a different strategy than that used at Glen Canyon. First, visitation will be limited to the monument's carrying capacity, thus limiting noise and overcrowding. Second, interpretation will be used to inform visitors that the monument is special, one held sacred by the Navajo, and a unique natural wonder. The interpretive program will attempt to convey reverence for the uniqueness of Rainbow Bridge, help set it apart from the recreation area, and promote respect for it among visitors.

Aircraft Overflights. There are occasional scenic aircraft overflights of the monument. These overflights have been flown at 400-2,500 feet above ground level. Aircraft overflights can generate noise that interferes with visitor experience and appreciation of the monument. Noise monitoring and management strategies will evolve through continued cooperation with the FAA and the U.S. Air Force (as appropriate). This may include the establishment of additional altitude advisories or restrictions, designation of flight corridors or even the restriction of flights over the monument during certain times of the day or periods of the year.

Boat Noise. Boating noise will be decreased by greatly reducing the numbers of boats accessing the monument during the primary visitor-use season. By restricting access during a portion of each day to tours only, the total number of boats entering the monument will be greatly reduced. During times of low water levels, the dock placement will further reduce boat noise.

Unique, Rare, and Endangered Species Management. The monument will continue to be monitored for the presence of threatened and endangered plant and animal species. If any such species are found to exist, appropriate mitigation measures will be determined and implemented.

Cultural Resources. The following strategies apply to cultural resources:

Maintenance of Cultural Resources Sites. Cultural resources sites recorded in the monument area are being disturbed and damaged through unrestricted access by visitors. Visitors climb, touch, and deface petroglyphs with graffiti on canyon walls, causing some to have become degraded. The plan will increase the protection of these sites by providing access restrictions at the monument, providing interpreters to accompany all tour groups on the ground, greatly restricting use numbers during those periods that the monument is open to private boat access, restricting use directly under the bridge, and through better delineation of the trail.

Management of the Monument as a Traditional Cultural Property. A variety of measures has been incorporated into the plan as a result of consultation with American Indian groups concerning the traditional and religious significance of the site. Visitor-use levels will be limited to the monument's carrying capacity, and use

will be much more controlled due to an enhanced interpretive presence. Trail improvements will be designed to minimize their intrusion on the natural landscape. Visitor use will be terminated at the viewing area, 250 feet from the bridge, with visitors discouraged from entering the area directly below the bridge.

The daily mix of rural/natural and semiprimitive experiences that will be provided at the monument will provide enhanced opportunities to experience the natural quiet and tranquility of the monument, which may provide opportunities for traditional ceremonies.

Visitor Use and Interpretation

Experience Levels. (See appendix A - Carrying Capacity.) Management will strive to provide a daily mix of visitor experience opportunities during the primary visitor-use season. A daily window will be managed to help meet use demands and provide an opportunity for most visitors to see Rainbow Bridge. During this window a rural experience in a natural setting will result most of the time because of the presence of humans and encounters with groups.

During the remainder of each day in the primary visitor-use season, semiprimitive experiences will be provided where visitors have the opportunity to experience the quiet and tranquility of Rainbow Bridge. These conditions will also occur during the off-season the majority of the time.

Carrying Capacity. Specific results of carrying capacity analysis are contained in appendix A - Carrying Capacity. Carrying capacity numbers are not exact. They are an approximation of limits that will be approached under the prescribed management for the monument. But in general, the conditions described in appendix A will be met most of the time. When the national monument is managed for semiprimitive opportunities, capacity is estimated at 30-40 people at one time (PAOT). This estimate is based on management of the social setting necessary for natural quiet. When managed for rural opportunities, about 200 PAOTs could be accommodated at the national monument.

Access. During the primary visitor season, water access during the rural/natural window will be limited to boat tours. This will include a new tour that originates at Dangling Rope and is targeted to provide access for the recreational boater. Tours will be scheduled to ensure that the 200 PAOT level is not exceeded. Access during the semiprimitive use portion of each day will be limited to private boats (including rental boats). The private boats will be allowed access to the courtesy docks, which will be reduced in size so that they limit use to approximately 5-8 private boats at one time. Use will be controlled by limiting the dock space, and if necessary, through implementation of a ticketing or reservation system.

During the off-season, access to the monument will be unrestricted except that tours will be managed to ensure that no more than one tour boat at a time is present at the monument. The dock capacity will limit use of the monument to semiprimitive levels, except when tours are present.

Land access via the trails from Navajo Mountain will be maintained.

The hours of daily use partitioning (between tours and private boats), and the actual length of the primary visitor season, will be managed by the park superintendent based on resource protection concerns, changing visitor-use patterns, and operational issues. The objective will be to maximize the opportunities for each type of experience while providing the necessary protection.

Visitor access to the base of the bridge itself and to the area directly below the bridge will be discouraged, to respect the sacred nature of this area to American Indian groups, to allow for revegetation of this heavily damaged area, and to provide better protection against graffiti and other damage to the bridge itself. A variety of methods will be used to discourage travel below the bridge; including the trail design, signing, and interpretive presence at the monument.

Interpretation and Visitor Services. Details of the interpretive plan are described in the Interpretive Prospectus contained in appendix B. Interpretation will convey to the visitor that Rainbow Bridge is a special place, apart from the rest of Lake Powell. The monument's significance to American Indians will be conveyed. Interpretive services will vary according to the management of visitor experience level and method of access.

All boat tours to the monument will have an NPS interpreter on board who will accompany passengers to and from the bridge. Thus, all visitors to the monument in the daily rural/natural window will be accompanied by an NPS interpreter, with heavy reliance on these personal services to accomplish effective interpretation.

During the semiprimitive periods, when private boat access is allowed, personal services will be limited and more reliance will be placed on self-guiding brochures, wayside exhibits and other passive media to tell the interpretive story. This will allow visitors to experience the monument's natural quiet and beauty on their own. However, rangers will be present to answer questions and provide protection for the monument during heavier use times.

Concessions. Scheduling of boat tours will be coordinated by park management with the concessioners, to be consistent with the access restrictions and use levels described above. During the primary visitor season, tours will be scheduled to ensure that they arrive at the monument during the designated rural/natural window. Tours will be managed such that the total use at the monument does not exceed the rural/natural limit of 200 persons at one time. Tours from Dangling Rope to Rainbow Bridge will be provided on a regular schedule

throughout the rural/natural window. These tours will provide recreational boaters the opportunity to dock at Dangling Rope, take the round-trip tour to the monument, then depart Dangling Rope for their campsite or destination marina. Every effort will be made to manage pricing of these tours so that they are affordable for the recreational boater.

During the off-season, tours will be scheduled in such a way that no more than one tour boat at a time is present at the monument. Tours will be managed to maintain a semiprimitive experience at the monument as much of the time as possible during the off-season.

No specific restrictions are placed on the size of tour boats as long as the limits on use levels described above are met. However, the use of large tour boats may require that more than one ranger accompany the boat to enable the interpreters to adequately manage the ground tour at the monument.

Park Operations

Under the plan, full implementation will require 10.5 full-time-equivalent employees. Interpretation, security, fire, and emergency medical services (EMS) will be provided by the National Park Service.

Additional housing for this staff will be required, and would be at either Dangling Rope or Wahweap. The development concept plans for these areas would have to be amended to incorporate the additional housing and other support facilities required. Required housing would be built and maintained by the NPS.

The following are staffing estimates for full implementation of the plan. The estimate for interpreters to accompany the tour boats is based on current levels of tours and will have to be increased somewhat if the number of tour boats grew substantially.

Additional Staffing Required to Implement the Plan

Maintenance:

Trail maintenance

Tamarisk eradication

Flood monitoring/alarm system

Graffiti removal

0.5 FTE

Added housing and utilities (at Dangling Rope)

0.5 FTE

Resource Management:

Tamarisk eradication/graffiti removal

Vegetation rehab/increased monitoring

0.5 FTE

Visitor Protection:

Enforcement in the channel (no private boats) 1.0 FTE

Interpretation:

Interpreters on tour boats 7.0 FTE

Additional interpretive staff at monument 1.0 FTE

TOTAL 10.5 FTE

Estimated increased annual operations and maintenance associated with implementation of the plan are \$252,000 for salaries, and \$168,000 for materials, supplies, and fuel.

General Development/Development Concepts

The development concept plan shows general areas of visitor use for the monument.

Access. During the primary visitor season, water access will be restricted according to a daily partitioning of use. During a daily window (probably during midday), access will be restricted to tour boats. Visitor-use levels during this period will be higher, with 200 persons at one time allowed. During the remainder of each day, only private (including rental) boats will be allowed access to the monument. Use numbers during these periods will be restricted to provide a semiprimitive experience (30-40 PAOT).

During the off-season, water access to the monument will be basically unrestricted except that tours will be managed so that no more than one tour boat is present at the monument at one time. It is anticipated that visitor-use levels will be of magnitude that allow usually semiprimitive experiences.

Land access via the trails from Navajo Mountain will be allowed, except that no livestock will be permitted within the monument.

The actual length of the primary season will be managed by the superintendent to respond to changing visitation patterns. It is anticipated that under current conditions the primary visitor season would be defined as lasting from mid-April to mid-October. Similarly, the timing of the daily use partitioning during the primary visitor season will also be determined by the superintendent, to respond to operational and visitor-use needs, while providing a high-level of resource protection. It is anticipated that this window will be managed to fall within the midday hours.

The access restrictions will be communicated to the public through a sign at the mouth of Forbidding Canyon, signing at Dangling Rope, and on the courtesy docks within the monument, as well as extensive public relations and interpretive efforts. Enforcement of

the restrictions will be accomplished through ranger patrols within Forbidding and Bridge Canyons, the presence of a ranger on each tour boat and ranger presence at the monument.

Water-Based Facilities. The courtesy docks at the monument will be reduced in size to provide carrying capacity control during periods when access is open to private boats. The docks will be redesigned to accommodate only 5-8 private boats or 2-3 tour boats at one time. In addition, 1-2 spaces will be reserved for NPS use. Rest rooms will be maintained on the courtesy docks, but will be upgraded to improve their appearance and to reduce odor problems. Storage space may also be provided as part of this upgraded facility, as required.

The floating walkway will be retained and located as required to respond to fluctuating lake levels. A floating interpretive platform will be provided near the connection of the floating walkway to shore. This platform will provide views of the bridge at high water levels. Other interpretive waysides may be provided on the docks or floating walkway.

The water-based facilities will be sized, located, and designed to minimize intrusions upon natural, cultural, and social values. The floating facilities will be located as required to respond to fluctuating lake levels. Vertical elements of these facilities will be limited to those necessary for health and safety.

Land-Based Facilities. A modified trail system will be provided from the point at which the dock accesses land up through the monument to connect with the trail from Navajo Mountain. The portion of this trail system that is below the full pool elevation of Lake Powell (elev. 3,700 feet) will be surfaced with soil cement and constructed to a width of 8 feet. This portion of the trail will terminate at a viewpoint just below the high-waterline. A wayside will be placed at this location to point out the sacred nature of the site beyond that point. This wayside will be relocated to the floating interpretive platform during periods of high water. The viewpoint will be delineated using low rock walls and will be sized such that it can accommodate interpretive talks.

The portion of the trail from the high-water mark (elev. 3,700 feet) to a second viewing area approximately 250 feet northwest of the bridge, will receive only minor improvements to better delineate the trail, discourage off-trail use and provide maintenance of the tread surface. The trail width on this portion will be 6 feet and the trail will be dirt or aggregate surfaced. Aggregate will be imported for maintenance of the tread surface only if required to stop erosion of the existing dirt surface, and any aggregate used will be selected to closely match the color of the native soil.

The second viewing area will be located near the small wash that crosses the existing trail approximately 250 feet northwest of the bridge (before a visitor walking up from the docks reaches the bridge). This area will be located during the design process so that a minimum of disturbance to the soil and the natural environment is required. It will be surfaced with

the same materials used on the trail (dirt and/or aggregate) and will be delineated with low rock walls.

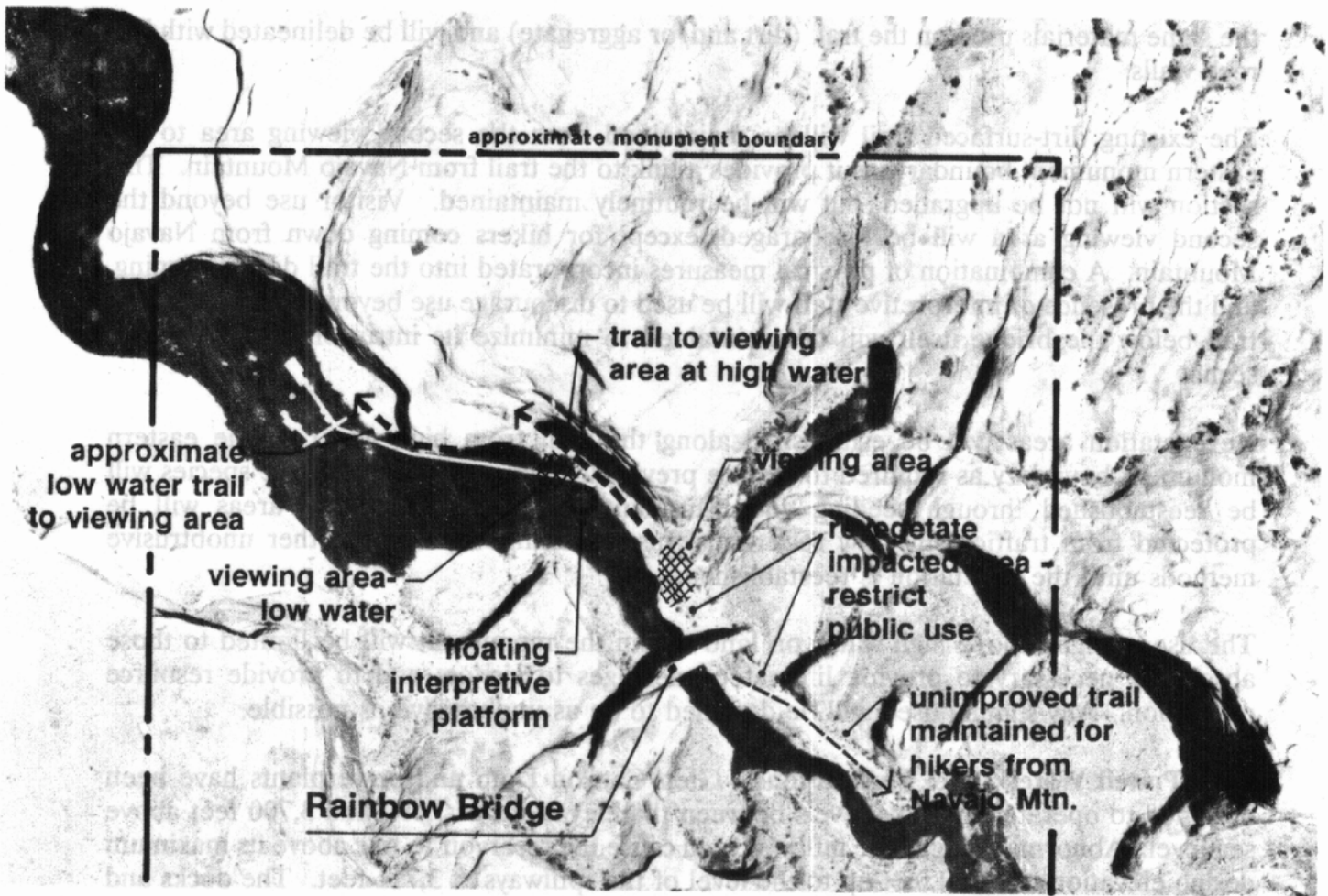
The existing dirt-surfaced trail will be maintained from the second viewing area to the eastern monument boundary, as it provides a link to the trail from Navajo Mountain. This section will not be upgraded, but will be routinely maintained. Visitor use beyond the second viewing area will be discouraged, except for hikers coming down from Navajo Mountain. A combination of physical measures incorporated into the trail design, signing, and the presence of interpretive staff will be used to discourage use beyond that point. The trail below the bridge itself will be maintained to minimize its intrusion on the natural scene.

Revegetation areas will be established along the trail from high water to the eastern monument boundary as required to restore previously damaged areas. Native species will be reestablished through seeding and transplants. These revegetation areas will be protected from traffic using low rock walls, rustic fencing, signing, or other unobtrusive methods until the vegetation is reestablished.

The use of signs above high water on land within the monument will be limited to those absolutely necessary to provide life safety messages to visitors and to provide resource protection. Any signing used will be designed to be as unobtrusive as possible.

Lake Powell Water Level Fluctuations. Glen Canyon Dam and powerplants have been designed to operate with lake levels between the elevations of 3,490 and 3,700 feet above sea level. Abnormally high lake inflows could cause the reservoir to rise above its maximum design elevation of 3,700 feet up to the level of the spillways at 3,711 feet. The docks and trail system at Rainbow Bridge will be designed to accommodate these widely fluctuating lake levels. As the lake levels recede, the floating docks and walkway will be relocated such that adequate water depth is provided for boat docking and an adequate shore connection point is provided. The trail will be extended within the lake fluctuation zone as required to provide access from the floating facilities. In many locations, this will follow the old trail that led from the Colorado River up to the monument.

The large quantity of silt that has been deposited at the location where Bridge Creek flows into Lake Powell creates unique problems at the connection point between the floating facilities and the land trail. Large silt flats that are difficult to cross with either floating walkways or trail construction are present at some lake elevations. Special construction techniques may be required to bridge these areas; such as stabilization fabric or matting, boardwalks, or a trail supported by the adjacent rock walls that make up the lakeshore. At some lake elevations, it may be infeasible to maintain access from the water, especially during the spring low-water periods.



Trail system at Rainbow Bridge will be designed to accommodate these widely fluctuating lake levels. As the lake levels recede, the floating docks and walkway will be relocated such that adequate water depth is provided for boat docking and an adequate shore connection point is provided. The trail will be extended within the lake fluctuation zone as required to provide access from the floating facilities. In many locations, this will follow the old trail up to the monument.

* aerial photo shows Rainbow Bridge at high water - elev. 3700'

The large quantity of silt that has been deposited at the location where Bridge Creek flows into Lake Powell creates unique problems at the connection point between the floating facilities and the land trail. Large silt flats that are difficult to cross with either floating walkways or trail construction are present at some lake elevations. Special construction techniques may be required to bridge these areas, such as stabilization fabric or matting, boardwalks, or a trail supported by the adjacent rock walls that make up the lakeshore. At some lake elevations, it may be infeasible to maintain access from the water, especially during the spring low-water periods.

Development Concept Plan Rainbow Bridge National Monument

U.S. Dept. of the Interior - National Park Service

Support Development Required at Dangling Rope. The establishment of tours originating from Dangling Rope will require the addition of facilities and supporting infrastructure at that location. The tour operation will require the construction of an area for ticket sales and passenger loading as well as additional courtesy docks for boat parking. Approximately 30-40 new courtesy slips are estimated to be needed. Additional housing will be required for the staffing (both NPS and concessioner) needed to implement the plan. As much of the housing as possible would be provided at other locations (mainly Wahweap), with the staff commuting up to Dangling Rope or Rainbow Bridge from those locations. It is estimated that three six-person dorms would be required for NPS housing. The utility systems at Dangling Rope will require expansion to accommodate the additional housing and facilities. The water system will require a second storage tank and an additional well, at a minimum. The electrical generating system may also require upgrades.

Development Costs, Phasing, and Major Equipment

The total cost along with implementation stages is shown in Table 1.

Additional Plans and Studies

The plan contains an estimated cost for construction of housing and utility upgrades at Dangling Rope and/or Wahweap marinas. A separate environmental document as well as development concept plan revision will be needed at these locations before these actions can take place.

Current ease of access from Lake Powell is the primary determinant of increased use at the monument. The Bureau of Reclamation is conducting an environmental impact study of existing conditions for the Glen Canyon Dam. The effects that fluctuating water levels at Lake Powell have on use at the monument need to be part of that study.

A program of visitor-use monitoring will be undertaken to answer several questions related to implementation of this management plan. How effective are the measures taken to discourage use below the bridge? How have these restrictions affected the visitor experience? Have the interpretive efforts to relay to our visitors the significance of the bridge to American Indians been successful? These questions (and possibly others) related to visitor access and use will be studied through visitor surveys and behavioral research.

Pursuant to the Endangered Species Act, the National Park Service requested a list from the U.S. Fish and Wildlife Service (USF&WS), of threatened and endangered species that

Rainbow Bridge National Monument - General Management Plan/Development Concept Plan

TABLE 1 - DEVELOPMENT AND EQUIPMENT COSTS

Equipment Needs	Cost/Unit	Unit	# of Units	Net Cost
Small Patrol Boat	\$35,000	Each	2	\$70,000
Subtotal				\$70,000
Item Description	Cost/Unit	Unit	# of Units	Net Cost
Implement flash flood plan	\$70,000	LS		\$70,000
Replace rostrums	\$150,000	LS		\$150,000
Dock modifications	\$10,000	LS		\$10,000
Wayside exhibits, signing, & video	\$102,000	LS		\$102,000
Trail improvements	\$60,000	LS		\$60,000
Floating interpretive platform	\$60	SF	1,600	\$96,000
Dangling Rope - tour boat staging platform	\$60	SF	1,600	\$96,000
Dangling Rope - courtesy docks	\$15,000	slip	40	\$600,000
Dangling Rope and/or Wahweap-Construct three-6 person dorms	\$119,000	Each	3	\$357,000
Dangling Rope - Upgrade utility system	\$300,000	LS		\$300,000
Revegetation	\$20,000	LS		\$20,000
Subtotal				\$1,861,000
Construction cost, material, and labor				\$1,861,000
Equipment Cost				\$70,000
Construction supervision				\$266,000
Facilitating administrative services				\$283,000
Project planning and advance planning				\$531,000
Total				\$3,011,000

CONSULTATION

During the preparation of this document the National Park Service consulted with the following organizations and individuals:

Advisory Council on Historic Preservation

Bureau of Reclamation

Glen Canyon Dam Office, Page, Arizona

Chamber of Commerce, Page, Arizona

Federal Emergency Management Agency

Denver Office, Denver, Colorado

Kane County, Utah

Building Inspector Office, Kanab, Utah

Midwest Archeological Center

National Park Service, Denver Service Center

Glen Canyon National Recreation Area

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Mr. Wayne Gardner, Chief, Branch of Planning

The Navajo Tribe and Chapter Houses

The Hopi Tribe

The San Juan Paiute Tribe

State of Utah

State Historic Preservation Office (SHPO)

State Travel Commission, Utah

U.S. Fish and Wildlife Service

Utah State Office

Pursuant to the Endangered Species Act, the National Park Service requested a list from the U.S. Fish and Wildlife Service (USF&WS), of threatened and endangered species that

might be affected by the plan. Impacts have been analyzed and the USF&WS concurred on June 15, 1990, with the determination of no adverse effect.

The National Park Service consulted with the Utah State Historic Preservation Officer (USHPO) and the Advisory Council on Historic Preservation in preparation of this plan, pursuant to the servicewide programmatic agreement (1990). The NPS requested that the USHPO make a determination of eligibility of Rainbow Bridge for the National Register of Historic Places as a site that has cultural significance based on its traditional and sacred values to American Indians. Research also indicated that many sacred sites in Bridge Canyon upstream from Rainbow Bridge are as important as the bridge itself. On March 17, 1992, the USHPO concurred with the recommendation that Rainbow Bridge is eligible for listing.

Public involvement for the project resulted from news releases and brochures describing the planning project and soliciting public input. The scoping brochure was released in December of 1988. Comment time allowed for public input on the initial issues outlined in the scoping brochure was 30 days. Responses were received and incorporated into planning for this project and were considered during the formulation of alternatives. Consultation with concessioners, the Navajo Tribe, and other federal/state agencies has also taken place. A summary of American Indian consultation is provided in Table 2.

In September 1990, the National Park Service distributed the *Draft General Management Plan, Development Concept Plan, Resource Management Plan, Interpretive Prospectus and Environmental Assessment (DGMP/EA)* for Rainbow Bridge National Monument. The DGMP/EA presented a proposal and three alternatives for addressing issues and mitigating impacts on the environment. Representatives of the National Park Service met with concessioners, the Navajo Tribe, and other federal/state agencies during the 90-day review period. A total of 86 comments were received.

As a result of substantive public comment, the National Park Service chose to reassess the range of feasible alternatives presented and reissue the DGMP/EA. This reassessment was released for a 60-day public review period on December 15, 1991, ending February 15, 1992. Representatives of the National Park Service again met with concessioners, the Navajo Tribe, and other federal/state agencies during the 60-day review period. This time, a total of 95 comments were received. The substantive comments on the *Rainbow Bridge National Monument General Management Plan/Development Concept Plan/resource Management Plan/Interpretive Prospectus and Environmental Assessment* along with the National Park Service's Responses are included later in this document.

TABLE 2 - SUMMARY OF AMERICAN INDIAN CONSULTATION

MEETING DATE	SUBJECT	REPORT DATE
December 20-21, 1988	Navajo Mountain Community interviews for the Rainbow Bridge Development Concept Plan	December 29, 1988
October 12, 1990	Meeting with Navajo Mountain Chapter Planning Board on the Rainbow Bridge National Monument GMP/DCP/RMP/IP and EA	October 26, 1990
November 9, 1990	Public meeting on the Rainbow Bridge GMP/DCP/RMP/IP and EA	November 26, 1990
November 24, 1990	Chapter Meeting-Navajo Nation	December 3, 1990
December 7, 1990	Public meeting-Navajo Mountain on Rainbow Bridge GMP/DCP/RMP/IP and EA	December 24, 1990
November 12, 1990	Trip to Rainbow Bridge NM--Chapter officials on site trip	December 3, 1991
January 27, 1992	Rainbow Bridge NM on-site visit with Navajo Nation-Window Rock officials	February 18 1992
February 2, 1992	Navajo Mountain Chapter planning meeting	February 5, 1992
February 3, 1992	Meeting with the Navajo Medicine Man Association regarding the Rainbow Bridge GMP/DCP/RMP/IP and EA	February 18, 1992
February 12, 1992	Navajo Mountain Chapter workshop: Rainbow Bridge GMP/DCP/RMP/IP and EA	February 25, 1992
April 20, 1992	Consultation with the Hopi Advisory Council on Rainbow Bridge planning: Leigh Jenkins, Director of Cultural Preservation Office-Hopi Tribe	Record of Call
January 29, 1993	Results of consultation meeting with Navajo leaders on Rainbow Bridge planning	February 19, 1993 May 20 1993

General Public

Comment: One letter was written to support alternative A and state that the proposal is overly expensive. It also suggested that additional NPS staffing could resolve most of the problems at Rainbow Bridge.

Response: Alternative A was not chosen because it did not adequately address protection of resources at Rainbow Bridge. The final plan reduced the cost of implementation by a third.

Comment: The plan should provide a window of time during each day in the busy season for as many visitors as possible to see the bridge.

Response: The final plan is designed with a daily window of rural/natural experience, which allows a large number of visitors to see the bridge in a group setting. Limiting this window to tours allows for better scheduling and management of visitors in this period.

Comment: Require all large (longer than 30 ft.) private boats to stop at a dock in Forbidding Canyon and provide a shuttle to ferry their passengers into the monument.

Response: This approach only solves a portion of the problem at Rainbow Bridge and does not address carrying capacity.

Comment: Methods used to control tamarisk must consider their effects on wildlife and its habitat. Interpretive programs should include educating the public on wildlife in the area (one letter).

Response: The impacts on wildlife habitat will be considered in designing a tamarisk control program. The flora and fauna of the Colorado Plateau is one of the themes included in the Interpretive Prospectus.

Comment: Removal of graffiti on rock surfaces should be done carefully to insure that no rock art is damaged in the process.

Response: Techniques for removal of rock graffiti will be designed and carefully monitored to insure protection of all rock art.

Comment: Shuttle and tour boats should be the only boats to use Forbidding Canyon. A fee should be charged to access Rainbow Bridge.

Response: The plan has been revised to only allow tour boats access to the monument during peak visitations times. All tours will have a fare, possibly including a fee for interpretation.

Comment: Visitation to the monument should not be reduced or controlled. Several of the letters also said that access to the monument by private boats should not be restricted.

Response: The management problems at the monument cannot be resolved, nor can its resources be protected, without limiting visitation to its social and biological carrying capacity. The revised plan still allows private boat access to the monument during many times of the day and seasons of the year.

Comment: There should be no restrictions on visitation. Also, the proposed plan is too expensive to implement.

Response: The no-action alternative does not address the resource management problems at the monument. Revisions in the final plan (deleting the proposed reservation and shuttle systems) greatly reduce the cost to implement the plan.

Comment: Many respondents felt visitation should be limited to 40 people at one time at all times of the day. Others felt that a rural/natural window allowing 220 people at one time would be acceptable, as long as it were limited to no more than 4 hours per day. Some objected to wording in the plan that said carrying capacity could be exceeded occasionally. The respondents suggested that all tours be scheduled at fixed times around midday, so that private boaters would have the opportunity to schedule their visits around the tours. Several of the letters also said that the trail should only be improved using native or natural-appearing materials.

Response: The plan has been modified in several ways to respond to these comments. Access by tours and private boaters has been entirely segregated to eliminate the conflicts between these two user groups. Limiting access to tours during the rural/natural window provides a better control over carrying capacity, thus the wording about exceeding the capacity has been removed. The design of the trail and viewing areas above high water have been changed to use native or natural-appearing materials.

Comment: Visitation at any one time should be limited to as low a number as possible (20 or less).

Response: Such severe restrictions would prohibit the majority of people from having the opportunity to see the bridge. The plan offers a better balance of use and preservation.

A total of six letters were received related to the monument's status as a traditional cultural property. Four were from American Indian groups, one was from the Advisory Council on Historic Preservation and one was from the Utah State Historic Preservation Office. The detailed comments and our responses are listed below.

January 7, 1992, letter from the Advisory Council on Historic Preservation.

Comments: The letter states that the NPS must complete a Determination of Eligibility for Rainbow Bridge as a traditional cultural property. The effects of the proposal and alternatives on cultural resources cannot be completed, nor a FONSI signed, until this determination is complete.

Response: The NPS submitted documentation to the Utah SHPO supporting the eligibility of the site as a traditional cultural property. The Utah SHPO concurred with the site's eligibility for the National Register of Historic Places.

March 17, 1992, letter from the Utah State Historic Preservation Office.

This letter concurred with our determination of eligibility for the monument as a traditional cultural property, as discussed above.

January 7, 1992, letter from the Navajo Nation, Historic Preservation Department.

Comment: The proposed plan will allow too many visitors at one time into the monument, which will disrupt traditional Navajo religious uses of the monument.

Response: The plan has been designed to provide a daily mix of opportunities at the monument, including both semiprimitive and rural/natural experience levels. The daily semiprimitive periods may provide opportunities for the Navajo people to practice their traditional religious ceremonies. In addition, the off-season will provide extended periods of semiprimitive or primitive experiences.

In the case, *Lamarr Badoni, et al. v. Keith Higginson*, the United States Tenth Circuit Court of Appeals in 1981 ruled on a very similar argument brought forward by members of the Navajo Tribe concerning Rainbow Bridge. The court ruled that for the NPS to exclude or regulate visitation to Rainbow Bridge for the purpose of allowing religious ceremonies to take place in private would conflict with the agency mandate of providing for the public

enjoyment of the parks and would be a violation of the Establishment Clause of the First Amendment to the Constitution.

Comment: All visitors to the monument must be accompanied by a Navajo guide.

Response: The plan has been modified to provide NPS interpreters on all tour boats, and to restrict visitation to tours for portions of each day, with the result of providing a higher level of personal interpretation to monument visitors. The NPS, through its affirmative action plan, will attempt to insure that its interpretive work force reflects the cultural diversity of the local area and to hire qualified Navajos for interpretive positions. However, we cannot restrict hiring for these positions solely to Navajos.

Comment: Boat access to the monument should only be by shuttle (no private boat access).

Response: The final plan responds to this comment by restricting access to the monument to tours only during substantial portions of each day during the primary visitor-use season. This will result in a much more controlled pattern of use and will greatly reduce boat noise during these midday periods. However, greatly limited access by private boats is allowed during early and late periods each day to give some opportunity for these users to visit the monument in their vessels.

Comment: Days should be set aside for no tourists, preferably more than one a week.

Response: The intent of this comment appears to be to provide for religious ceremonies in private. This is exactly the issue put forward in the previously cited Appeals Court case (*Badoni*) and the court ruled that for the NPS to exclude visitors from the monument for the purpose of allowing religious ceremonies would violate the First Amendment Establishment Clause.

Comment: A determination of eligibility as a traditional cultural property needs to be completed before a Finding of No Significant Impact is issued.

Response: The determination of eligibility has been completed, as discussed above.

January 30, 1992, letter from the Hopi Tribe, Cultural Preservation Office

Comment: The Hopi Tribe requests consultation in the event that any archeological sites or human remains attributed to prehistoric peoples, are impacted, and mitigative measures are being considered.

Response: The NPS will conduct the requested consultation.

Comment: The Hopi Tribe considers Rainbow Bridge to be a sacred place, which is represented in present-day clan ceremonies. The Hopis want to be included in consultation on the management and interpretation of the monument.

Response: The NPS will include the Hopi Tribe in consultation concerning Rainbow Bridge.

Letter from Mr. Jack Owl, Sr., a member of the San Juan Paiute Tribe

Comment: The letter generally supports the proposed plan and asks that the San Juan Paiutes be included in consultation concerning management of the monument.

Response: The NPS will include the San Juan Paiute Tribe in consultation concerning Rainbow Bridge.

Navajo Mountain Chapter Resolution dated February 15, 1992

Comment: The trail should stop at least 75 to 150 yards north, away from the proposed congregating site (where Willies Grayeyes was standing in the slide photo).

Response: The plan has been modified to respond to this comment. No concrete or other materials will be used to harden the trail's surface above high water. It will be surfaced with dirt or aggregate that matches the native colors. The only delineation of the trail will be accomplished with stone. All construction above high water will minimize ground disturbance and use only materials that blend with the native ground.

However, the trail will extend through the monument as at present to connect to the trail leading down from Navajo Mountain. The intent of the final plan is to continue the existing trail system with minor improvements designed to minimize intrusion on the natural scene while providing better delineation and viewpoints for picture taking and interpretive talks.

Comment: American Indians should have access to traditional sites, the use and possession of sacred objects, and herb gathering at anytime, not only at a set date.

Response: The plan will allow American Indians access to the site for ceremonial purposes without a permit. However, any collection of herbs or other objects must be done within the NPS collections policy, which requires permitting.

Comment: Multiple trailing should be restricted to one trail.

Response: The additional delineation and view areas discussed above are designed to limit multiple trailing. In addition, revegetation areas will be established to restore the areas previously impacted by multiple trailing. The requirement for an NPS interpreter to accompany all tour groups on their trip into the monument will provide much better control over these larger groups and should reduce their impacts. Access to private boaters is much more limited under the final plan, which should also greatly reduce human impacts.

Comment: Low-flying aircraft should be controlled.

Response: The plan proposes continued monitoring of aircraft noise and the development of aircraft management strategies through cooperation with the FAA, if necessary. The plan has been revised in response to this comment to clarify that these strategies could include the establishment of additional altitude advisories, designation of flight corridors or the restriction of flights during certain times of the day or periods of the year.

Comment: During the tour, the natural habitat should not be disturbed and trash should be discarded in appropriate places.

Response: The NPS concurs with this comment.

Comment: The environment surrounding the trail should be respected during the tour activities.

Response: The NPS concurs with this comment. Issues related to the trail have been discussed above.

Comment: Any improvement in the Rainbow Bridge vicinity should be in consent with the Navajo Mountain Community and the Navajo Nation.

Response: The NPS will consult with the Navajo Nation on the general improvements associated with the monument. Routine maintenance of existing facilities will not require consultation. The NPS would like to schedule regular meetings with the Nation, possibly twice a year, to discuss issues related to the monument.

Comment: Five percent of the profit realized should be given to the Navajo Mountain Chapter.

Response: The plan does not propose fees to be charged at the monument, nor are any concession sales proposed. The primary opportunity for the Navajo Nation to earn revenues at Lake Powell would be to develop the Antelope Point Marina, which could include boat tours to Rainbow Bridge.

Comment: Glen Canyon National Recreation Area should hire local Navajo people to assist with the guided tours and with improvements on the trails. Cement slabs should not be used to upgrade the trail.

Response: The recreation area, through its affirmative action plan, has a goal of having its work force reflect the cultural diversity of the local community. Both the NPS and its concessioner also strive to hire locally to the greatest extent possible. The plan has been revised to clarify that no concrete will be used on the trail above the high-water level of Lake Powell.

Comment: The level of the lake should be controlled to prevent additional damage to the natural habitat in the canyon walls from the bridge to the lake.

Response: The Bureau of Reclamation administers the reservoir levels through the operation of Glen Canyon Dam. This issue was addressed by a decision of the Tenth Circuit Court in 1973 (Friends of the Earth, et al., v. Armstrong, et al.). The court ruled that the reservoir should be operated with a full pool elevation of 3,700 feet but the Bureau was directed to study the effects of Lake Powell's incursion into Rainbow Bridge National Monument for 10 years.

The operation of the dam is currently being evaluated through the preparation of an Environmental Impact Statement. The Navajo Nation should take the opportunity to participate in that process and to share their concerns regarding lake levels and the resulting impacts.

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APPENDIX A
CARRYING CAPACITY OF
RAINBOW BRIDGE NATIONAL MONUMENT

CARRYING CAPACITY OF RAINBOW BRIDGE NATIONAL MONUMENT

Carrying capacity alone will not solve the problems of the monument. The establishment of carrying capacity is important only when part of a broader solution, as defined within the context of the planning alternatives. When part of a broader solution, carrying capacity is important for controlling adverse impacts to natural and cultural resources from too much visitor use and for improving the recreation experience of the monument visitor.

Carrying capacity for the monument relies on extending the techniques used for determining Lake Powell's carrying capacity -- Recreation Opportunity Classes (source: *The Carrying Capacity of Lake Powell -- A Management Analysis of Capacity for Boater Recreation*, November 1987, NPS [ROS]). Five levels of experience opportunities were described--primitive, semiprimitive, rural/natural, urban/natural, and urban. The primitive spectrum does not apply to Rainbow Bridge because of the volume of visitors and the associated sights and sounds of humans and support facilities. The urban class does not apply because this class will violate NPS management objectives regarding levels of use and physical settings for Rainbow Bridge. The three remaining experience levels were used to help set the parameters in determining the carrying capacity at Rainbow Bridge--**semiprimitive, rural/natural, and urban/natural.**

To determine boating capacity, the Lake Powell study (ROS, p. 42) used a limiting factor method in various lake zones. This included physical, safety, water quality, shoreline impacts (biological), and social capacity (recreation experience) factors. Each factor provided a maximum limit for number of boats at one time. The most limiting factor became the constraint chosen for the zone.

When applied to Rainbow Bridge, the physical, safety, water quality, and biological carrying capacity factors were all considered with specific mitigation and management measures included with each alternative. Persons-at-one-time (PAOT) was found to be more applicable to use than boats-at-one-time. The following rationale illustrates how carrying capacity factors were considered.

The **physical** factor and carrying capacity limit is described in the 1990 *Draft General Management Plan, Development Concept Plan, Resource Management Plan, Interpretive Prospectus and Environmental Assessment (DGMP/EA)*, appendix A. This is the maximum capacity of the monument docks and trails, 390 PAOT. This limit was approached within the alternative containing an urban/natural experience level.

The **safety** factor is concerned with boater safety in Forbidding Canyon. It is addressed in the proposal mitigation measures by better controls on the numbers of boats in the channel and a possible reservation system.

Monitoring completed for the 1987 carrying capacity found water quality degradation was created by human waste on the shoreline and in the lake. The **water quality** factor is addressed in the proposal as are alternative mitigation measures that will provide public rest rooms. It is also being addressed in other operational aspects of Glen Canyon such as the use of self-contained boats.

The **biological** factor is related to vegetation trampling, soil erosion, and associated sedimentation. It is addressed in the proposal and alternative mitigation measures including trails with natural surfaces to delineate areas for pedestrian traffic, enforcement measures to confine visitors to designated trails, increasing trail infrastructure (congregating areas and trail type) with a corresponding increase in use, personal services/interpretation, and providing a monitoring program. The mitigation measures consider the desert environment, the physical limits of useable terrain within the narrow canyon, and the highly erosive nature of sandstone soils. For further discussion see the environmental consequences for each alternative.

The remaining factor, **social**, considered **semiprimitive, rural/natural, and urban/natural** experience opportunities. This factor was found to be limiting and used to set management parameters and carrying capacity for each alternative. The criteria, listed below, were used to determine alternative parameters as well as carrying capacity. These consider desired future condition and recreation experience opportunity for visitors.

The determination of number of visitors associated with each recreation experience class is based on professional judgement, personal observations, and research displayed in *Visitor Impact Management (VIM), A Review of Research, 1990*. It should be noted from the literature that carrying capacity numbers are not exact and may vary greatly even within a single social setting. **Carrying capacities are an approximation of limits that will be approached under a prescribed management scenario while still maintaining a particular recreation experience opportunity.**

Visitor surveys conducted in 1989/1990 at Rainbow Bridge revealed that the party size for private boats ranges from 7 to 8 visitors. The review of research (*VIM*, pp. 212-213) provided a synopsis of previous studies using visitor encounter norms. These studies ranged from backcountry wilderness areas to river users and white water rafters. It also included boaters and number of boats seen. In semiprimitive backcountry areas the median acceptable encounter level ranged from 2.5 to 9.5 for backpacker parties. For the purposes of our analysis, a median acceptable encounter level of 5 was used. As the plan is implemented, encounter levels and their effects on experience levels need to be monitored to confirm or refute the encounter levels prescribed by the plan.

The VIM study also included median encounter levels for more developed areas -- areas receiving more substantial use. These levels ranged from 25 to 50 parties seen or

encountered on a trip. As is the case with semiprimitive, the area will be monitored to confirm or refute the encounter level prescribed.

For the urban/natural experience level, capacity is governed by the space requirements and the physical capacity of the monument. A detailed study was provided in appendix A of the previous draft plan (DGMP/EA,1990). The study found the physical limit of the monument for an urban/natural experience will be about 390 persons at one time.

The following criteria characterize the parameters used to construct the range of alternatives described within the document and characterize the elements of social carrying capacity.

Experience Criteria

Urban/Natural: Sights and sounds of humans are dominant, no opportunity to experience natural quiet or tranquility.

Rural/Natural: Limited opportunity to experience natural quiet or tranquility.

Semiprimitive: Predominantly isolated from the sights and sounds of humans, Opportunities to experience natural quiet and tranquility may be attained.

Physical Setting Criteria

Urban/Natural: Landscape modified with facilities to provide major visitor services for highly intensified use. Strong evidence of designed roads, walks, and structures.

Application to RABR:

Constructed walks, walkways, or boardwalks to clearly delineate areas of pedestrian traffic.

Constructed congregating areas to accommodate large groups (up to 40 people) for interpretive presentations.

Docks and docking facilities provided to accommodate private and commercial watercraft, including tour boats, houseboats, and smaller watercraft. Docking facilities designed to accommodate physical capacity of monument walks, walkways, and congregating areas.

Facilities constructed to regulate use on site and off site.

Comfort stations, contact station, storage facilities, and interpretive displays provided for visitor comfort and convenience.

Areas of soil compaction mitigated, areas of barren soil reduced, visible erosion reduced because of level of development.

Impacts to fauna and microflora, ground cover, archeological sites, graffiti, and plant species reduced.

Rural/Natural: Predominantly natural-appearing landscape with small scale developments that remain visually subordinate to the surrounding landscape.

Application to RABR:

Trails with hardened surfaces using material that delineate differences between natural surfaces and trails available for pedestrian traffic.

Use of natural viewing points, areas where landform provides opportunities for congregation, to accommodate up to 40 visitors for interpretive presentations.

Docks and docking facilities to accommodate private and commercial watercraft, including tour boats, houseboats, and small watercraft. Dock capacity will be tailored to PAOT limits.

Facilities to regulate use located off site.

Rest rooms and minimal interpretive displays provided.

Areas of soil compaction, barren soil, erosion barely visible.

Impacts to fauna and microflora, ground cover, archeological sites, graffiti, and plant species reduced.

Semiprimitive: Predominantly natural setting that may have alterations that do not draw the attention of the visitor. Facilities generally limited to those necessary for life, health, safety, protection, and basic visitor needs.

Application to RABR:

Trails with natural surfaces to accommodate small levels of use.

Docks and docking facilities limited to those necessary to accommodate PAOT limits.

Facilities to regulate use located off site.

No areas of soil compaction, barren soil, and soil erosion.

No impacts on fauna and microflora, ground cover, archeological sites, graffiti, or plant species.

Managerial Setting Criteria

Urban/Natural: Regimentation and controls obvious and numerous.

Application to RABR:

Presence of numerous uniformed personnel for interpretive and protection purposes. Personnel provided on a scheduled basis, usually during daylight hours.

Signs, displays, and waysides provided to warn visitors of hazards and restrictions governing use of the national monument.

Persons and groups highly regulated and confined to developed trails. Social trails eliminated.

Rural/Natural: Regimentation and controls are noticeable but harmonize with the natural landscape.

Application to RABR:

Presence of uniformed personnel for interpretive and protection purposes. Personnel provided on a scheduled basis during peak use periods.

Signs and displays provided to warn visitors of hazards and restrictions governing use of the national monument.

Persons and groups regulated and confined to developed trails. Social trails eliminated.

Semiprimitive: Regimentation and controls located off site or presented in publications or other subtle media.

Application to RABR:

Presence of uniformed personnel provided for protection purposes, on an unscheduled basis.

Signs provided to warn visitors of hazards.

Persons and groups unregulated. Social trails not expected to occur.

Social Setting Criteria

Urban/Natural: Large number of visitors in large groups on site with near constant contact with others.

Application to RABR:

May accommodate up to 390 persons at one time.

Controlled and intensive interpretive programs presented by park personnel to sensitize visitors to the significance of Rainbow Bridge.

American Indian opportunities provided during off-season and low-use periods.

Rural/Natural: Moderate contacts, some in large groups, on site.

Application to RABR:

May accommodate up to 200 persons at one time.

Intensive interpretive programs presented by park personnel to sensitize visitors to the significance of Rainbow Bridge.

Semiprimitive: Contacts with others minimized, infrequent contact with large groups may occur.

Application to RABR:

May accommodate up to 40 persons at one time.

Interpretation minimized, emphasis on visitor self-reliance.

**APPENDIX B
RAINBOW BRIDGE
NATIONAL MONUMENT
INTERPRETIVE PROSPECTUS 1993**

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PURPOSE OF AN INTERPRETIVE PLAN

This interpretive plan has been written to provide a framework for a meaningful visitor experience to Rainbow Bridge National Monument, through park interpretation provided by the National Park Service and concessioner personnel.

Planning documents and studies that are related to this plan can be found in the listing included in the *General Management Plan* for Rainbow Bridge.

THE PARK IN PERSPECTIVE

On May 30, 1910, President William H. Taft proclaimed the Rainbow Bridge a national monument. The words of that proclamation still provide the basis for all National Park Service efforts to preserve and interpret this impressive masterpiece in stone.

... an extraordinary natural bridge, having an arch which is in form and appearance much like a rainbow, and which is three hundred and nine feet high and two hundred and seventy-eight feet span, is of great scientific interest as an example of eccentric stream erosion, and it appears that the public interest would be promoted by reserving this bridge as a National Monument, together with as much land as may be needed for its protection ...

In 1916, the National Park Service was created and assumed administration of Rainbow Bridge. As the world's largest natural bridge it was nominated as a World Heritage Site in 1989, and is an outstanding example of geologic processes.

While it was the geological significance of Rainbow Bridge that caught the attention of the public at its inception, the religious and sacred significance of the area to various American Indian tribes has become a strong factor in determining the way the monument is managed. In March of 1992, the Utah State Historic Preservation Office concurred with the National Park Service that the bridge and surrounding areas be nominated on the National Register of Historic Places as a site that has cultural significance based on its traditional and sacred values to American Indians.

The monument is administered by Glen Canyon National Recreation Area (NRA), which forms part of its boundary at its northwest corner. It is bounded on three sides by the Navajo Reservation. Composed of 160 acres, the monument is in the heart of some of the nation's most rugged canyon country and presents a unique blend of significant natural and cultural resources. The natural bridge is 290 feet high, has a 278 foot span, and is located in the approximate center of the monument.

Access to the area is limited. Boaters may approach from the Forbidding Canyon and Bridge Canyon, arms of Lake Powell in the Glen Canyon NRA. Hikers can access via trails originating on the Navajo Reservation and tracking over Redbud Pass and into Bridge Canyon from the landward side. The nearest road is approximately 13 miles away.

AREA SIGNIFICANCE

TO THE FOOT OF THE RAINBOW

... Around the first bend in the canyon we saw it--
Nonne-zoche Not-se-lid, the incomparable, the
indefinable.

It was hard to believe that this thing was of
hard cold stone. In the setting sun it was warm,
radiant, glorious . . .

We crept closer. We found that we had not
realized the great size of the arch, for it is
so wonderfully graceful and so perfectly proportioned
that its beauty rather than its colossal size first
engages the attention. One could place the Capitol
under it, however, and then have considerable room . . .

For hours we walked and sat and looked. Hardly a
word was said. At last we slept. At the foot of the
Rainbow, we had not found the pot of gold, but content and happiness.

-- Clyde Kluckhohn
To The Foot Of The Rainbow
The Century Company, New York, 1927

The significance of Rainbow Bridge lies not only in its geological character, but in its power to move and inspire the human soul. For the Navajo, Hopi, and other native peoples it is part of who they are and what they consider sacred and meaningful in this life. Describing the bridge as a "sacred place," however, is not enough. There is no way to capture the essence of a people and their perception of the world with one simple word that carries cultural connotations of its own. What is sacred to one culture may have no meaning to another. In order to even begin to understand the way Rainbow Bridge is perceived by the Navajo and other native peoples, there must be a willingness to acknowledge a whole different view of the world we share. The true significance of Rainbow Bridge extends far beyond the obvious. It is indeed a bridge -- a bridge between cultures - if we but listen with both heart and mind.

Until the formation of Lake Powell, this was one of the most remote and inaccessible regions in the contiguous United States. It is a spectacular microcosm of the whole Colorado Plateau ecosystem. Vast sweeps of time are revealed by geological forces and processes that are ongoing. Rocks sculpted by wind and water, plants and animals uniquely adapted for the desert environment, and dramatic scenic vistas are hallmarks of the monument.

The world's largest known natural bridge is now accessible to a growing number of people, who, for the most part, view it as an extension of their recreational experience at Glen Canyon NRA. The importance of Rainbow Bridge goes beyond mere recreation, however. It is part of the creation story of whole cultures, a place to look inward for guidance and harmony and balance. It is a place where the forces of nature have left their remarkable footprints in the rocks, canyons, animals, and plants. It is a fragile place, a place to respect.

CULTURAL AND NATURAL RESOURCES

Prehistoric Resources

An archeological survey is 63 percent complete at this time. In 1985, archeologists from Northern Arizona University intensely surveyed 100 acres of the 160-acre monument. Eight archeological sites and three isolated finds were recorded in a 70-acre area. Of the eight sites recorded, six are deemed eligible for inclusion on the National Register of Historic Places. Four of the sites have potentially significant rock art inscriptions.

Historic Resources

Some of the rock art sites include such names as Zane Grey and John Wetherill. At the east base of the bridge, numerous inscriptions have been carved by park visitors. Detailed recording of these may reveal the presence of additional significant inscriptions.

There are no structures in the monument. Physical remains of early historic use along the Colorado River have all been inundated by Lake Powell. Physical remains of the Rainbow Lodge, and other structures along the Rainbow Trail are outside the monument. Numerous early registers from the lodge are in the possession of the park. Plaques dedicated to the "discovery" party have been placed along the trail within the monument boundary.

Ethnographic Resources

Ethnographic resources are park resources that have traditional subsistence, sacred ceremonial, residential, or other cultural meaning for members of contemporary park-associated ethnic groups, including American Indians.

It is well known that Rainbow Bridge and nearby areas are culturally significant for the Navajo people. It is a major aspect of their creation history and is respected as a spiritual site. Individuals from the Navajo Tribe frequently use the area informally for the religious practices, and occasionally make formal requests for this use. Requests are normally granted as being in accord with the provisions of the Native American Religious Freedom Act. Other area American Indian tribes also may consider the bridge important to their cultures and beliefs.

Collections and Libraries

Glen Canyon NRA has a small collection of historic photographs and documents about the history of Rainbow Bridge and its visitors. The Rainbow Bridge photographic collection needs to be organized, catalogued, and segregated from the Glen Canyon collection. The majority of documents has been catalogued, with approximately 20 historic documents currently stored as museum objects.

The photographic collection is currently located at the park headquarters building in Page, Arizona, and is generally in fair condition. None of the collection is stored in compliance with Special Directive 80-1, and substantial deterioration of the photographs will probably be found when they are examined and their storage upgraded.

There is no library in the monument, only a few shelves of books for reference. Books and documents relating to Rainbow Bridge are housed in Glen Canyon's general park library at park headquarters.

Natural Resources

The current resource management plan for Rainbow Bridge describes the natural features of the monument in greater detail.

The monument is located within the Colorado Plateau, primarily supporting desert-shrub vegetation. Plant communities include riparian, grassland, blackbrush, talus slope, and hanging gardens. There is a wide diversity of plants in these communities because of the many micro-habitats found in the monument. Tamarisk is expanding and threatens to impair the natural scene.

Animal life is typical of a semidesert climate. Mule deer, coyote, and gray fox range widely throughout the area. Jack rabbits, rodents, and reptiles are common. Two endangered species, the peregrine falcon and the bald eagle, use the monument.

There are many fish species found throughout Lake Powell and in Bridge Canyon. Fishing is not allowed in the monument.

The monument contains outstanding examples of geologic processes at work. Examples include wind and water deposition, consolidation, periods of deformation by folding, warping, and faulting, normal erosion, and accelerated erosion brought about by general uplift. One result of these processes is a river system deeply entrenched in the sedimentary rocks of the Colorado Plateau.

Rainbow Bridge is established as a class II air quality area. The average visibility, described in 1974 as "excellent" (about 125 miles), is now noticeably less due to the start-up of the Navajo Generating Station.

HISTORY OF USE AND AMERICAN INDIAN CONCERNS

History of Use

Within the core of a vast, roadless region, Rainbow Bridge National Monument remained virtually isolated from the outside world until recent years.

The major access was once through the Navajo Indian Reservation, which borders the monument on three sides. A 52-mile dirt road across part of the reservation to the base of Navajo Mountain brought potential visitors to the lodge furnishing guide service. From there, hardy visitors either hiked or rode horseback into the deep canyons for the 2-day round-trip to the bridge. Later, a river trip, via powerboat up the Colorado River from Lees Ferry to the mouth of Forbidding Canyon, required 3 days and a 12-mile round-trip hike to the monument. A variation of the same trip involved coming in from the north and down the San Juan River from Mexican Hat to the same junction on the Colorado River.

In later years, a third route to the bridge involved the charter of a light plane. When one is soaring the path of the eagle, the natural bridge appears tiny in the vast expanse of desert.

With such isolation of the feature, few people had the opportunity to visit. In 1955, about 1,000 people came to Rainbow Bridge. Few would predict that by 1992 almost 300,000 visitors would come to see the "rainbow cast in stone," after the waters of Lake Powell spread watery fingers into tributary canyons.

At present, most visitors to Rainbow Bridge view their experience as part of their recreational pursuits on Lake Powell. In 1992, visitation to the monument exceeded 250,000. Virtually all visitors come by private boat or public tour boat. The average party size for private boats ranges from 7 to 8 visitors, with commercial tour boats averaging 60 passengers in the summer and 6-15 in the off-season. Very few visitors access the monument by trail from Navajo Mountain. Most visitation occurs between April and October. In the ten-year period from 1979 to 1989, annual visitation increased approximately 245 percent. The highest visitation to date was in 1987, approaching 300,000.

The average amount of time visitors stay at the bridge is extremely short, usually 15 minutes or less. The amount of time spent is often a function of the water level in the canyon. Low water levels mean a 30-minute round-trip walk to the bridge. Most tour boats only spend 45 minutes in the monument, which limits the amount of time actually spent at the bridge in times of low water. Hot summer temperatures also limit the amount of time people are willing to spend at the site. Many visitors take the trail only as far as necessary to glimpse the bridge, a smaller number go the full distance.

Water extends under the bridge when water levels are high, and people often want to swim there. Park staff tries to discourage this type of activity as well as other recreational pursuits. At peak summer visitation boats sometimes must wait for a space to dock. Sight-seeing flights over the monument cause some noise disturbance.

Public use is concentrated on the trail from the boat docking facilities to the bridge. Existing trails are heavily worn, with some nearby areas of vegetation nearly stripped from shortcutting on switchbacks. Visitors view the monument area by using a random network of paths and trails established by general use. While it is possible to hike to the backcountry Echo Camp (beyond Rainbow Bridge and on the Navajo Reservation), very few people go that way. Visitors are often found climbing on nearby rocks or carving their names in the rocks. Rockfalls and flash flooding are potential threats to visitors.

During the winter months there are often days when there are no visitors. Visitors during the off-season often seem to have a different attitude toward the monument and their experience there, regarding it more than simply recreation.

American Indian Concerns

As previously mentioned, a variety of American Indian tribes (Navajo, Hopi, San Juan Paiute, and others) view Rainbow Bridge and other nearby features and sites as important to their spiritual beliefs and identity as a people. The issues are complex, and their concerns, while deeply felt, are sometimes difficult to convey to those of another culture with a different perception of the world. The willingness to put cultural differences and biases aside and really listen to each other is essential in any aspect of management and interpretation of the monument.

- People walking beneath the bridge is particularly offensive to the Navajo people and other American Indian tribal members.
- Access to, and use of, traditional sites is very important.
- Any improvements in the Rainbow Bridge vicinity should be in consultation with the Navajo Tribe and other American Indian groups.

- Tribal members should have an opportunity to be employed as guides.
- The amount of information that is revealed about traditional beliefs and sites needs to be determined in close consultation with tribal advisors.

There are no doubt other concerns that will surface, which affect interpretation at the monument. To be sensitive to the values and experiences of other people, to bridge the cultural gap, will be the challenge to interpretive managers.

CURRENT INTERPRETIVE SERVICES AND MEDIA

Personal Services

Each year nearly 300,000 visitors are funneled from dispersed recreation areas on Lake Powell to the confines of a 2,000-linear-foot walkway system at Rainbow Bridge. The Division of Interpretation, as part of its minimum interpretive program, continues to provide the only permanent staff member assigned specifically to the monument. This individual provides interpretive services in the form of roving assignments and informal group talks.

During the summer season, two seasonal interpreters provide seven day a week coverage, 4-5 hours per day. Other hours are spent traveling by boat to and from the bridge or to Wahweap, staffing the visitor contact station at Dangling Rope and providing roving interpretation at the monument. All interpretive staff members assigned to Rainbow Bridge have quarters at Dangling Rope, 10 miles away. Interpretive staff members assist other divisions by providing resource protection, emergency medical services, and search and rescue.

A critical deficiency of this operation is the lack of boats. At present extremely tight scheduling of a second downlake district boat is necessary to minimally cover the scheduling and many hours of staff time are involved in ferrying staff to and from the bridge. Boat roving patrols have been substantially decreased because of budget and staffing constraints.

Wayside Exhibits

Two fiberglass wayside exhibits are on the floating walkway connecting the dock to the Rainbow Bridge trail. These waysides interpret the geologic forces that formed the world's largest natural bridge, the white man's "discovery" of the bridge in 1909, and the formation of rock varnish on the canyon walls surrounding the bridge. Two plaques honoring the American Indian guides who led the first white men to the bridge are on a canyon wall within the monument.

Publications

A full-color park brochure is available. It is in the standard design used throughout the National Park Service. Brochures are available at park and concession facilities.

A site bulletin that interprets a variety of natural and archeological features found along the short trail (½- to -mile) from the boat docks to Rainbow Bridge is nearly complete. This brochure will be made available to visitors on tours as well as individuals in private boats arriving on the docks, possibly via a brochure box on the dock.

Trails

There is a short trail (½- to -mile) from the boat docks to the base of Rainbow Bridge. Trails are very worn, with adjacent vegetation nearly stripped by general off-trail use.

Other trails originate outside the park on the Navajo Reservation. These trails are not maintained and they cross rough canyon country. Hikers must obtain permits from the Navajo Tribe before hiking these trails.

Nearby Areas

Interpretation of Rainbow Bridge at Glen Canyon National Recreation Area is minimal. There are a few brief descriptions of the site, but most interpretation is done informally through personal contacts between rangers and visitors.

Threats to the Monument

Threats to the monument include the destruction of plant life from off-trail use resulting in soil erosion, and names carved into the bridge and nearby rocks.

Inappropriate visitor use of the site creates an atmosphere that detracts not only from the American Indian view of how the site should be treated, but from why the area was designated as a national monument. These uses include water sports, swimming, climbing, diving, sunbathing, hunting, fishing, overnight use, rock throwing, feeding wildlife, and special events. Pets are also a potential problem.

The tamarisk, an exotic species, is prevalent and threatens to change the monument by altering its natural visual characteristics.

Visitors climb canyon walls, and touch or deface petroglyphs.

INTERPRETIVE THEMES

These interpretive themes have been refined and developed from a combination of the 1992 Glen Canyon Annual Statement for Interpretation and ideas from the planning team.

Geological Processes Formed Rainbow Bridge

Entrenched stream meandering and conchoidal fracturing (water erosion and fracturing) formed the largest natural bridge on earth. Recognized as a world class example of such geological phenomena, Rainbow Bridge has been protected by the federal government since 1910.

Rainbow Bridge is Part of the Larger Colorado Plateau Ecosystem

The monument's riparian, blackbrush, and desert scrub communities are three distinct plant zones found throughout the Colorado Plateau. In addition, its diverse populations of mammals, birds, reptiles, insects, and other animal species are representative of the Colorado Plateau.

People Have Interacted with the Bridge in Prehistoric Times

Archeological features are evidence of pre-Columbian people living in the area, with the earliest Euro-American explorers referring to the remains of a primitive structure beneath Rainbow Bridge.

People Have Interacted with the Bridge in Historic Times

Twentieth-century Navajos, San Juan Paiutes, and other nearby tribes attached (and continue to attach) special religious and cultural significance to Rainbow Bridge. Contrary to claims by the 1909 discovery party of being the first Anglos to view the bridge, several believable accounts point to pre-1909 visits by cattlemen, miners, and trappers. However, the Douglass-Cummings parties' discovery on August 14, 1909, resulted in the first widespread publicity about the bridge.

People Continue to Impact the Monument

In 1971, the waters of Lake Powell, formed behind the Glen Canyon Dam, first entered the monument. By 1980, the lake reached its full pool elevation of 3,700 feet above mean sea level, and permanently altered the monument's riparian environment. Once one of the most remote areas in the United States, Rainbow Bridge is now readily accessible via Lake Powell. However, the lake's encroachment under the bridge continues to raise concerns about damage to the natural underpinnings of the structure, noise pollution from boat traffic, and degradation to the monument's resources from increasing visitation.

GOALS

- To increase visitor understanding of the geology, plants, and animals of the region.
- To encourage visitor understanding of how Rainbow Bridge fits into the Colorado Plateau formation and ecosystem.
- To help visitors understand that different cultures perceive resources differently, i.e., some neighboring American Indians regard Rainbow Bridge as sacred.
- To help visitors understand that the monument's resources do not end at its boundaries.
- To generate visitor interest in the cultures and lifestyles, from prehistoric to present times, of the people of the Rainbow Bridge region.
- To stimulate visitor and local citizen understanding of external threats to monument resources.
- To encourage visitor understanding of limited visitor access to Rainbow Bridge as one management device for reducing degradation of monument resources.
- To foster safe, informed, minimum boat and foot impact access to monument resources.
- To reduce visitor injury and hazards related to monument uses.
- To help visitors understand and appreciate their role in maintaining the monument's natural and cultural resources.
- To enhance the visitor's experience at Rainbow Bridge by providing a pleasant transition from a recreational activity to an environmental education experience.
- To foster visitor enjoyment through awareness of available activities and services and time needed for each, both within the monument and the Glen Canyon National Recreation Area.
- To prevent intentional and unintentional resource degradation.

OBJECTIVES

Objectives are used to measure achievements. As we learn more about our visitors and our capabilities, these objectives may be modified. The following list is but a partial inventory

of the objectives of the monument's interpretation program. Any necessary modifications and additions should be placed in the Annual Statement for Interpretation.

Of the visitors leaving the monument:

More than half will confirm that they received adequate information for a well-informed, safe, efficient, and enjoyable visit.

More than half will be able to describe the primary resource that warrants the area's national monument designation.

More than half will be able to identify Rainbow Bridge National Monument as a separate National Park area, distinct from Glen Canyon National Recreation Area.

More than half will know that Rainbow Bridge is considered sacred by various nearby American Indian tribes.

More than half will be able to identify water erosion and fracturing as the two main factors in the formation of Rainbow Bridge.

More than half will be able to identify at least one management measure used to reduce impacts on the monument's resources.

Half will be able to identify human impacts affecting Rainbow Bridge.

Half will be able to identify at least one action they can take to prevent degradation to the Rainbow Bridge.

Half will know that prehistoric people once lived in and around the monument.

PLAN RECOMMENDATIONS

The interpretive program at Rainbow Bridge is essential to achieving park management's goal of meeting diverse public expectations, yet providing a quality visitor experience. Four primary forms of interpretive services will be used - personal services, wayside exhibits, printed material, and audiovisual media.

Interpretation at Rainbow Bridge will:

Provide interpretive programs and facilities that meet National Park Service standards for accuracy and quality found in NPS-6.

Instill appreciation for all park resources: natural, cultural, and the National Park System.

Nurture cooperative efforts involving concessionaires, the natural history association, the Navajo Tribe and other concerned American Indian tribes, and the National Park Service.

In compliance with National Park Service policy, the issues of accessibility will be identified and incorporated in all construction and renovation projects. Interpretive programs, media, and facilities should meet guidelines outlined in the NPS publication *Interpretation for Disabled Visitors in the National Park System*.

Personal Services

In order to provide resource protection and provide a quality visitor experience to the monument, the current park *General Management Plan* requires that during the primary visitor season, water access will be restricted based on a daily allotment of use. Management will strive to provide a daily mix of visitor experience opportunities during the primary visitor-use season. A daily window will be managed to help meet use demands and provide an opportunity for most visitors to see Rainbow Bridge. During this window a rural experience in a natural setting will result most of the time because of the presence of humans and encounters with groups. During the remainder of each day in the primary visitor-use season, semiprimitive experiences will be provided where visitors have the opportunity to experience the quiet and tranquility of Rainbow Bridge. These conditions will also occur during the off-season the majority of the time.

Ideally, NPS interpreters will accompany all tour boats from their marina of origin to Rainbow Bridge. This will provide an outstanding opportunity to relay the interpretive story of Glen Canyon NRA, as well as Rainbow Bridge NM. The interpreters will have the opportunity to prepare visitors for their experience at Rainbow Bridge, and will be able to control the activities of the group while at the monument. During interpretive talks all the major themes previously discussed for the monument can be presented.

During the portions of the day reserved for access by private boats, the NPS has a goal of providing a more isolated, quiet visitor experience. This will be accomplished by controlling use levels, emphasizing visitor self-reliance and allowing visitors to experience the monument's natural quiet and beauty on their own. The NPS will use non-personal techniques to accomplish the majority of the interpretation for these visitors. Rangers will be present to answer questions and provide protection for the monument during the more frequently used periods. Roving interpretation will play an essential role.

In the off-season, access to Rainbow Bridge will not be restricted, except to limit tour boats to one tour at a time at the monument. Both private boats and tour boats will be able to

directly approach the monument dock. Personal services will be limited during the off-season, with other forms of interpretive media emphasized. Roving interpretation and patrols will also be used.

In order for this plan to be implemented, there obviously must be a vast increase in the number of interpretive rangers. Park management will determine the limits on the number of tour groups to the site, which will in turn determine the number of interpretive staff that must be available to accommodate this use. An estimate of FTEs and money necessary to accomplish this is found in the current *General Management Plan*.

Training and Employment

With a much greater emphasis being placed on personal services under this plan, adequate training of staff is essential to the overall success of the program. Of particular concern are issues relating to cultural sensitivity. Cross-cultural training is key to the implementation of an expanded visitor services program at Rainbow Bridge. Managers as well as field staff need to be aware of the sensitive issues involved, and consult with tribal members as to how much, and sometimes how, these topics and issues should be conveyed to the public.

The interpretation of another culture's values and views is difficult at best, and Rainbow Bridge is no exception. Efforts should be made to hire American Indian interpretive rangers at Rainbow Bridge.

Audiovisual

A 7-10 minute video should be produced. The video should emphasize the preservation and use of Rainbow Bridge as a world class natural and cultural resource. The American Indian viewpoint would be represented and highlighted. The video can serve the park under current conditions as well as under the new visitor access strategy.

Present uses include a wider distribution of the message that Rainbow Bridge is not the same as Glen Canyon. It would serve those unable to currently access the site and be a useful sale item for the cooperating association.

Future uses include being part of the educational process to explain what visitor-use limits are being imposed. It would also be shown to visitors at strategic locations before they take a Rainbow Bridge tour to reinforce the idea that Rainbow Bridge is not just part of Glen Canyon but a special place.

Wayside Exhibits

Visual intrusions at the monument should be minimized. Wayside signs will be placed on the courtesy docks, at the floating interpretive platform, at the viewing area below high

water, at launch ramps, and at the points of departure for the boat tours transporting the majority of visitors during the primary-use season. All waysides should be of uniform design, compatible with those in Glen Canyon NRA.

The proposal for wayside exhibits is as follows:

Location	Content
Tour boat departure points and launch ramps	General orientation. Management strategy for Rainbow Bridge. Rainbow Bridge in relation to Glen Canyon NRA.

Viewpoint below high waterline	The spiritual significance of the bridge to American Indians.
--------------------------------	---

Floating walkway	The monument's ecosystems as part of the greater Colorado Plateau.
------------------	--

Floating walkway	The geologic processes that created the world's largest natural bridge.
------------------	---

Floating walkway	Changes to the environment brought about by the waters of Lake Powell. Could include exotic species.
------------------	--

(A larger "trailhead" type wayside should be used for the following:)

Courtesy docks at Rainbow Bridge	Inappropriate activities (swimming, climbing, fishing, etc.) and brief safety warnings re: flash floods.
----------------------------------	--

During times of high water, the waysides at the viewpoint below the high waterline would be relocated to the floating interpretive platform.

A cost estimate for the production of waysides can be found in the current *General Management Plan* for Rainbow Bridge.

Publications

The current park brochure will have to be revised to reflect the new access limitations and restrictions.

A separate brochure/booklet should be done just on access to Rainbow Bridge. It should include the reasons for the limitations, stressing resource management issues and American Indian concerns. Information on the flash flood warning system should also be included. This should be distributed widely within and near Glen Canyon NRA.

At Glen Canyon NRA

In order for the interpretive efforts at Rainbow Bridge to be the most effective, there needs to be continued support from, and coordination with, the interpretive program at Glen Canyon NRA. Publications, handouts, and other information relating to Rainbow Bridge should be distributed as widely as possible at visitor centers, courtesy docks, marinas, boat rental facilities, and contact stations.

APPENDIX C
FLASH FLOOD MITIGATION PLAN
RAINBOW BRIDGE NATIONAL MONUMENT

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PURPOSE OF FLASH FLOOD MITIGATION PLAN

INTRODUCTION

National Park Service (NPS) guidelines define "flash flood" as one in which the flood waters rise so rapidly that there is insufficient time for warning and evacuation of persons threatened by the flood. NPS guidelines classify such flash-flood areas as high hazard areas and require that specific management actions be taken to reduce the flood hazard. Thus, when studies reveal that existing structures or facilities are subject to the effects of flash flooding, as they are at Rainbow Bridge, a plan of action for flood mitigation is to be prepared. The following pages contain the National Park Service's Flood Mitigation Plan for Rainbow Bridge National Monument.

BACKGROUND

Flood mitigation methods were developed within NPS guidelines for compliance with Executive Order 11988 (Floodplain Management). Executive Order 11988 was developed "in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative," (E.O. 11988; 42 F 26951). Consistent with these guidelines, the National Park Service has developed the following objectives (listed in priority order) for floodplain management at Rainbow Bridge: protect life, allow existing visitor-use areas to remain open to the public wherever possible, and protect property.

NPS guidelines specify protection against the probable maximum flood (PMF) within flash-flood hazard areas. This mitigation plan defines the probable maximum floodplain and 100-year floodplain. The 100-year flood is a flood that can be expected to be equaled or exceeded on average once every one hundred years. Floods of this magnitude occur frequently enough to pose a serious threat to all facilities and people. The PMF is the largest flood that can ever be expected to occur in an area; however, these floods are rare, and their statistical probability of occurring is uncertain. Estimates for the 100- and 500-year floods can be calculated to be about 8 and 10 feet, respectively, above the existing channel bottom in this area. No PMF is recorded for the area. Existing trails are outside the area of 100- and 500-year floods. Actual delineation of the PMF will be done at the time of plan implementation. PMF limits will be used to set signing and provide visual information for a wayside exhibit. Larger flash floods have occurred on occasion; for example, in 1974 at Eldorado Canyon on Lake Mohave (nearby in Lake Mead National Recreation Area) a flood occurred that was 7.6 times larger than the calculated 100-year flood and two-thirds of the calculated PMF.

FLOOD MITIGATION ALTERNATIVES

INTRODUCTION

During preparation of the flood mitigation plan, considerable discussion occurred on the level (100-year versus probable maximum) and type (structural versus nonstructural) of flood mitigation that should be provided for those areas subject to flash-flood hazard. The plan evaluated both structural and nonstructural flood mitigation alternatives.

STRUCTURAL MITIGATION ALTERNATIVES

Structures like dikes, levees, and channels can be designed and built to control floods. They are very expensive, but achieve the greatest level of protection for floods up to the size they were designed to protect against. Structures are susceptible to failure, and great care must go into their design and construction. The consequences of a failure can be catastrophic since they usually are not anticipated or prepared for in advance. In addition, any structural mitigation measures undertaken at Rainbow Bridge would create a major visual intrusion and interfere with the monument's natural beauty. Measures could also involve construction of structures on Navajo lands, which would need to be coordinated with the Navajo Tribe.

NONSTRUCTURAL MITIGATION ALTERNATIVES

The more traditional flood mitigation measures are structural, such as dams, dikes, levees, and channels. In addition to these structural mitigation measures are nonstructural measures that can be applied whether structural measures are used or not.

Relocation

Relocation of threatened facilities out of flood hazard areas is the most effective nonstructural strategy. It eliminates the flood hazard for people and property, but it is very expensive. The following three methods only mitigate the hazard for people in the floodplain; property remains susceptible to damage.

Information/Education

Information/education can make people aware of a flood hazard and provide them information about coping with the threat. These activities include erecting warning signs, posting notices, distributing pamphlets, presenting information at public meetings, and distributing flood hazard area maps. Education and information activities are applicable

nonstructural measures at all developed areas having a flood hazard, regardless of other measures that might be considered or implemented, excepting total relocation.

Flood Warning Systems

Flood warning systems can give people notice of an impending flood so that they protect themselves, and if time permits, their property. These systems include elements that deal with provisions for early identification of an impending flood; analysis of the magnitude, severity, and potential impact of an impending flood; and dissemination of appropriate warnings to parties likely to be affected by an impending flood.

Evacuation Planning and Emergency Preparedness

Evacuation planning and emergency preparedness consists of arrangements for evacuation of endangered areas when a flood is anticipated and other emergency preparedness actions. These arrangements consist of assignments of responsibility for various actions, provision of transportation or other assistance to evacuees, traffic control, and opening and operation of shelters to provide refuge in flood-safe areas. Once an evacuation plan has been proposed for an area, all NPS employees will be trained on what to do in a flood emergency. Evacuation planning for Rainbow Bridge is influenced by two factors. First, flooding can occur very quickly; therefore, people must respond rapidly to a warning to save their lives. Second, the facilities are located such that safe refuge is close at hand, but some are difficult to reach because of steep slopes.

ALTERNATIVES CONSIDERED, BUT REJECTED

Relocation of monument dock facilities to a place other than those shown in the alternatives is not feasible. Visitors could be stopped on the floating walkway some distance from Rainbow Bridge, but the visitor experience would be greatly diminished. All land access would have to be prohibited, or to avoid flood hazard, the floating platform would have to be several hundred yards from Rainbow Bridge, practically back to the existing courtesy docks. Due to the constricted lake channel in this area, a large floating platform for visitors to congregate on at the northwest end of the walkway would not be feasible. This facility arrangement is unacceptable if a meaningful visitor experience is to be maintained.

Structural flood mitigation measures such as dams, dikes, levees, and channels were not considered. Their impact on the monument was determined to be excessive. Such structures would directly contradict and degrade the purposes for which the national monument was established.

Another option for predicting flash-flood hazard is radar. However, there is not an adequate radar system in the area to provide such precise small drainage warning. If one were installed on Navajo Mountain, it would have the added benefit of providing flash-flood

warning capabilities for most of Glen Canyon National Recreation Area and surrounding areas. However, the cost of installing, maintaining, and monitoring such a system makes this option prohibitive.

CONCLUSION

Effectiveness of various flood mitigation measures varies widely. If the goal of the flood mitigation measures is to protect property, only structural mitigation and relocation are effective. However, if the goal is to protect people, the nonstructural mitigation measures offer relatively inexpensive alternatives.

The nonstructural measures are usually applied together and can result in successful evacuation. However, there are often people who refuse to leave their vehicles or obey the orders or warnings to evacuate. There may be elderly or disabled people who cannot respond quickly, and there is the possibility that some people won't receive the message to evacuate. Also, there can be failures in the flood-warning system. They usually rely on devices in remote locations that sense rainfall or flood water levels and transmit their information by radio communications to a computer, radio dispatcher, or warning device that is automatically activated. The sensing devices and the radio communication systems must be maintained and in working order, and the radio communication systems must continue working through an electrical storm. The probability of a warning system failure cannot be estimated, but that possibility must be considered. Therefore, even if the last three nonstructural mitigation strategies are applied together, there may still be flood victims. The goal is to greatly reduce the number of victims, and the hope is that there will be none.

RAINBOW BRIDGE FLOOD MITIGATION PLAN

INTRODUCTION

There are four components of the Flash Flood Mitigation Plan--a wayside exhibit, additional signing, evacuation and emergency preparedness procedures, and a warning system.

WAYSIDE EXHIBIT

Information can be provided that would greatly reduce the flash-flood hazard to visitors. Signing would be sized, located, and designed to minimize intrusions upon natural, cultural, and social values. Per NPS regulations related to floodplain management, the wayside would show flood hazard areas and illustrate the flood of record (if known), 100-year flood, and probable maximum flood.

ADDITIONAL SIGNING

Where appropriate, signs telling visitors in the flood hazard zones where to move in case of a flood would be added. On the walkway that is in the flood hazard zone, signs should read "Return to Boats in Case of Flood and Leave Area." Signing would be sized, located, and designed to minimize intrusions upon natural, cultural, and social values.

EVACUATION AND EMERGENCY PREPAREDNESS PROCEDURES

Evacuation and emergency preparedness measures would be identified for the monument. A chain of command outlining who is responsible for what actions must be identified. Emergency supplies would be stored at Dangling Rope and Rainbow Bridge. Supplies needed, their exact locations, and any necessary support facilities would be identified.

WARNING SYSTEM

Although warning systems are expensive to maintain, the ability to give adequate warning for evacuation of the few areas affected by flash flood is important. Under the plan, a warning system that provides at least six minutes advance warning would be installed. Given this time, visitors could be expected to be evacuated to areas of safety. Visitors would be alerted to evacuate by warning devices at the dock and appropriate signing and land trails within the monument. Signing and warning devices would be sized, located, and designed

to minimize intrusions upon natural, cultural, and social values. Ranger assistance would help insure an expedient evacuation and greater assurance of success.

System Design

Two gauges would be located in the middle of the Bridge Canyon/Rosebud Creek Channel, 1 to 2 miles upstream. The location of the triggering mechanism needs to be placed sufficiently upstream to provide an acceptable warning time. The exact distance and warning time required will be provided to design engineers during system design by Fort Collins Water Resources Division and safety officials. The system would be equipped with photovoltaic panels to charge batteries for a radio transmitter. All would be accessible by trail, and construction and maintenance would be restricted by horseback or foot access. Actual design for the system would be done during the advanced planning stage for plan implementation and may include modeling of docking facilities from the impact of wave action generated by flash floods at various intervals. The assessment from this modeling will be used in displays in the wayside exhibit.

The most limiting flood depth for warning of an impending flash flood may be the 100-year flood or a smaller recurrence interval event. The appropriate criteria will be set at the time of system design by Fort Collins Water Resource Division and safety officials. At a minimum, the actual depth of a 100-year flood could be used and can be reasonably estimated for this area. Using equations presented in a U.S. Geologic Survey report (Thomas and Lindskov, 1983) for estimating depth of flow gathered for distinct climatic areas of the state of Utah ($D100 = 17.9 * [A^{0.143}] * [E^{-0.680}]$), the estimated depth of flow above the bottom of the stream channel for a 100-year flood is 7.5 feet where

D100 = 100-year recurrence interval flood depth

A = watershed area in square miles

E = average watershed elevation in thousands of feet.

The watershed for Bridge Creek was measured at 6.92 square miles and 5,500 feet, respectively (memo and personal conversation, Smillie, 8/89).

The stream flow gauge system would transmit a signal when a certain flow level was reached. The transmitter would signal a repeater on Navajo Mountain that in turn would signal a siren/flasher system at Rainbow Bridge and at Glen Canyon NRA dispatch. The flow level would be calculated based on modeling done at the time of plan implementation. Each gauge would be activated when the water height exceeded the calculated elevation. Gauges would be attached to a power source and transmitter. The power source would probably be batteries attached to photovoltaic panels for charging.

Coordination with the Navajo

In all probability, placement of the stream flow gauge would be on the Navajo Reservation in both the Bridge Creek and Redbud drainages. The National Park Service will coordinate location of the stream flow gauge at the time of system design.

Maintenance and Testing

In order to be fully successful, this system needs to incorporate a regular manual testing and maintenance program. This would be designed to insure a fully working system and avoid the false sense of security by staff that the monument is protected, which could come about when a system of this type is put into place. *The importance of this component of the program cannot be understated. Cyclic maintenance is a necessity and should be viewed as the highest priority.* Recurring costs in the form of operations and maintenance from this would be about \$5,000 annually.

COST

The signs and wayside would cost approximately \$4,500. However, if the wayside is added on a separate floating walkway structure so the walkway is wider at that location, an additional \$9,000 will be required for the floating walkway section.

The stream gauge system would cost approximately \$40,000 to \$70,000.

APPENDIX D
STATEMENT OF FINDINGS

STATEMENT OF FINDINGS FOR FLOODPLAINS

INTRODUCTION

Rainbow Bridge National Monument was originally formed by eccentric stream erosion and has flash flood areas along Bridge Canyon running through its center. Dock facilities on Lake Powell waters within Rainbow Bridge could be affected by flash floods. These are identified in the Rainbow Bridge General Management Plan/Development Concept Plan/Resource Management Plan/Interpretive Prospectus (RABR GMP) and the Environmental Assessment.

The National Park Service considered a range of alternatives in the development of the general management plan to avoid and mitigate the adverse impacts associated with the occupation of floodplains, in accordance with the National Park Service final regulations for implementing executive orders 11988 and 11990 (45 FR 35916 as revised by 47 FR 36718). Facilities on the water, although not within a flash flood zone, could be affected by flash floods. Corrective measures are described in the RABR GMP, Appendix D - Flash Flood Mitigation Plan.

The proposed RABR GMP, with the Flash Flood Mitigation Plan conforms to applicable State and local floodplain protection standards and is the most practical alternative for mitigating the flood hazards and protecting beneficial floodplain values.

National Flood Insurance Program criteria do not apply. Neither, Rosebud nor Bridge Canyon appear on Federal Emergency Management Agency maps. No wetlands would be affected by the plan.

Affected Environment

No developed areas are within the 100-year or 500-year floodplains. The existing land trail is out of the 100- and 500-year floodplains. Dock facilities and floating walks on the water in Bridge Creek within Rainbow Bridge National Monument could be affected by flash floods of 100-years, 500-years, and probable maximum flood (PMF). The NPS final procedure for implementing E.O. 11988 and 11990 defines a "flash flood" as a flood in which the waters rise so rapidly there is insufficient time for warning and evacuation of persons threatened by the flood. When elevation levels for Lake Powell drop below the full operating pool of 3,700 feet, some of the monument is in a flash flood, high hazard area. The 100- and 500-year flood elevations in Bridge Creek are estimated to be 7.5 and 10 feet above the bottom of the channel, respectively. That area can be defined as the area of Bridge Canyon Creek immediately before entry to Lake Powell. The high hazard area is undeveloped and there are no structures or trails within the area, from which humans could seek shelter. Flash floods are most likely to occur during times of the highest visitor use, the summer thunderstorm season.

Information provided in the plan indicates that a potential problem could be created by flash flood waters entering Lake Powell near Rainbow Bridge. Hazards from flood flows in Bridge Creek are divided into three general areas: 1) above the lake; 2) a short reach near the terminus of the lake (transition area); 3) the lake beyond the transition area. The delineation of these areas will vary based on the elevation level at Lake Powell. At full operating level of 3,700 feet, the dock facilities would be located more than 2,000 feet from the end of the water channel. At lake elevation 3,650, some floating dock facilities could be as close as 400 feet to the end of the water channel.

For the area above the lake, analysis indicated that the trail that follows the creek was located on a bench well above the channel and is out of the 100- and 500-year floodplains near Rainbow Bridge.

For the transition area near the terminus of the waters for Lake Powell, analysis indicated that the actual location at any time would vary according to fluctuating lake levels and flood magnitude. At normal levels, the transition area would include Rainbow Bridge itself and the existing floating walkway. The transition area would be subject to some water surface elevation increase, surface turbulence, and significant velocities. Facilities within the transition area could become unstable and the walkway could

be torn from its moorings, making evacuation from the site dangerous. The transition area is not within the flash flood area, but is subject to the effects of a flash flood. These factors will be taken into account during the design of the facility's anchoring system.

For the lake beyond the transition area, analysis indicates little or no discernable water surface increase would occur and surface turbulence would be limited. The lake beyond the transition area is not within the flash flood area and is not subject to the effects of a flash flood, although some surface waves may be present below the transition zone.

When Lake Powell is at full operating pool, flash flood areas are in the Bridge Canyon drainage, just outside the monument. When Lake Powell lake levels drop to 3,660 feet, the decreasing reservoir pool exposes land within the monument, flash flood areas increase, and flash flood areas move into the monument. All facilities are outside of the 100-year and 500-year flash flood areas; however, facilities on the water at Rainbow Bridge National Monument could be affected by wave surges created by flash floods.

Why Development Actions Are Located in the Floodplain

The existing docking facilities, land trail, and viewing areas were in place before the preparation and studies were done for this general management plan. General management guidance has been provided by the General Management Plan for Glen Canyon National Recreation Area. After flood studies were completed in 1989 it became apparent that flash floods might affect docking facilities, because of the location of these facilities in the transition zone. The proposal outlined in the Flash Flood Mitigation Plan is considered to be the best practical course of action, short of closing the monument to the public.

Alternatives Considered

Rainbow Bridge General Management Plan, Alternative A, and Alternative B. A flash flood mitigation plan was developed within NPS guidelines for compliance with Executive Order 11988. Consistent with these guidelines, the National Park Service has developed the following objectives (listed in priority order) for floodplain management at Rainbow Bridge: protect life, allow existing visitor use areas to remain open to the public wherever possible, and protect property.

The maximum number of persons who could be exposed to the effects of flooding is related to the carrying capacity of the monument -- 220 for The Proposal, 390 for Alternative A, and 40 for Alternative B. The Flash Flood Mitigation Plan will reduce effects on these visitors. There are four components of the Flash Flood Mitigation Plan -- a wayside exhibit, additional signing, evacuation and emergency preparedness procedures and a warning system. The wayside would show flood hazard areas and illustrate the flood of record (if known), 100-year flood, and the probable maximum flood. Additional signs would be added telling visitors in the flood hazard zones where to move in case of a flood. Evacuation and emergency preparedness measures would be identified for the monument. A warning system would be installed and would provide enough warning time for the area to be evacuated and loss of life prevented. Acceptable warning times would be determined at the time of system design, by the National Park Service Fort Collins Water Resource Unit and safety officials.

No-Action Alternative. Under the No-Action Alternative, use of existing facilities by visitors without proper warning devices, information, and emergency preparedness procedures would continue. Mitigation measures would not be adequate for the area to be evacuated quickly and loss of life and property from flash floods prevented. The maximum number of persons who would be exposed to the effects of flash floods would be unlimited.

Alternatives Considered But Rejected. Other alternatives were considered and rejected during the development of the Flash Flood Mitigation Plan. The following is a brief description of those considered.

Relocation of monument dock facilities in a place other than those shown in the alternatives is not

feasible. Visitors could be stopped on the floating walkway some distance from Rainbow Bridge, but the visitor experience would be greatly diminished. All land access would have to be prohibited or to avoid flood hazard, the floating platform would have to be several hundred yards from Rainbow Bridge, practically back to the existing courtesy docks. Due to the constricted lake channel in this area, a large floating platform for visitors to congregate on at the northwest end of the walkway would not be feasible. This facility arrangement is unacceptable if a meaningful visitor experience is to be maintained.

Structural flood mitigation measures such as dams, dikes, levees, and channels were not considered. Their impact on the monument was determined to be excessive. Such structures would directly contradict and degrade the purposes for which the national monument was established.

Another option for predicting flash-flood hazard is radar. However, there is not an adequate radar system in the area to provide such precise small drainage warning. If one were installed on Navajo Mountain, it would have the added benefit of providing flash flood warning capabilities for most of Glen Canyon National Recreation Area and surrounding areas. However, the cost of installing, maintaining, and monitoring such a system makes this option prohibitive.

EFFECT ON NATURAL OR BENEFICIAL FLOODPLAIN VALUES

None of the proposals at Rainbow Bridge NM would adversely affect the water resource values of floodplains related to the natural moderation of floodwaters, maintenance of water quality, and ground water recharge. No living resource values would be affected. The natural and beneficial values of the floodplains or wetlands would not be adversely affected. Actions would benefit the natural and beneficial values of the floodplains by reducing the risk to visitors of flash flood hazards. Short term disruption of vegetation and soil loss by construction activities would not increase the potential for erosion or downstream siltation in the event of normal storms.

CONCLUSION

Based on the proposed actions and mitigating measures described above, the National Park Service has determined that the proposed actions for the Rainbow Bridge National Monument General Management Plan in flash flood floodplain areas are the most practicable alternatives. This decision was based on the need to provide adequate visitor and administrative facilities, to improve visitor safety, and to improve resource protection. The risk is minimized by the provision of flood emergency warning and response procedures via a flash flood mitigation plan and installation of warning devices in Bridge Canyon and Rosebud Creek drainages.

Recommended:

Michael D. Snyder

MS

Regional Director, Rocky Mountain Region

2/18/92

Date

Approved:

Jim Ridenour

Director, National Park Service

3/11/92

Date

APPENDIX E
DRAFT FINDING OF NO SIGNIFICANT IMPACT

Draft (06/21/93) **FINDING OF NO SIGNIFICANT IMPACT**

General Management Plan

Development Concept Plan

Interpretive Prospectus

for

Rainbow Bridge National Monument

INTRODUCTION

The National Park Service has prepared a general management plan, development concept plan, and interpretive prospectus to guide long-range management, development, and use of the Rainbow Bridge National Monument. An Environmental Assessment that analyzes issues dealing with diverse public expectations, visitor experience, protection of natural and cultural resources, access, interpretive services, and facilities was released for a 60-day public review in November of 1991. The *General Management Plan, Development Concept Plan, Interpretive Prospectus and Environmental Assessment, October 1991 (GMP/EA)* for Rainbow Bridge National Monument responded to new issues identified during the planning process when the draft plan was first published in September of 1990. The plan was further modified to respond to additional public comment received during the second public review period, which closed in February 1992. The proposed plan is summarized below.

PROPOSAL

The plan provides a variety of recreational experiences and settings for visitors to the national monument. Management methods used to implement the plan respond to the need to achieve use levels falling within the monument's natural, biological, physical, and social carrying capacity levels. A daily mix of visitor experience opportunities will be provided, including opportunities to experience the monument in relative quiet and tranquility. Visitor-use levels during the primary visitor-use season will be controlled by restricting access to tours only during a portion of each day and by limiting the dock capacity for those portions of the day when private boats are allowed access. Interpretive services will use a variety of techniques based on the management period. Developments will be limited to those necessary to meet basic visitor and resource protection needs. The plan allows for flexible dock location to adjust to fluctuating lake levels and minimal development to maintain a natural setting. Developments will be sized, located, and designed to minimize intrusions upon natural, cultural, and social values.

ALTERNATIVES CONSIDERED

A no-action and three action alternatives were considered in detail in the *GMP/EA*. Each alternative was a complete set of management actions proposed to address the issues.

The first, which was the original NPS proposal, provided for variety of recreational experiences and settings for visitors and responded to the need to achieve use levels falling within the monument's natural, biological, physical, and social carrying capacity levels. It also provided for regulating use levels through the staged implementation of actions that will eventually lead to a reservation system and a shuttle service.

Alternative A, was designed to maximize the number of visitors that could be accommodated at Rainbow Bridge through use of a shuttle system, and would have created a visitor experience similar to that of a rural or urban environment.

The alternative B, would have substantially reduced the number of visitors who could see Rainbow Bridge during the high-use season, but would have provided a semiprimitive recreation experience and opportunities for visitors to experience quiet and tranquility on a year-round basis.

The no-action alternative, alternative C, provided for the retention of existing management strategies and conditions.

PUBLIC INVOLVEMENT

Public involvement was solicited through news releases and brochures describing the planning project. The scoping brochure was released in December 1988, and thirty days were allowed for public comment. Responses were received and incorporated into planning for this project and were considered during the formulation of alternatives. Consultation with concessioners, the Navajo Tribe, and other federal/state agencies occurred.

In September 1990, the National Park Service distributed the *Draft General Management Plan, Development Concept Plan, Resource Management Plan, Interpretive Prospectus and Environmental Assessment* for Rainbow Bridge National Monument. The *GMP/EA* presented a proposal and three alternatives for addressing issues and mitigating impacts on the environment. National Park Service representatives met with concessioners, the Navajo Tribe, and other federal/state agencies during the 90-day review period. Eighty-six comments were received. As a result of substantive public comment, the National Park Service chose to reassess the range of feasible alternatives and reissue the *GMP/EA*.

In November 1991, the National Park Service distributed the revised *Draft General Management Plan, Development Concept Plan, Resource Management Plan, Interpretive Prospectus and Environmental Assessment (GMP/EA)* for Rainbow Bridge National

Monument. The *GMP/EA* presented a new proposal and three alternatives responding to issues. Representatives of National Park Service met with concessioners, the Navajo Tribe, the Hopi Tribe, the San Juan Paiute Tribe, and other federal/state agencies during the 60-day review period. During this period, 95 responses were received. Additional verbal responses were received during consultation meetings held with representatives of the three American Indian tribes. Many respondents felt that the proposed plan would place too many restrictions on visitors to the monument and would result in a reduction of the number of people able to visit the monument. Other respondents felt that the plan did not go far enough in controlling use levels at the monument and in providing opportunities for visitors to experience the natural quiet of the monument. On June 15, 1990, the Fish and Wildlife Service state supervisor in Utah concurred with the NPS determination that the *GMP/EA* is not likely to adversely affect endangered and threatened species in the area.

Compliance with Section 106 for this plan is under way with the Utah State Historic Preservation Officer (USHPO), the Advisory Council on Historic Preservation (ACHP), and the Navajo Nation via a separate memorandum of agreement. The National Park Service consulted with the USHPO, ACHP, Hopi Tribe, San Juan Paiute Tribe, the Navajo Nation, and other interested persons in preparation of this plan, pursuant to a servicewide programmatic agreement (1990) as it applies to the monument's eligibility as a traditional cultural property. The NPS requested that the USHPO concur with their determination that Rainbow Bridge qualifies for listing on the National Register of Historic Places. On March 17, 1992, the USHPO concurred with the recommendation indicating Rainbow Bridge to be eligible for listing. No actions that could affect cultural resources will be undertaken prior to completion of Section 106 compliance.

CONCLUSION

The proposal does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The proposal will not have a significant effect on the human environment. Negative environmental impacts that could occur are minor and temporary in nature. There are no *unmitigated* adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in, or eligible for listing in, the National Register of Historic Places, or other unique characteristics of the area. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Approved:

Regional Director, Rocky Mountain Region

Date