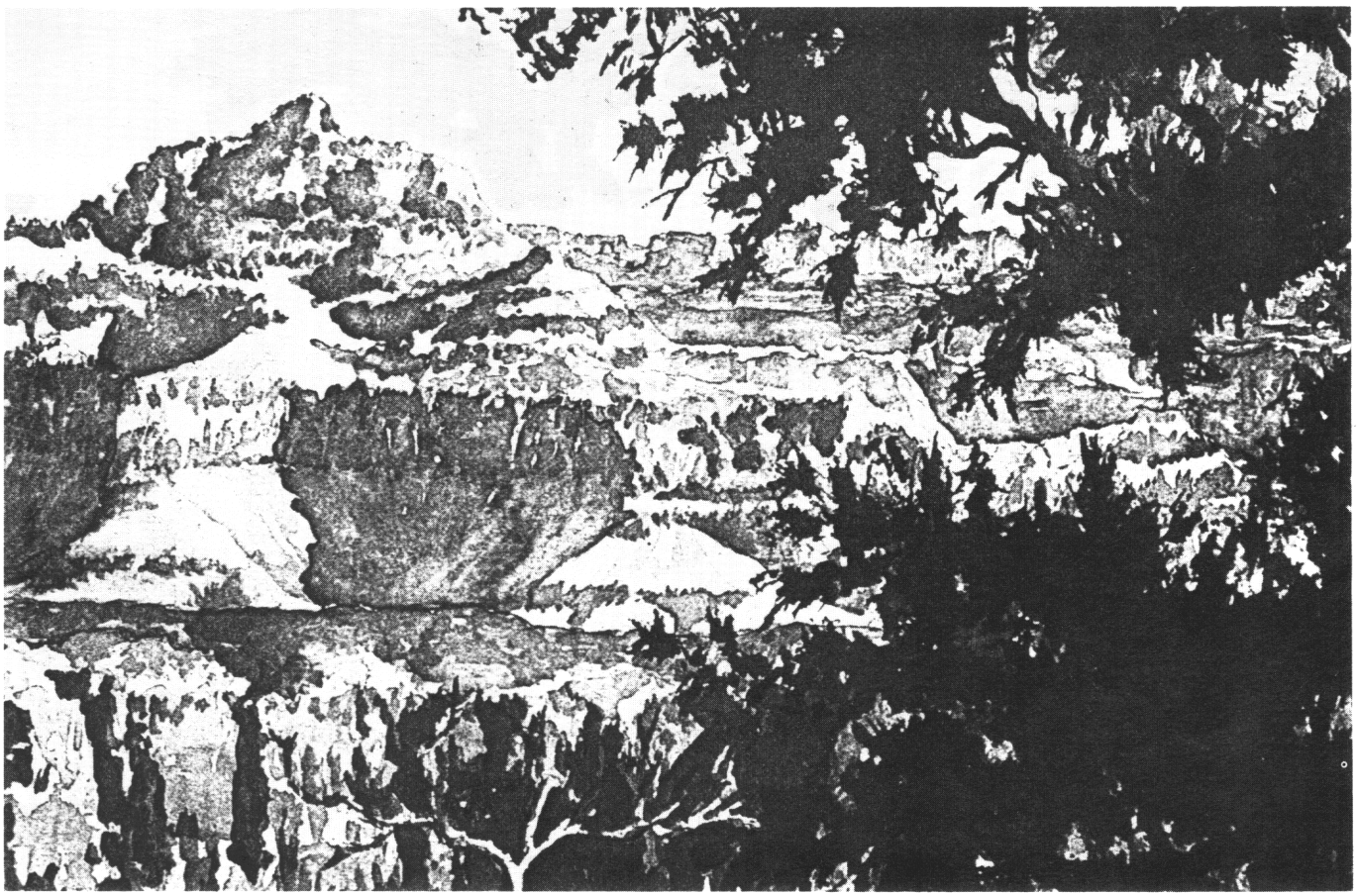
Van Ripper

FINAL
GENERAL MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT



GRAND CANYON
NATIONAL PARK • ARIZONA

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FINAL
GENERAL MANAGEMENT PLAN
and
ENVIRONMENTAL IMPACT STATEMENT

GRAND CANYON
NATIONAL PARK

Coconino and Mohave Counties, Arizona

July 1995

The *Draft General Management Plan and Environmental Impact Statement* provided management objectives and visions for Grand Canyon National Park, with alternative plans for the park's developed areas (South Rim, North Rim, Tuweep, and the corridor trails). The proposed action (alternative 2) would emphasize regional cooperation for information distribution, regional resource preservation, and a quality visitor experience. A major shift away from the use of private automobiles would occur. Alternative modes of transportation would be emphasized throughout the region, with staging areas linked to regional private transit services in outlying communities and a public transit system within the park. A bike/pedestrian trail system would be developed within the park. Private vehicles would be removed from all high use areas in the park, creating pedestrian-only areas. The number of private vehicles allowed into the park at any one time would be limited in certain areas. The adaptive reuse of historic structures and other structures would be maximized. The construction of new facilities within the park would be almost entirely within disturbed areas. The visitor experience would be defined by the unique qualities of each individual area, and the number of visitors allowed into some areas of the park would be determined by a carrying capacity monitoring program. With respect to environmental consequences, the proposed action would stabilize the growth of infrastructure, enhance natural and cultural resource preservation, significantly improve the visitor experience, create better living and working conditions for park employees, and benefit local economies. The other alternatives include continuing existing conditions (the no-action alternative), a minimum requirements alternative (alternative 1), reduced development within the park (alternative 3), and increased development within the park (alternative 4).

The draft document was on formal public review for 60 days, from March 13 to May 11, 1995, and a total of 240 letters of comment were received. Because the comments did not substantially modify any of the alternatives, propose new concepts for consideration, or supplement, improve, or modify the environmental analyses, this *Final General Management Plan and Environmental Impact Statement* includes only factual corrections and text clarifications to the draft, summaries of substantive comments, and National Park Service responses to those comments. The full text of the draft document has not been reprinted, and this final document must be used as a companion document with the draft.

A record of decision on the final plan will be issued 30 days after this final document has been made available for public review, as announced in the *Federal Register*. For further information about this plan contact the superintendent at the following address:

Grand Canyon National Park
P.O. Box 129
Grand Canyon, AZ 86023

United States Department of the Interior • National Park Service
in cooperation with the
United States Department of Agriculture • Forest Service

SUMMARY

The *Draft General Management Plan and Environmental Impact Statement* for Grand Canyon National Park was released for formal public review on March 13, 1995, as announced in the *Federal Register.* The original 45-day review period was extended to 60 days (ending on May 11). A total of 240 letters of comment were received from governmental agencies, American Indian tribes, and the public. Because of the nature of the comments, the National Park Service has decided to issue an abbreviated *Final General Management Plan and Environmental Impact Statement* that notes clarifying text changes and factual corrections, and that summarizes and responds to substantive comments.

This shortened format for a final environmental impact statement is in accordance with the *Code of Federal Regulations,* title 40, part 1503.4. The "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" state that if changes in response to comments are minor and are confined to factual corrections or explanations of why comments do not warrant further agency response, then they may be written on errata sheets and attached to the draft statement instead of rewriting the draft statement.

The regulations also allow substantive comments to be summarized when the response has been exceptionally voluminous. The 240 comments received totaled 532 pages. In an effort to reduce paperwork, to streamline the planning process, and to reduce printing costs, all substantive comments have been summarized. The original comments are on file at the National Park Service, Denver Service Center, Technical Information Center, Denver, CO 80226, and copies may be requested under the Freedom of Information Act.

The first part of this document corrects errors that were noted in the draft text. For example, housing numbers and employee numbers in the text and tables that did not match have been corrected to show actual numbers. The second part of this document responds to comments and clarifies the intent of proposed actions or explains why certain subjects were or were not addressed. For example, a few comment letters presented concepts that had been considered in the development of the draft range of alternatives.

A total of 177 comments indicated a preference for an alternative. These preferences are noted below:

Alternative	Pro	Con
Alternative 1 (no action)	1	10
Alternative 2 (proposed action)	94	9
Alternative 3 (reduced park development)	41	3
Alternative 4 (increased park development)	2	17
Total	138	39

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CORRECTIONS AND REVISIONS TO THE *DRAFT GENERAL MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT*

PREFACE

Page iii, paragraph 2, sentence 2 — Change to read as follows:

> The exposed geologic strata — layer upon layer from the basement ~~bedrock~~ Vishnu schist to the capping Kaibab ~~Coconino~~ limestone — rise over a mile above the river. . . .

Page iii, paragraph 3, sentence 1 — Change to read as follows:

> The park contains several major ecosystems from the mixed Mohave desertscrub ~~Sonoran Desert~~ of the lower canyon to the coniferous forests of the North Rim.

NOTE: Corrections and revisions are noted by section, page number, column, and paragraph. The phrase "change to read" means that words have been added or deleted. Underlines indicate new text (except for lengthy additions), while strikeouts show deleted text. The word "replace" or "rewrite" means new phrasing for a sentence or paragraph.

PURPOSE OF AND NEED FOR ACTION

INTRODUCTION

Page 3, column 4, following paragraph 2 — Insert the following text:

> The most pressing issue in the park today that is creating the need for this plan is the degree of impact created by the annual crush of 5 million visitors and their private cars on the few developed areas along the canyon rims. No comprehensive management plan is in place that provides direction for the park when dealing with general visitor use or that guides the park in appropriate development.

Park Significance

Page 4, column 1, paragraph 1 — Replace the introductory paragraph with the following text:

> Grand Canyon National Park is nationally or internationally significant for the following reasons:

Park Vision Statements

Page 4, column 5, paragraph 1 — Replace the introductory paragraph with the following text:

> The vision statements for the park convey the essence of the park's qualities and desired future conditions. The statements are built on the park's purpose, significance, and applicable legislation, as well as public comments and principles of sustainable resource and visitor management. The visions affirm what must be preserved, as well as what types of experiences visitors should be able to expect. The visions and management objectives, along with park purpose and significance, provide the basis for the plan alternatives and proposed action, and they set the direction for future management decisions that are not specifically addressed in the alternatives.

Page 5, Location map — Relabel the "Paiute Tribe" reservation as the "Kaibab Paiute Tribe."

Undeveloped Areas. Page 6, column 2 — Insert the following text as the second paragraph:

> Visitors traveling through the canyon on the Colorado River should have the opportunity for a variety of personal outdoor experiences, ranging from solitary to social. Visitors should be able to continue to experience the river corridor with as little influence from the modern world as possible. The river experience should help visitors to intimately relate to the majesty of the canyon.

Management Objectives

Wilderness and Wild River Management. Page 6, column 4, last paragraph — Rewrite as follows:

- Manage the Colorado River corridor through Grand Canyon National Park to protect and preserve the resource in a wild and primitive condition. Actively pursue designation of eligible segments of the Colorado River and its tributaries as part of the national wild and scenic rivers system.

Facility Design. Page 6, column 6 — Insert the following text after third bullet:

- Ensure that park developments and operations do not adversely affect park resources and environments, except where absolutely necessary to provide reasonable visitor access and experiences.

South Rim Management Objectives. Page 7, column 1, paragraph 1 — Change to read as follows:

> The South Rim is considered to be bounded on the west by Hermits Rest and on the east by Desert View, on the north by the canyon rim, and on the south by the park boundary.

North Rim Management Objectives. Page 7, column 2, paragraph 1 — Change to read as follows:

> The North Rim is considered to include all park lands north of the canyon rim from Walhalla Plateau west to Swamp Point.

Page 7, column 3, "Visitor Experience," bullet 4 — Move to new section "Tuweep Management Objectives" (see below).

Page 7, column 3, "Access" — Rewrite the first bullet as follows:

- Emphasize the natural environmental and slow pace of the visitor experience in providing all access to ~~all parts of~~ the North Rim. . . .

Tuweep Management Objectives. Page 7, column 4, after first full paragraph — Insert the following new section:

> **Tuweep Management Objectives**
> Tuweep is considered to include park lands within 150 feet of the roads to the Toroweap overlook and Lava Falls trailhead, including those destinations, and the Tuweep ranger station development. The following objectives for Tuweep are in addition to the overall park objectives.
> - Maintain Tuweep as an uncrowded, rustic, and remote experience that is dominated by nature and solitude.
> - Maintain park roads at Tuweep in their current primitive, unpaved condition, and encourage access roads outside the park to be consistent with the vehicular experience to be provided inside the park.

Corridor Trails Management Objectives. Page 7, column 5, "Maintenance" — Rewrite second bullet as follows:

- Minimize and mitigate the impacts of trail maintenance activities. . . .

Undeveloped Area Management Objectives. Page 7, columns 5–6 — Change as follows:

Column 5, paragraph 1, sentences 1 and 2 — Change sentence 1 to read as follows; delete sentence 2:

> Undeveloped areas are considered to be all areas within the park boundaries not within the areas described for the South Rim, North Rim, Tuweep, or corridor trails. ~~They include most of the inner canyon . . . Pasture Wash.~~

Column 5, bullet 1, second to last line — Change to read as follows:

> Manage and monitor visitor use and park resources . . . to preserve and maintain a wilderness experience or, where an area is not proposed ~~suitable~~ for wilderness, a primitive experience.

Column 6 — Insert the following bullet at the end of the list:

- Provide a wilderness river experience on the Colorado River (this objective will not affect decisions regarding the use of motorboats on the river).

CONTEXT FOR THE PLAN

Issues and Concerns

South Rim. Page 8, column 1, "Region," paragraph 3, sentence 2 — Change to read as follows:

> The residents and businesses of Tusayan are actively pursuing local development plans (e.g., the *Tusayan Area Plan).*

Tuweep. Page 8, column 5, "Cultural and Natural Resources" — Insert the following as the third paragraph:

> There are also a large number of significant archeological and probably ethnographic resources in the area. Because Tuweep is remote, these sites are being vandalized.

Corridor Trails. Page 8, column 5, "Cultural and Natural Resources" — Insert the following text as the first paragraph:

> The historic character, cultural landscape, and archeological resources near the trails are being impacted by high visitor use.

Influence of Other Plans and Projects on This Plan

National Park Service. Page 9, column 3, *"Backcountry Management Plan,"* last sentence — Change to read as follows:

> Ways to manage use in backcountry areas, including the corridor trails and Tuweep, will generally be addressed in the revised plan according to the direction provided in this general management plan, including the possibility of day use permits or other restrictions in certain areas.

Page 9, column 3, *"Colorado River Management Plan"* — Change to read as follows

> The park's 1989 *Colorado River Management Plan* will be revised as needed to conform with the direction given in the management objectives of the final general management plan. The use of motorboats will be addressed in the revised plan, along with other river management issues identified through the scoping process. The revised plan will also conform to NPS direction and responsibilities as set forth in the *Operation of Glen Canyon Dam Final Environmental Impact Statement.*

Page 9, column 3, after last full paragraph — Insert the following new section after the *"Fire Management Plan"* section:

> **Aircraft Management Recommendations.** In September 1994 the National Park Service report to Congress in compliance with Public Law 100-91 (NPS 1994d) contained specific recommendations for substantially restoring the natural quiet and experience of the park relative to aircraft overflights. This *Final General Management Plan and Environment Impact Statement* and the report's recommendations are consistent with each other and with legislation and policy. Additional future planning would further address aircraft overflight issues in detail. This document provides specific guidance for NPS actions to address the issues in the "Management Objectives" section.

Bureau of Land Management. Page 9, column 4 — Change line 1 to read as follows:

> This 1992 plan by the Bureau of Land Management provides management direction for the Arizona Strip. . . .

U.S. Forest Service. Page 9, column 4, "Kaibab National Forest Land Exchange Environmental Impact Analysis" — Change the word "Analysis" to "Statement."

Tusayan Planning Committee. Page 9, column 6 — Change to read as follows:

> First sentence — In 1993 Coconino County formed the Tusayan Planning Committee to create goals and policies to be used as guidance by Coconino County officials when deciding issues with a bearing on Tusayan.
>
> Last sentence — The *Tusayan Area Plan* was largely completed by December 1994.

Regional Transportation Committee. Page 9, column 6, paragraph 3 — Change second sentence to read as follows:

> The study is concentrating on the feasibility of establishing staging areas in existing communities. . . .

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

INTRODUCTION

Actions Common to All Alternatives

Page 13, column 4 — Insert the following paragraph after the introductory paragraph:

> A general management plan is primarily a conceptual plan. Therefore, in most cases additional site-specific planning and comprehensive design, accompanied by analyses of environmental impacts, would have to be completed before any proposed actions were implemented. (For example, upon further detailed planning, design, and analysis, it might be determined that a proposed location for a road or trail could have fewer impacts or might better accomplish the intended purpose at a slightly different location than proposed in this plan.) Future actions will be undertaken in full compliance with all applicable laws, policies, and requirements, as listed on pages 189 to 192 of the *Draft General Management Plan and Environmental Impact Statement.*

Page 13, column 6, last paragraph, sentence 1 — Change to read as follows:

> The 1980 and 1993 wilderness proposal, the established Havasupai use land, <u>the Colorado River,</u> and undeveloped areas on the South Rim are all within the natural zone.

Management Zones. Page 14, column 1, "Development Zone," paragraph 2 — Add the following text at the end of this paragraph:

> (Lees Ferry is an existing development zone of Glen Canyon National Recreation Area; however, Grand Canyon National Park rangers are stationed at Lees Ferry, and proposals in this document relating to operations at Lees Ferry would be considered in an amendment to the 1985 Lees Ferry *Development Concept Plan.)*
>
> The boundaries of the park's developed areas are as follow:
>
> > **Hermits Rest** — from the paved parking area on the east to the Hermit trailhead on the west, including all the structures, walkways, and roads in-between
> >
> > **Grand Canyon Village** — generally bounded on the west by Rowe Well Road (but includes Supai Camp and the wastewater lagoons), on the south by power and sewer line corridors and by Center Road (but includes the helibase area and the landfill area), on the east by the south entrance road (but includes the Southgate area and the South Kaibab trailhead area), and on the north by the canyon rim
> >
> > **Tusayan museum** — includes the parking lot, the museum, the adjacent residence, and the area between them

Desert View — bounded on the west, north, and east by the canyon rim; the south boundary is an imaginary line from the rim to the west side of the current entrance station, then just south of the entrance station and the employee housing area along sewerlines to the lagoons, and then to the rim

North Rim — the entire Bright Angel peninsula from the wastewater treatment plant south, plus the CC Hill and the North Kaibab trailhead areas

Tuweep — includes the ranger station, the water catchment system, the outbuildings (including the generator shed), the area between these facilities, the campground, and the unpaved road into Tuweep

Phantom Ranch — bounded on the east and west by the canyon walls, on the north by the hiker dorms, and on the south by the Colorado River

Transportation subzones connect development zones and include primarily paved road corridors and rail corridors to a width appropriate for safe travel. The following areas are considered transportation subzones:

West Rim Drive — between Grand Canyon Village and Hermits Rest, including existing overlooks and parking areas, plus areas immediately adjacent to West Rim Drive that would be suitable for a bike/pedestrian trail

East Rim Drive — from Grand Canyon Village to the east entrance (excluding the Desert View developed area), including existing overlooks, overlook access roads, picnic areas, and parking areas, plus areas adjacent to East Rim Drive, particularly on the north side, that would be suitable for a bike/pedestrian trail

South Entrance Road — from the south entrance into the Grand Canyon Village developed area, plus the following: Rowe Well Road, the old entrance roadbed west of the existing entrance road, the existing powerline corridor into Grand Canyon Village from the south, and the existing railroad corridor along Bright Angel Wash

North Entrance Road — from the north entrance to the North Rim developed area

Walhalla Plateau Scenic Drives (North Rim) — from the north entrance road to Point Imperial and Cape Royal, including existing overlooks and parking areas, plus areas adjacent to these roads (and outside recommended wilderness areas) that would be suitable for bike/pedestrian trails

Utility subzones within the developed zone include all extant utility corridors, such as the utility corridors from Grand Canyon Village to Desert View, from the village to Hermits Rest, and from the north park entrance to Bright Angel Point. Their width is determined by the particular type of utility (such as, water, sewer, or power).

Sustainable Development. Page 14, column 3, paragraph 1 — Change last sentence to read as follows:

> Central to the concept of sustainable development is the idea that all decisions . . . must be evaluated in light of the principles of natural and cultural resource conservation.

Access for Visitors with Disabilities. Page 14, column 4, third full paragraph — Change second part of sentence to read as follows:

> . . . visitors with disabilities who could not be adequately accommodated by public transportation would be allowed private vehicle access.

Management Zones map. Page 15 — The access road to Kanab Point (shown just above the label for the Colorado River) should be shown coming from the north almost parallel to Kanab Creek canyon in the park (not from the west, as a right angle to Kanab Creek canyon). There is also designated road access to the 150-Mile Canyon trailhead.

Natural Resource Management. Page 16 — Make the following changes:

Column 5, bullet 6 — Change to read as follows:

- Quantify flows and water-related values at various springs and streams in order to participate effectively in future water right adjudications.

Add the following bullet at the end of the list:

- Continue research and monitoring of the resources of the Colorado River corridor and use that information to guide its management.

Cultural Resource Management. Page 16 — Make the following changes:

Column 5, paragraph 1, line 1 — Change to read as follows:

> ~~All~~ Significant cultural resources . . . would be preserved and protected.

Column 5, last paragraph — Rewrite as follows:

> Cultural landscape studies would be conducted to evaluate the significance of historic landscapes in the park and to determine their character-defining features. The use of native building materials and the physical layout of developed areas in harmony with the natural contours of the land enabled many elements of the built environment to blend with their natural surroundings. The settings of several historic districts, including Grand Canyon Village, are characterized by natural and historic landscaping, roads, and footpaths. In some cases historic natural landscaping was designed in such a way as to give a natural appearance using indigenous trees and shrubs. Associated with some historic footpaths, overlooks, and roads are a number of rustic stone curbs, headwalls, retaining walls, and culverts. Any changes to significant historic landscapes would be undertaken in accordance with historic preservation standards and NPS *Management Policies,* and significant character-defining features would be retained.

Column 6, bullet 1 — Change to read as follows:

> Conduct a comprehensive archeological inventory of the ~~entire South Rim~~ developed areas and immediate adjacent areas.

Cooperation outside Park Boundaries. Page 17, column 1, paragraph 2, sentence 1 — Change to read as follows:

> It is assumed that the Grand Canyon Railway would operate a rail shuttle service from the Tusayan area to the Maswik transportation center.

Page 17, column 2, "North of the Park," paragraph 1, sentence 2 — Change the document title to the *Kaibab National Forest* ~~*Land Management*~~ *Plan.*

South Rim. Page 17, column 3 — Insert the following new section after the "Employee Housing" section:

- **Community Services**

A new recreation center to replace the recently burned one would be built adjacent to the Grand Canyon School campus.

Tuweep. Page 17, column 4 — Rewrite sentence as follows:

> The septic and water catchment systems for the ranger station would be rehabilitated.

NO-ACTION ALTERNATIVE

Parkwide Management Actions

Natural Resources. Page 19, "Vegetation, Wildlife, and Ecosystems," column 2, top paragraph, second to last sentence — Change to read as follows:

> Native and self-sustaining plant materials would be used in landscaping. ~~when possible~~. Exotic plant species would continue to be actively eradicated.

Cultural Resources. Page 19, column 4, paragraph 4 — Change to read as follows:

> Cultural resources would be evaluated under criteria for listing on the National Register of Historic Places on a project specific basis.

South Rim

Visitor Experience. Page 20, column 3, "Orientation and Interpretation: Gateway Information," sentence 2 — Change to read as follows:

> Efforts would continue to coordinate NPS information provided by the private sector and other entities about visiting the park.

Tuweep

Visitor Experience. Page 22, column 2, "Orientation and Interpretation, Gateway Information," sentence 1 — Change to read as follows:

> Information about Tuweep would be available along Mohave County Road 5. No additional efforts would be made to attract visitors.

Column 3, "Visitor Services" — Make the following changes:

> Paragraph 1 — Change to read as follows:
>
> > The Bureau of Land Management would continue to allow ~~primitive~~ camping outside the Tuweep area.
>
> Paragraph 2, last sentence — Change to read as follows:
>
> > Since campsites would be available on a first-come, first-served basis, campers unable to get a park site <u>could be issued a park backcountry camping pass, if available, or they could be asked to use BLM campsites.</u>

No-Action Alternative, Park Developed Areas map. Page 23 — Change as follows:

> Roads 109 and 1069 have been redesignated as Mohave County Road 5. The road leading south from 5 to the park boundary has been redesignated as Mohave County Road 115.
>
> The Mt. Trumbull Wilderness area extends around Mt. Trumbull. The camping symbol in the Mt. Trumbull area is farther west. The Mt. Logan Wilderness area is to the west of the lettering "TUWEEP."
>
> Remove the dotted trail from the rim edge to Lava Falls (this is not a major corridor trail).
>
> [NOTE: These changes apply to the Park Developed Areas maps for all alternatives.]

ALTERNATIVE 1 — MINIMUM REQUIREMENTS

Parkwide Management Actions

Cultural Resources. Page 31, column 3, paragraph 1, sentence 2 — Change to read as follows:

> Cultural resources would be evaluated under criteria <u>for listing on the national register</u> on a project specific basis.

North Rim

Visitor Experience. Page 33, column 6, "Visitor Services: Outside the Park," last sentence — Change to read as follows:

> Under this alternative additional parking could be needed on adjacent national forest lands to accommodate visitors waiting to enter the park.

Tuweep

Visitor Experience. Page 34, column 3, "Access/Transportation," paragraph 1 — Add the following text after the first sentence:

> The Bureau of Land Management would continue to coordinate with Grand Canyon National Park on any future road improvements to the access road to Tuweep.

Page 34, column 3, "Orientation/Interpretation: Gateway Information" — Change last two sentences to read as follows:

> This area would not be advertised, and knowledge about it would primarily be by word of mouth and travel guidebooks. Information about Tuweep would be available along Mohave County Road 5.

ALTERNATIVE 2 — PROPOSED ACTION

Parkwide Management Actions

Natural Resources. Page 47, column 3, "Air Quality and Noise," paragraphs 1–2 — Replace with the following text:

> All permits and licenses required for operating commercial and transit vehicles within the park would incorporate standards for reducing air and noise emissions to the maximum extent feasible, phased in over the quickest reasonable time period. Bus operators would be required to turn off their engines when parked, continuing the current restrictions.

Page 47, column 6, "Water Resources" — Make the following changes:

> Paragraph 1 — Change to read as follows:
>
> > Water resource management actions would include reducing the use of water in the park, conserving ground and surface water resources, ~~protecting park waters, protecting groundwater resources from development,~~ instituting water quality and flow monitoring, understanding the park's hydrography, and protecting park water rights and the water supply capacity. ~~water sales to Tusayan, and flood hazard area management~~.

Paragraph 2 — Change to read as follows:

> For facilities proposed in the Tusayan area . . . water would be provided from the park system unless other sources were developed that had less impacts on park water resources.

Page 48, column 1, paragraph 1, line 1 — Change to read as follows:

> Existing and new light sources would be shielded to reduce light pollution at night.

Cultural Resources. Page 48 — Make the following changes:

Column 1, third bullet — Change to read "a comprehensive historic resource study program . . ."

Column 2, paragraph 2 — Insert the following text after sentence 1:

> The memoranda of agreement would address not only the treatment of ethnographic resources in the broadest sense, but also human remains and objects protected by the Native American Graves Protection and Repatriation Act. In all NPS actions outside the park where the Park Service was a cooperating agency, the Park Service would take the lead in developing these memoranda of agreement.

Column 3, top paragraph — Change to read as follows:

> A program would be initiated to complete the survey, inventory, documentation, and evaluation of cultural resources in the park under criteria for listing on the national register.

South Rim

Visitor Experience. Page 48, column 5, "Visitor Use Patterns," paragraphs 1–3 — Replace paragraphs with the following text:

> To continue providing a quality visitor experience while protecting park resources, and in keeping with the visions and management objectives established for the South Rim (see pages 4 and 7), limits would be placed on the number of people who could visit the South Rim at any one time. However, if the visitation assumptions made in this document are reasonably accurate, and if the transportation changes proposed in this alternative were implemented, then limits are not expected to be necessary until approximately 2015. The transportation changes would improve visitor distribution while still providing opportunities along the South Rim for solitude. The point at which limits would be imposed, once these changes were made, would be when approximately 22,500 visitors were on the South Rim at any one time.
>
> This figure was derived at through the carrying capacity process outlined on page 16 and in the special attention box on page 49. This capacity figure is a day use limit; because it is an estimate, it could be adjusted upward or downward based on data from future monitoring. The monitoring process would include many of the steps used in originally determining the capacity figures, including surveys of visitors. When monitoring showed that the number of

visitors was nearing the stage where the experience or resources were beginning to be negatively impacted, then the capacity would have been reached. It is currently thought this would occur with about 22,500 visitors along the South Rim at any one time; but the exact number would depend on the results of the monitoring program.

It is important to note that if the transportation and other facility changes proposed in this alternative were not put in place, then the limit on the number of people who could visit the South Rim at any one time would be substantially reduced. Also, if visitation substantially exceeded forecasts or if there was a significant delay in implementing crucial transportation and other changes, then that limit would need to be imposed much sooner. In fact, if the changes proposed in this alternative could not be put in place for one reason or another, something similar to the limits and day-use reservation system envisioned in alternative 1 would be imposed.

Pages 48–49, "Access/Transportation" — Make the following changes:

Page 49, column 1, first full paragraph — Replace with the following text:

North of Tusayan, at a site to be determined in cooperation with the U.S. Forest Service, a large parking facility is proposed. It would be closely associated with the gateway information center discussed on page 50 and would be the starting point for various alternatives to automobile travel into the park, as described below.

- First, a bicycle/pedestrian trail would connect this facility with Mather Point and a network of similar trails along the South Rim.
- Second, a rail shuttle between Tusayan and the Maswik center (an action common to all alternatives; see page 17) could, pending further environmental review, be relocated from the airport to this north Tusayan site and provide transportation service into the park for up to 20% of park visitors. The Maswik transportation center would be the northern terminus for this shuttle route because railroad track and the Maswik facility already exist. It is estimated that only up to 20% of visitors would use this service for the following reasons: (1) the landscape and other constraints, as well as the need to quickly distribute visitors, do not allow a larger facility at Maswik, (2) orientation provided at the Maswik facility would be less comprehensive than at the Mather Point orientation center, and (3) access from Maswik to the rim is less direct than from the Mather Point site.
- Third, a shuttle service to the Mather Point orientation center would be provided for the remaining day visitors who did not use the trail or the train. This shuttle could use either rubber-tired buses on the existing road or a fixed guideway system (e.g., rail, light rail, monorail); such a system would likely be privately financed and operated if economically feasible and costs for riders were reasonable.

Alternative analyses for providing these transit services would fully evaluate site-specific planning, design and environmental factors. Two primary criteria would be used in selecting transit corridors (in addition to the required environmental review): (1) existing disturbed areas would be favored over new disturbances, and (2) visitors must be well served by the routing. Existing disturbed corridors would be evaluated, including the

original entrance road alignment (just west of the existing south entrance road) and the utility powerline corridor leading to Grand Canyon Village.

The capacity of the Tusayan parking facility is estimated at a maximum of 2,600 vehicles by the year 2010. If other mass transit options were effective at reducing the number of cars arriving at the park's gate — such as buses from Flagstaff, the train from Williams, or other options to be developed — the size of the lot could be reduced.

Page 49, column 2, paragraph 1 — Replace with the following text:

USFS Road 302/307 would remain unchanged as a dirt/gravel road, assuming the visitation estimates made in this alternative were correct and that funding was obtained for the major transportation system components. If these conditions could not be met, the discussion of paving USFS 302/307 (in part or in whole) as an alternative to the park's East Rim Drive could be reopened. The possibility of straightening Rowe Well Road to avoid some of the rail crossings could be considered, but neither this road nor USFS Road 328 would be paved or graveled.

Page 49, "Roads, Parking, and Transit: Overview," columns 2–4 — Make the following changes:

Column 2, paragraph 1, sentence 4 — Change to read as follows:

Automobiles would be restricted from Hermits Rest to Yaki Point ~~Desert View~~ year-round by 2010.

Column 3, top paragraph — Insert the following text after this paragraph:

The parking lot near Mather Point, to be built in two phases, would not be any larger than 1,225 cars. If other transportation means were effective in reducing the number of cars arriving at the park gates (buses from Flagstaff, the train from Williams, or others that might be developed), the size of the parking lot could be reduced and the second phase might not be necessary. It is important to note that when this parking lot was built and vehicle restrictions in Grand Canyon Village put in place, there would be an overflow parking demand. This overflow would not be accommodated inside the park. If the parking lot proposed north of Tusayan was not in place at that time and/or the shuttles proposed were not available, other options through private entrepreneurs would be the only means for handling this overflow.

Columns 3 — Insert the following text before the last paragraph:

Buses on East Rim Drive would operate as described below:

All buses would be allowed access to East Rim Drive.

About half of the existing developed areas on East Rim Drive would be designated for use by buses only. The other areas would be designated for private vehicles only (no buses).

Desert View would be accessible to both buses and private vehicles.

During the off-peak season private vehicles would be allowed access to all developed areas on the East Rim, as long as the off-peak season demand did not exceed the available parking supply at these developed areas.

Roadside parking in the vicinity of the developed areas would be prohibited through the use of curbing, appropriate regulatory signing, and active enforcement.

Column 4, paragraph 1, sentence 1 — Change to read as follows:

West Rim Drive would be converted to year-round public transit~~/concession tour~~ service only.

Page 49, column 4, "Roads, Parking, and Transit: Grand Canyon Village," columns 4–6 — Make the following changes:

Insert the following text as a special attention box:

Arrival Sequence at the South Rim

- Visitors would receive information packets at home that describe transportation alternatives, visitor services, lodging, etc.
- Visitors could stop at regional gateway information centers at Las Vegas, Phoenix, Williams, and Flagstaff.
- Electronic message signs south of Tusayan and in Cameron would advise travelers regarding the status of parking on the South Rim.
- Visitors would be encouraged to stop at the gateway orientation center at Tusayan. If the Mather Point parking area was full, visitors could choose to park and ride an NPS or private transit bus into the park.
- Visitors could stop at the Mather Point orientation/transit center (by private vehicle if the lot was open, otherwise by tour or transit bus).
- Visitors parking at Mather Point would ride an NPS shuttle into the village and on West Rim Drive. If parking was not available, visitors would park their private vehicles in Tusayan and take a transit service into the park.
- Private vehicles and tour buses would be allowed to access East Rim Drive at all times.
- Overnight guests would be allowed to drive to the designated parking area for their particular lodging unit. Tour buses with overnight guests would be allowed direct access to lodging units to drop off passengers.

Column 5, paragraph 1 — Insert the following text after the first paragraph:

> Local bus companies that demonstrated and maintained a good record of performance in the park, that operated clean-burning fleets, and that obtained training for drivers or guides from park interpreters could be provided broader access (at the discretion of the superintendent).

Column 5, paragraph 2, sentence 2 — Change to read as follows:

> The area would be heavily landscaped and would provide a total of up to 1,225 private vehicle parking spaces and 60 bus spaces.

Column 5, paragraph 2, last sentence — Replace with the following text:

> Hikers would continue to be permitted to park at or near East Rim Drive trailheads, as they do currently. However, they might be required to obtain special parking permits. If such use became a problem because of volume, a transit/taxi service would be established for access to these trailheads. Long-term parking for hikers on the corridor trails or on the Hermit Trail would be provided at the Mather orientation center. Transit connections would provide access to these trailheads, and telephones would be available for 24-hour taxi service back to the parking lot (at a reasonable price and response time).

Column 5, paragraph 4, sentences 1–2 — Delete:

> ~~The business center parking lot . . . interpretive program area.~~

Page 50, "Orientation and Interpretation" — Make the following changes:

Column 4, "Regional Information" — Replace the first sentence and the five bullets with the following text:

> The National Park Service would actively work with area partners to ensure that visitors received adequate and appropriate information to plan their trips before they reached the park. Partners in this cooperative effort could include the Flagstaff Chamber of Commerce at the Flagstaff visitor center, the Kaibab National Forest and the city of Williams at the Williams visitor center, the Cameron Chapter of the Navajo Nation in Cameron, the Kaibab National Forest at the Kaibab Plateau visitor center, and the city of Kanab at the information center in Kanab. Regional planning would also be conducted to coordinate efforts in the management of resources and visitor use, and to help ensure appropriate sustainable development.

Column 6, "Tusayan Gateway Information Center," paragraph 1 — Delete sentences 2 and 4:

> ~~The gateway information center would be a mandatory stop for all park visitors.~~ . . . ~~However, the ultimate location would be decided during the review process now being conduced by the U.S. Forest Service for the land exchange.~~

Column 6, paragraph 2 — Change to read as follows:

> The facility could be jointly funded and operated by the Forest Service and Park Service, or private entities could also be involved.

Page 51, "South Rim Overview," column 2, top paragraph, last sentence — Rewrite as follows:

> The headframe at the Orphan Mine would be removed, and any opening easily accessible to visitors would be sealed. These actions would be implemented in compliance with the provisions of federal historic preservation laws and NPS *Management Policies* and would be undertaken after further consultation with the Arizona state historic preservation officer under the terms of the programmatic agreement.

Page 51, column 3, "Grand Canyon Village," last bullet — Rewrite as follows:

- a multi-media education center in the community building

Page 51, column 4, "Business Center" — Change paragraph to read as follows:

> The existing visitor center amphitheater would be relocated ~~either to the business center or in~~ to a nearby area central to lodging and camping facilities.

Page 52, column 1, "Village Lodging and Camping," paragraph 1, sentence 3 — Change to read as follows:

> ~~To help restore the historic character of the village,~~ The Kachina and Thunderbird Lodges would be removed from the rim. . . .

Page 52, columns 2–3, "Village Food Service, Shopping, and Other Facilities" — Make the following changes:

Column 2, paragraph 1, sentences 3–4 — Replace with the following text:

> The Bright Angel Lodge would be remodeled and would continue to provide food service, restrooms, and gift shop space; the gift shop could be reduced in size. The Maswik cafeteria . . .

Column 2, paragraph 2 — Replace the first sentence with the following text:

> Once the Kachina and Thunderbird Lodges were removed, this area would be used for program space, American Indian cultural celebrations, and outdoor seating. The design would be plaza-like in nature and would visually connect the Bright Angel, rim, and El Tovar.

Column 3, bullet 1 — Change to read as follows:

- bike rental ~~a gift shop~~ in the Grand Canyon National Park Lodges maintenance building

Column 3, bullet 2 — Replace as follows:

- the blacksmith shop would remain as it is

Column 3, bullet 4 — Change bullet as shown below, add the following text, and change the paragraph to read as follows:

- a corner store, with groceries, supplies, and a deli to replace the recently burned recreation center ~~Babbitt's store~~

Once the gravel parking lot had been removed from the historic depot area, the switches and tracks would be restored. Rail cars for food service and/or for overnight accommodations could be considered as uses for these tracks.

The business center would continue to have the same services as alternative 1. ~~In addition, landscaped outdoor picnic areas would be provided, along with interpretive program space.~~

Area Operations. Page 52, column 4, end of paragraph 3 — Insert the following text:

Management support functions remaining in the park would be accommodated by adaptively reusing existing structures and using previously disturbed lands for new structures whenever possible.

Page 52, column 5, "Outside the Park: Housing" — Make the following changes:

Rewrite the second sentence as follows:

Up to 500 ~~300~~ housing units . . . would be provided adjacent to Tusayan.

Add the following text as the final sentence in the paragraph:

The Park Service would prefer that these units be provided within the community of Tusayan. If this need could not be met by private enterprise, then a joint NPS/USFS federal housing area would be built nearby on forest land.

Page 52, column 5, "Community Services," bullet 4 — Change to read as follows:

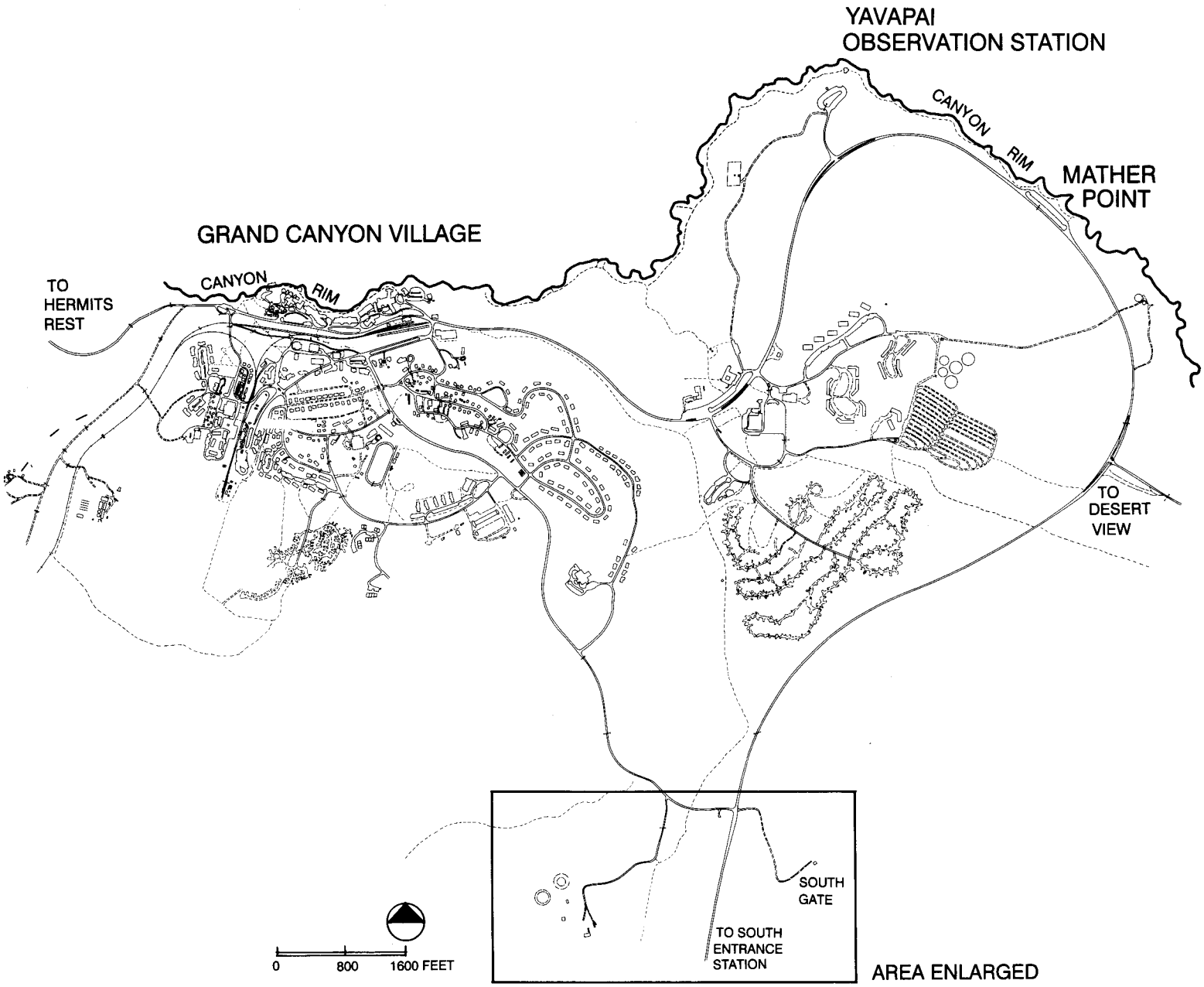
- laundry, ~~bank and/or ATM station,~~ oversized vehicle storage, auto repair center, and groceries/supplies

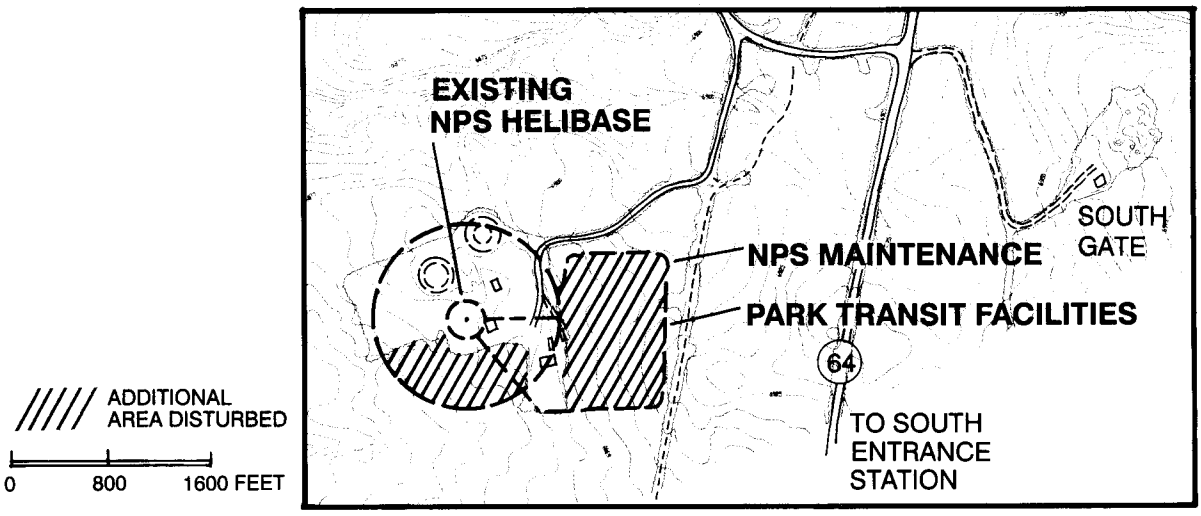
Page 52, column 6, "Housing," last sentence — Delete:

~~Housing development now occurring between Pinyon Park and the former YACC camp area would be stopped, with just a few short roads and/or units added to bring the development to a reasonable conclusion~~.

Page 53, column 1, "NPS Management Support Functions," paragraph 3 — Change to read as follows:

NPS maintenance operations, warehouses, and Denver Service Center offices would be consolidated and moved to an area immediately east of the existing helibase. The site would incorporate the proposed transit operations as well, occupying all of the land used by the existing transit operations and expanding into undisturbed forested areas surrounding the existing dry dump (see the accompanying Helibase / Maintenance / Park Transit Facilities map). Employees could also store their boats at the dry dump. The Southgate





HELIBASE / MAINTENANCE / PARK TRANSIT FACILITIES
ALTERNATIVE 2: PROPOSED ACTION

GRAND CANYON VILLAGE / MATHER POINT

GRAND CANYON NATIONAL PARK · ARIZONIA
U.S. DEPARTMENT OF THE INTERIOR·NATIONAL PARK SERVICE·113/20105/DSC/6·95

disturbed area would be used for maintenance material storage, for NPS mules and horses, and for the storage of RVs and other items. All conflicting uses within the flight safety zones of the helibase operations would be removed, and the helibase would continue to operate in its existing location.

Page 53, column 2, top paragraph, last sentence — Change to read as follows:

The boat shop would be moved to Lees Ferry subject to amendment of the 1985 Lees Ferry *Development Concept Plan,* prepared by the Glen Canyon National Recreation Area.

Page 53, column 2, "Other Management Support Functions," bullet 5 — Change to read as follows:

- new barn and corral ~~and blacksmith's shop~~ on the west edge of the village for the mule operation

Page 53, column 3, "Utilities" — Make the following changes:

Paragraph 1 — Replace with the following text:

Grand Canyon National Park would explore alternative water sources to the current use of Roaring Springs and the transcanyon waterline. If an alternative source could be found that would have a reduced impact on park resources, it would be investigated and used if financially feasible. If such a source was not found, the transcanyon waterline would be rehabilitated and reengineered to return water that is not pumped to the rim back to Roaring Springs Creek rather than overflowing into Garden Creek as currently happens. If Roaring Springs was retained as the South Rim water source, water consumption (measured in gallons per visitor pumped to the rim) would be reduced from the current 43 gallons to 20 gallons by 2010.

Page 53, column 3, paragraph 2, — Change to read as follows:

To achieve this goal, aggressive water conservation measures would be employed. . . . The wastewater treatment facility would remain the same, with connecting lines to the Mather Point orientation/transit center and to the proposed new NPS maintenance area at the current dry dump. The overflow lagoons . . .

North Rim

Visitor Experience. "Visitor Use Patterns, " page 54, column 1, top paragraph — Change to read as follows:

. . . approximately 28% more visitors than today could be accommodated (amounting to a maximum of 550 visitors per hour. . . . With an aggressive shift in visitor use, ~~which could be accomplished by stronger encouragement and incentive to visitors,~~ 38% more visitation could be accommodated. . . .

Page 54, column 1, "Access/Transportation: Regional Access" — Make the following changes:

Insert the following new paragraph before paragraph 1:

> The communities of Kanab and Fredonia are strategically placed to serve as tourist hubs for the "Grand Circle." Many tourists who want to visit the North Rim are also interested in seeing attractions such as Zion National Park, Bryce Canyon National Park, Glen Canyon National Recreation Area, Kodachrome Basin State Park, Coral Pink Sand Dunes State Park, Pipe Spring National Monument, and Tuweep. An aggressive effort to have people stay in Kanab and Fredonia and take day trips from these hub communities would help distribute visitors among the region's various scenic destinations.

Insert the following new paragraph after what is now paragraph 2:

> To help preserve the secluded and natural character of destinations inside the park on the North Rim, the Park Service would also work with regional entities to ensure that roads outside the park that provide access to nonwilderness road corridors in undeveloped areas remain unpaved and do not change in character.

Page 54, column 1, "Roads, Parking and Transit" — Insert the following as a special attention box:

Arrival Sequence at the North Rim

- Visitors would receive information packets at home that described transportation alternatives, visitor services, lodging, etc. They would receive day use permits by mail.
- Visitors could stop at regional gateway information centers at Las Vegas, St. George, and Kanab/Fredonia to obtain information and day use permits.
- An electronic message sign near Jacob Lake would advise travelers about the need for day use permits.
- Visitors would be encouraged to stop at the gateway orientation center at Jacob Lake to obtain information and day use permits if they did not already have them.
- Visitors would stop at the park entrance station, where permits would be checked.
- Visitors could stop at the CC Hill orientation center. Day visitors seeking access to Bright Angel Point would park here and take the transit service to Grand Canyon Lodge.
- Private vehicles and buses less than 22′ in length would have access to scenic roads to Cape Royal and Point Imperial. All oversized vehicles would park at CC Hill.

- Overnight guests would proceed with their vehicles to the lodging area (overnight permits would be verified at a checkpoint station on the road to Bright Angel Point). Tour buses with overnight guests would also be allowed to drive to the lodge.

Page 54, column 3, "Trails: Inside the Park," paragraph 2, sentence 2 — Change to read as follows:

> Visitors could continue to use abandoned fire roads ~~existing roadbeds~~ within proposed wilderness areas as hiking trails (the same as alternative 1).

Page 54, column 4, "Orientation and Interpretation: Gateway Information," bullet 2 — Change to read as follows:

- lodging and camping check-in for ~~all USFS and~~ NPS facilities . . .

Page 54, column 5, "Visitor Services: Outside the Park," last sentence — Change to read as follows:

> Under this alternative additional parking might be needed on adjacent national forest lands to accommodate visitors waiting to get in the park.

Page 54, column 5, "North Rim: Lodging and Camping," sentence 2 — Change to read as follows:

> To better separate employee housing from visitor lodging, ~~provide additional lodging,~~ approximately 20 ~~historic frame~~ cabin units at the lodge and inn would be converted from employee housing to visitor lodging units.

Page 54, column 6, paragraph 1 — Change to read as follows:

> Four to six of the historic exposed frame cabins at the inn would be adaptively used; the rest would be razed and the area revegetated. This action would be implemented in compliance with the provisions of federal historic preservation laws and NPS *Management Policies* and would be undertaken after further consultation with the Arizona state historic preservation officer under the terms of the programmatic agreement.

Page 55, column 1, "Winter Use," paragraph 2, sentence 3 and last sentence — Change to read as follows:

> As part of the winter hut system, portable huts would be located in three areas accessible to moderately fit skiers. . . . The maximum group size at any one hut area would follow the same maximum standards as for backcountry group campsites.

Area Operations. Page 55, columns 1–2, "North Rim: Housing," sentence 1 — Change to read as follows:

> Approximately 270 ~~215~~ housing units would be constructed in existing disturbed areas to replace substandard units and units converted to visitor lodging [delete rest of sentence].

Page 55, column 2, "NPS Management Support Functions," sentence 3 — Change to read as follows:

> A new backcountry office and minor interpretive office space would be included at the North Rim orientation center at CC Hill and at Jacob Lake. Utilities (telephone, electricity, water, and sewer) might have to be improved or provided to support these functions, consistent with other utility direction applicable to the proposed action. The helipad would be moved. . . .

Page 55, column 3, "Utilities," sentence 2 — Change to read as follows:

> The North Rim water supply system would have adequate capacity to handle increased needs for potable water and supply inside the park.

Tuweep

Summary of Tuweep Actions. Page 55, column 4 — Delete paragraph 3:

> ~~If the Bureau of Land Management could not acquire the state-owned airstrip and adjacent private lands, the Park Service would seek to acquire them. The Park Service would work . . .~~

Visitor Experience. Page 55, column 4 — Insert a new section before "Access, Roads, and Trails" section:

- **Visitor Use Patterns**
  The number of day visitors to the Tuweep area might need to be limited at certain peak times of the year to maintain the quiet, solitary experience.

Page 55, "Access, Roads, and Trails," column 5, paragraph 1 — Make the following changes:

Sentences 3 and 4 — Change to read as follows:

> To reduce congestion and natural resource impacts at the rim, the parking lot and toilet at the Toroweap overlook would be removed and the area revegetated. A new 25-space parking area and toilet would be provided in an appropriate place adjacent to the existing road near the entry to the Saddle Horse Canyon trail.

Insert the following text after the last sentence:

> These parking areas would be located to avoid ephemeral pools and other sensitive resources.

Page 55, column 5, "Interpretation: Gateway Information," paragraph 1 — Change to read as follows:

> Park managers would work with the Bureau of Land Management, Mohave County, Pipe Spring National Monument, and the tourism hub communities of Kanab and Fredonia to provide information about Tuweep to visitors. . . .

Page 55, column 6, "Visitor Services," paragraph 2, second half of sentence 4 and sentence 5 — Rewrite as follows :

> However, there would be a limit of two private vehicles at each individual campsite and four vehicles at the group campsite. Commercial uses at Tuweep would be tightly controlled, and requests for such activity would be evaluated on a case-by-case basis.

Corridor Trails

Visitor Experience. Page 56, column 2, "Access and Trails" — Make the following changes:

Paragraph 1 — Insert the following text after the first sentence:

> The main corridor trails could possibly be widened in a few limited locations to facilitate safe passing of mules and hikers.

Insert the following text after the first paragraph:

> An active monitoring program, along with indicators and standards, would be established to determine carrying capacities for visitors and stock on the corridor trails. The Hermit and Grandview Trails would also be the subject of a separate monitoring program and carrying capacity study to ensure that resources and visitor experiences did not significantly change on those trails as a result of dispersing some corridor trail use to them. Measures could be taken under the *Backcountry Management Plan* if carrying capacities were exceeded.

Page 56, column 3, "North Rim" — Make the following changes:

Paragraph 2, sentence 1 — Change to read as follows:

> ~~A monitoring system for resource damage and visitor experience on the trail would be established;~~ Because trail use could increase as a result of use at the nearby CC Hill orientation center, a monitoring system would continue until new use patterns were established.

Paragraph 3 — Change to read as follows:

> The Old Bright Angel Trail would be slightly upgraded from route/wild trail standards to primitive trail standards, as defined in the park's *Backcountry Management Plan.* A signed trail connection would be established from a small pullout next to Six Rock Meadow to the trailhead. Stock use would not be allowed on either of these trails.

Area Operations. Page 56, column 4, "Housing," sentence 2 — Change to read as follows:

> At Indian Garden housing would remain the same, except one house now used for storage would be converted back to housing for an interpreter if floodplain safety concerns could be adequately mitigated.

Page 56, column 5, "Other Areas" — Change to read as follows:

> At Lees Ferry an orientation center with facilities for the river trip safety talks and an exhibit area for the historic boat collection would be constructed in cooperation with Glen Canyon National Recreation Area and after the 1985 *Development Concept Plan* had been amended.

Alternative 2: Proposed Action map. Page 57, Tuweep area — Make the following corrections:

> Connect the park road to the trail loop leading to the Toroweap overlook, and end the road where it connects to the trail. Delete the road symbol from there to the point above Lava Falls (this is an unimproved off-road vehicle trail).
>
> Change the northernmost existing parking symbol to a proposed symbol. Remove the existing parking symbol above Lava Falls (the unimproved off-road vehicle trail is informally used for parking).
>
> Move the Saddlehorse Canyon trail (east of the overlook) closer to the rim edge.
>
> Remove the dotted trail from the rim edge to Lava Falls.
>
> Delete label: "Purchase Private Lands and Airstrip at Park Boundary."
>
> Move label "Private Residence" to the south, across from the airplane symbol and adjacent to the park entrance.
>
> Delete vertical lines (representing private lands) near park entrance; only a small area east of the road near the park entrance should be shown as a private inholding.

Alternative 2: Proposed Action, Grand Canyon Village map. Page 59 — Delete the new helicopter base off Rowe Well Road, the redesign of sewage lagoons, and paving of the section of Rowe Well Road to the new helicopter base (no longer proposed actions).

Alternative 2: Proposed Action, Mather Point oblique. Page 61 — Show the RV Campground as green (campground), not purple (visitor parking).

ALTERNATIVE 3 — REDUCED DEVELOPMENT WITHIN THE PARK

Parkwide Management Actions

Cultural Resources. Page 69, column 3, paragraph 2, sentence 2 — Change to read as follows:

> A program would be initiated to complete the survey, inventory, documentation, and evaluation of cultural resources under criteria for listing on the National Register of Historic Places.

South Rim

Visitor Experience. "Access/Transportation: Grand Canyon Village," page 70, column 1, paragraph 3 — Change to read as follows:

> Rowe Well Road would be ~~upgraded to a gravel road,~~ the same as under alternative 2.

Area Operations. Page 72, column 3, "Other Areas: Management Support Functions" — Change to read as follows:

> The NPS boat shop and related functions would be moved to Lees Ferry, in cooperation with Glen Canyon National Recreation Area management and after the 1985 *Development Concept Plan* had been amended.

Tuweep

Summary of Tuweep Actions. Page 73, column 4 — Delete paragraph 2:

> ~~As described for alternative 2, the Park Service would seek to acquire the airstrip and adjacent private lands outside the park if they could not be acquired by the Bureau of Land Management . . . visual quality.~~

Corridor Trails

Visitor Experience. Page 74, column 2, "Visitor Services," paragraph 1, sentence 1 — Change to read as follows:

> The number of beds at Phantom Ranch would be reduced from approximately 92 ~~170~~ to 85. . . .

ALTERNATIVE 4 — INCREASED DEVELOPMENT WITHIN THE PARK

Parkwide Management Actions

Cultural Resources. Page 87, column 3, paragraph 2, sentence 2 — Change to read as follows:

> A program would be initiated to complete the survey, inventory, documentation, and evaluation of cultural resources under criteria for listing on the National Register of Historic Places.

South Rim

Visitor Experience. "Access/Transportation: Grand Canyon Village," page 88, column 1, paragraph 2 — Change to read as follows:

> Rowe Well Road would be ~~upgraded to a gravel road,~~ the same as under alternative 2.

Area Operations. "Grand Canyon Village: Management Support," page 89, column 3, last bullet — Change to read as follows:

- moving the boat shop to Lees Ferry, in cooperation with Glen Canyon National Recreation Area management and after the 1985 *Development Concept Plan* had been amended.

Tuweep

Summary of Tuweep Actions. Page 90, column 5 — Delete sentences 3–4:

~~As described for alternative 2, the Park Service would seek to acquire the airstrip and adjacent private lands outside the park if they could not be acquired by the Bureau of Land Management. . . . present visual quality.~~

ACTIONS CONSIDERED BUT REJECTED

Page 92, column 3 — Insert the following text after the last entry:

Limiting the Number of Visitors

Action: Visitation should be significantly reduced by placing limits on day visitation that are considerably lower than present peak daily visitation.

Reasons for Rejecting: Public scoping input, input on preliminary general management planning alternatives, and data collected for the carrying capacity studies indicated that substantial reductions in daily visitation were not necessary to accomplish resource and visitation goals if the number of vehicles could be reduced and if visitors were better distributed among the existing visitor areas. Large reductions in daily visitation would require a reservation system that would be much more cumbersome than that described under alternative 1 because it would satisfy only a very small part of the demand, causing very long waiting lists for people to visit the park.

TABLE 1: SUMMARY OF ALTERNATIVE ACTIONS

Parkwide Management Actions

Natural Resource Management

Page 105, No-Action Alternative, "Vegetation/Wildlife/Ecosystems," sentence 2 — Change to read as follows:

Use native and self-sustaining plant materials in landscaping; ~~allow nonnative species to remain~~.

Cultural Resource Management

Page 106, alternative 2, sentence 7 — Rewrite as follows:

Implement a comprehensive plan to survey, inventory, and evaluate all historic, archeological, and ethnographic properties under national register criteria for their eligibility for listing on the register.

Visitor Experience

Access/Transportation

Page 107, Alternative 2, "Regional Access" — Delete last sentence:

~~Upgrade USFS 328/Rowe Well Road to a gravel road.~~

Page 107, Alternative 2, "Village" — Delete sentence 4:

~~Redesign the business center parking lot and reduce number of parking spaces.~~

Page 107, All Alternatives — Insert the following text:

The National Park Service would work with other agencies to extend the Arizona Trail, linking the South and North Rims to completed sections of the Arizona Trail in Kaibab National Forest.

Orientation and Interpretation

Page 109, Alternative 2, "South Rim: Village," sentence 5 — Change to read as follows:

Add an amphitheater in the village historic area; relocate the existing visitor center amphitheater ~~near the business center~~.

Visitor Services

Page 110, Alternative 2, "South Rim: Village" — Delete sentence 5:

~~Convert a portion of the business center parking lot into a picnic/interpretive program area.~~

Area Operations

Housing

Page 111, Alternative 3, "South Rim: Desert View," sentences 2 and 4 — Change to read as follows:

Build <u>some</u> new units (min. 15 units per acre) in existing disturbed areas <u>until these areas were fully utilized</u>. . . . Build <u>remaining new</u> units outside the park near the orientation/transit center.

Management Support

Page 112, No-Action Alternative, "North Rim" — Change to read as follows:

Retain existing facilities; add temporary office trailers in disturbed areas if needed; <u>construct emergency operations facility</u>.

Page 112, Alternative 2, "Desert View" — Change to read as follows:

Retain existing functions except for some ~~minor~~ construction of facilities in disturbed areas.

Page 112, Alternative 2, "North Rim" — Change to read as follows:

Retain all NPS space except for the following ~~minor~~ changes. . . .

Page 112, Alternative 2, "Tuweep" — Change to read as follows:

Expand office and storage space slightly.

Utilities

Page 112, Alternative 2, "South Rim: Village" — Make the following changes:

Sentence 2 — Change to read as follows:

Make no changes to the wastewater treatment facility. ~~redesign and reduce the size of overflow lagoons.~~

Insert the following text after the last sentence:

Provide water for the gateway information center and other park administrative and housing uses outside the park using the most feasible and environmentally sensitive approach to provide and store water.

TABLE 2: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Overview of Impacts

Page 113, Alternative 1, paragraph 1, sentence 2 — Change to read as follows:

Tuweep would continue to experience unrestricted access to the overlook, ~~uncontrolled use,~~ possibly leading to deteriorated natural resources and a degraded visitor experience over the long term.

Page 113, Alternative 4, paragraph 1, sentence 2 — Change to read as follows:

This alternative would produce more disturbance ~~resource damage~~ inside the park than any alternative and would set a precedent for continued disturbance ~~resource damage~~ in the future.

Impacts on Natural Resources

Page 114, Alternative 2, "Region," sentence 1 — Change to read as follows:

Species of concern in the Tusayan area could be affected by a gateway information center and ~~federal~~ housing for federal employees ~~and increased use of USFS 328 and USFS 302/307~~.

Page 114, Alternative 4, "Corridor Trails" — Add the following text after the last sentence:

Water resources would be the same as alternative 1.

Impacts on Cultural Resources

Archeological Resources and Traditional Cultural Properties

Page 115, No-Action Alternative, "South Rim" — Insert the following text after sentence 4:

A Hopi shrine near the Desert View Watchtower would continue to be affected by close proximity of visitors.

Page 115, Alternative 2, "Tuweep" — Insert the following text after sentence 1:

Other forms of mitigation could occur on the three archeological sites near the campground. There is a potential to affect ethnographic resources in the area.

Historic Structures and Landscapes

Page 116, Alternative 4, "North Rim," sentence 2 — Change to read as follows:

Demolishing all but a sample of the frame cabins at the inn and building 100 new lodging units and a restaurant would negatively affect the historic character of the inn area.

Impacts on Transportation, Parking, and Transit

Access and Circulation

Page 121, Alternative 2, "Region" — Make the following changes:

Paragraph 1, sentence 2 — Change to read as follows:

Private transit service would increase, both regionally and from Tusayan and Cameron. ~~because of vehicle limits in the park, plus better information from the regional centers.~~

Paragraph 2 — Delete:

~~Some visitors would stay longer in Tusayan waiting to drive into the park. . . . all visitor who wanted could enter the park.~~

Page 121, Alternative 2, "South Rim" — Make the following changes:

Paragraph 1 — Rewrite as follows:

All tour buses and people in private vehicles who have overnight lodging in the village would be allowed to enter the park at all times. A major new parking area would be constructed at Mather Point. All rim parking areas in the village would be removed. Some 50 miles of

separate biking/hiking trails plus 20 miles of rim/community trails would improve access for visitors and residents.

Paragraph 4, sentence 1 — Change to read as follows:

~~A total of 2,832 parking spaces would be provided near the village,~~ The village would be strictly a pedestrian area, with no day visitor vehicles allowed.

Impacts on Area Operations

Housing / Community Services

Page 123, Alternative 2, "South Rim," sentence 1 — Change to read as follows:

For the 2,502 ~~2,069~~ total employees needed under this alternative, 961 ~~748~~ new units would be built in the park, and all substandard housing conditions would be eliminated.

Page 123, Alternative 3, "North Rim," sentence 1 — Change to read as follows:

A total of 335 employees and 193 ~~246~~ new housing units would be needed.

Page 123, Alternative 4, "North Rim," sentence 1 — Change to read as follows:

A total of 422 employees and 263 ~~246~~ new housing units would be needed.

Management Support

Page 124, No-Action Alternative, "South Rim," sentence 2 — Change to read as follows:

The concessioner would continue to experience spatial and substandard facility problems. . . .

Page 124, No-Action Alternative, "North Rim," sentence 1 — Change to read as follows:

Inside the park most NPS operations would continue to function with space deficits in substandard structures, with the worst situations continuing for maintenance, ranger operations (emergency vehicles), administration, and backcountry offices.

Page 124, No-Action Alternative, "Tuweep," sentence 2 — Change to read as follows:

Inside the park storage, workshop, and office space would continue to be provided in a substandard historic structure.

Page 124, Alternative 2, "South Rim," last sentence — Change to read as follows:

> At Desert View additional space would be provided for NPS operations and GCNPL maintenance and transportation operations.

Page 124, Alternative 2, "Region," sentence 2 — Change to read as follows:

> The only NPS operation outside the park would be the joint gateway development ~~information center~~ in Tusayan and the boat shop at Lees Ferry.

Page 124, Alternative 3, "North Rim," sentence 1 — Change to read as follows:

> Same as alternative 2 except reduced transit facility needs and elimination of all mule operations.

Utilities

Page 125, Alternative 2, "Parkwide," paragraph 1, sentence 1 — Change to read as follows:

> The Park Service would provide water to NPS-related facilities outside the park.

Page 125, Alternative 3, "Parkwide," paragraph 1, sentence 1 — Change to read as follows:

> The Park Service would provide water to NPS-related facilities outside the park.

TABLE 3: SUMMARY OF LAND DISTURBANCE BY ALTERNATIVE

North Rim Outside the Park

Page 128, Alternative 2, Total New Lands Disturbed — Correct number is 1.5 (not 101).

AFFECTED ENVIRONMENT

NATURAL ENVIRONMENT

Species of Special Concern

Page 136, table 9 — Make the following corrections due to new information:

South Rim

Navajo Mountain Mexican vole — add; category C2

Change the following name — Tusayan ~~Disturbed~~ rabbit brush

Corridor Trails

Southwestern willow flycatcher — Move from "Other Sensitive Species Not Affected by General Management Plan Alternatives"; upgrade status from C2 to T.

Chuckwalla — Add; category C2.

Other Sensitive Species Not Affected by General Management Plan Alternatives

Add the following species:

	Category
Desert tortoise	E
Arizona shrew	C2
Camissonia confertiflora	C2
Cave myotis	C2
Ferruginous hawk	C2
Fringed myotis	C2
Loggerhead shrike	C2
Long-eared myotis	C2
Long-legged myotis	C2
Lowland leopard frog	C2
Marble Canyon kangaroo rat	C2
Mt. Trumbull beardtongue	C2
Occult little brown bat	C2
Pale Townsend's big-eared bat	C2
Prospect Valley pocket gopher	C2
Roundtail chub	C2
Small-footed myotis	C2
Western burrowing owl	C2
Yellow-flowered desert poppy	C2

Change the following name — Coconino Arizona pocket mouse

SOURCE: Based on 1995 information from the U.S. Fish and Wildlife Service, and 1994 information from the Arizona Game and Fish Department.

Floodplains and Wetlands

Page 138, columns 2/3, last sentence — Delete:

> ~~Meadows along the roads on the North Rim may also meet the criteria to be considered wetlands~~.

Page 138, columns 2/3 — Insert the following new paragraph before "Air Quality":

> Other areas possibly meeting wetlands regulatory criteria include the North Rim meadows, ephemeral (vernal) pools on slickrock at Tuweep and other locations, and riparian areas along streams in the inner canyon.

CULTURAL ENVIRONMENT

Archeological Resources

Park General. Page 140, column 4, paragraph 2, sentence 1 — Change to read as follows:

> Archeologists estimate there may be as many as 61,000 sites in the park; less than 2% ~~5%~~ have been formally recorded.

South Rim. Page 141, column 3, "Desert View" — Replace paragraph with the following text:

> Portions of Desert View have been surveyed for archeological resources. A Hopi shrine is located near the Desert View Watchtower; there are also some small isolates and lithic scatters nearby. Both the Hopi and the Navajo consider the Desert View point area to be a significant feature for their people.

North Rim. Page 141, column 3 — Insert the following text after paragraph 1:

> Good portions of the North Rim, principally Point Sublime, Fire Point, and Powell Plateau have significant archeological resources in addition to those on the Walhalla Plateau. Archeological remains associated with Civilian Conservation Corps (CCC) activities occur outside the village area, most notably around Swamp Ridge. The North Rim boundary fence was considered by the CCC to be the most important project they completed on the North Rim. Portions of the fence still exist.

Page 141, column 4, paragraph 2 — Replace with the following text:

> The CC Hill area was originally used as a CCC camp in the 1930s. Subsequent surveys have shown that there are no archeological remains of the CCC camp in the CC Hill area.

American Indian Traditional Uses and Sacred Areas

Page 142, column 3, paragraph 2, sentence 1 — Rewrite as follows:

> The following tribes, in cooperation with the National Park Service and the Bureau of Reclamation, are currently undertaking ethnographic studies, as well as cultural affiliation studies: the Hopi, Hualapai, Navajo, Southern Paiute, and Zuni.

Hopi. Page 144, column 1 — Insert the following text as a new paragraph after the top paragraph:

> Two areas that are of special significance to the Hopi may be affected by some alternatives — a Hopi shrine near the Desert View Watchtower, and the Mt. Trumbull area near Tuweep.

Southern Paiute (Kaibab <u>Paiute Tribe</u>, ~~Shivwits, and~~ San Juan <u>Southern</u> Paiute Tribe, <u>and the Paiute Indian Tribe</u> of Utah). Page 145, column 1 — Insert the following text at the end of the first full paragraph:

> Lava Falls and Vulcans Throne are both sacred to the Southern Paiute. Both features can be seen from the Toroweap overlook.

Historical Overview

Transportation and Development. Page 145, column 6, paragraph 1, sentence 2 — Change as follows:

> Another important crossing developed at <u>Pearce</u> ~~Pierce's~~ Ferry below the Grand Canyon.

Historic Resources

Page 146, column 5 — Replace introductory paragraph with the following:

> The historic significance of many buildings and structures associated with the early development of mining, tourism, and park administration and operations in Grand Canyon National Park is recognized by listing on the National Register of Historic Places. Currently, there are 19 listings on the national register, including eight national historic landmarks. Properties within the Cross Canyon Corridor Historic District have been determined eligible for listing by the keeper of the national register. In 1994 the Arizona state historic preservation officer determined that the Orphan Mine Historic District was eligible for listing on the national register. Three draft nominations have been prepared for other properties in the park and are awaiting revision. These include the Yavapai observation station, roads and trails of Grand Canyon National Park (a multiple property nomination), and Grand Canyon Village Historic District. Other properties for which national register evaluations should be prepared include the Grandview entrance station, Supai Village, Yaki Point, the Toroweap ranger station, the Pasture Wash ranger station, Powell Memorial, and the fire lookouts.

Not all structures listed on or determined eligible for listing on the national register have been entered on the park's list of classified structures (LCS). At present 558 structures are listed, of which 281 are on the North Rim, where an updated list has been finalized. On the South Rim, where an update is still underway, 277 structures are listed, including 61 archeological sites. The completed update will include only archeological sites that contain standing walls easily identified as structures, of which only 15 have been excavated, stabilized, and interpreted. Some existing LCS listings will be removed, such as those for boats within the museum collection, or consolidated, as in the case of 15 railroad tracks to be batched under one LCS listing. The largest impact on the number of LCS listings in the update comes from the revised draft national register nomination for Grand Canyon Village Historic District, which includes all historic buildings and character-defining features of the cultural landscape. This revised nomination for the historic district includes 269 structures, of which 223 are buildings. The current nomination lists only 64 buildings. When the list of classified structures has been fully updated for the South Rim, there will likely be more than 400 entries, bringing the park total to nearly 700.

South Rim National Register Properties. Page 146, column 6 — Replace introductory paragraph with the following:

Six historic districts, eight buildings, and one site on the South Rim are listed on the National Register of Historic Places. The Grand Canyon Village Historic District includes 223 historic buildings, six of which have been designated as national historic landmarks: El Tovar Hotel, the railroad station, the park operations building, the powerhouse, Hopi House, and Lookout Studio. The last two structures are also part of the Mary Jane Colter Historic District, which includes two other national historic landmarks on the South Rim: Hermits Rest, which has its own individual nomination dating from 1974, and Desert View Watchtower, for which a separate historic district (Desert View Historic District) was entered on the national register in 1995. The El Tovar stables, including the horse barn, mule barn, and blacksmith shop, were listed as a historic district in 1974, a year before they were incorporated in the original Grand Canyon Village Historic District nomination. The water reclamation plant, just outside the village, is listed as a historic district. The Orphan Mine Historic District was determined eligible for listing on the national register by the Arizona state historic preservation officer in 1994. The only South Rim site now listed on the national register is the Tusayan ruins.

Page 146, column 6, "Mary Jane Colter Historic District: Hermits Rest," sentence 1 — Replace with the following:

Hermits Rest, a rustic stone lodge, was individually nominated to the national register in 1974 and became a national historic landmark in 1987 when it was incorporated in the Mary Jane Colter Historic District. Designed by Colter for the Santa Fe Railway, this structure opened in 1914 as a rest stop on the stage line along West Rim Drive.

Page 147, column 1, "Mary Jane Colter Historic District: Hopi House" — Rewrite sentences 2–3 as follows:

> The Hopi shrine in the Hopi House is a kiva constructed for the use of Hopi craftsmen who lived and worked at the house. It contains two principal altars and three smaller shrines. There are no kachinas in the room, but there are numerous objects that were reproduced by H. Voth for use in the altars and shrines. The doorway leading into the kiva was taken from the Hopi village of Old Oraibi.

Page 147, column 2, "Grand Canyon Village Historic District," paragraph 1 — Rewrite sentences 1 and 2 as follows:

> The Grand Canyon Village Historic District currently contains 64 historic buildings and encompasses much of the original village site. The nomination for this district is being revised to include all historic structures associated with early tourist development and subsequent expansion in accordance with the original master plan. The revised draft nomination has a total of 269 contributing structures, including buildings and character-defining landscape features such as roads, footpaths, railroad tracks, and stone masonry walls.

Page 147, column 3, paragraphs 1 and 2 — Replace with the following text:

> Some of the more significant structures in the historic district include (1) the superintendent's residence, originally constructed in 1921 to serve as the national park's first administrative headquarters and enlarged and remodeled in 1931 as the superintendent's residence; (2) the ranger's dormitory, built in 1921 to house national park workers and later converted for use as a dormitory for park rangers; (3) the post office; (4) Apache Street residences; and (5) the horse barn, mule barn, and blacksmith's shop. The latter three were completed in 1906 for the Santa Fe and Fred Harvey companies. All of the aforementioned structures exhibit rustic qualities, evoking an image of pioneer construction, with dominating roofs and cross gable wall dormers, shingled walls, and board and batten skirts below the sill line.
>
> Another significant structure in the historic district is the Buckey O'Neill cabin built in the 1890s by a pioneer who would later become prominent in the early development of the national park. This log cabin, which has a wood-framed roof with shingles, wood frame doors and windows, and a stone fireplace, served as an office for a small tourist accommodation on the South Rim. A group of cabins later constructed south of the O'Neill cabin became known as the Buckey O'Neill Lodge.
>
> In addition to historic buildings, the setting of the district is also characterized by natural and historic landscaping, roads, footpaths, and stone masonry structures. Historic natural landscaping using indigenous trees and shrubs was designed to give a natural appearance. Historic footpaths are typically hard surfaced. Associated with these paths, as well as with many of the roads, are a number of rustic stone curbs, headwalls, retaining walls, and culverts. Other landscape features that occur in the district include streetlamps, footbridges, and a stone mule corral near the Bright Angel trailhead.
>
> Six structures in the district are national historic landmarks. As mentioned above, Hopi House and the Lookout Studio are part of the Mary Jane Colter Historic District. The other four are El Tovar Hotel, the railroad station, powerhouse, and park operations building.

Page 147, column 4, "Grand Canyon Railroad Station" — Insert following sentence at end of the paragraph:

> The passenger yard railway tracks are a part of the national historic landmark designation.

Page 147, column 5, "Water Reclamation Plant," sentence 1 — Rewrite as follows:

> Also listed as a district, the Grand Canyon water reclamation plant, one of the earliest such operations in the nation was constructed in 1925–6. . . .

Page 147, column 5, "Tusayan Ruins" — Make the following changes:

Sentence 3 — Rewrite as follows:

> The ruins include a U-shaped pueblo with two round kivas ~~and a two-story residential structure~~. The single width foundations and very little rubble suggest that the ruins were only one story tall.

Last sentence — Replace as follows:

> A small stone building near the ruins houses an archeological museum constructed in 1932 with funds provided by Mrs. Winifred MacCurdy. Other resources in the area include a ranger residence and garage, as well as the landscape features associated with the parking area.

Page 147, end of column 6 — Insert the following new section:

- **Desert View Historic District**

Entered on the national register in 1995, the Desert View Historic District is approximately 25 miles east of Grand Canyon Village near the east border of Grand Canyon National Park. Desert View Watchtower is the primary architectural resource in the district and was constructed in 1932 by the Santa Fe Railway for the Fred Harvey Company to use as a souvenir and gift shop, viewing platform, and lounge. The tower served as a rest stop for Fred Harvey tour buses traveling from Grand Canyon Village. The district contains seven contributing buildings, three of which (the Desert View Watchtower, the ruin, and a store room) were previously listed as a national historic landmark in 1987 as part of the Mary Jane Colter Historic District. These three buildings are significant as the work of Colter and represent one of three principal categories of rustic architecture in which she specialized — rustic architecture inspired by indigenous prehistoric stone Native American architecture.

Other rustic structures that were constructed at Desert View by the National Park Service or by the railroad for the Fred Harvey Company include the comfort station/visitor contact station, the Fred Harvey caretaker's residence, a small shed, and an NPS residence. These are contributing elements to the historic district, which is significant locally for its role in the railway's development of tourist facilities in Grand Canyon National Park and the NPS response to facility development in the park. The Desert View Historic District possesses significant cultural landscape elements, such as the placement and use of native materials in the layout of roads, walkways, and overlooks.

North Rim National Register Properties. Page 148, column 1, "Grand Canyon Lodge Historic District," paragraph 1, sentence 2 — Change to read as follows:

> The lodge, which was constructed in 1928, destroyed by fire in 1932, and reconstructed in 1936, is banked into the side of the rim and is the central feature of the district.

Page 148, column 2, "Grand Canyon Inn (North Rim Inn) and Campground Historic District," paragraph 1, sentence 1 — Change to read as follows:

> This complex includes a main building, 30 deteriorating exposed frame cabins and support structures, 10 duplex log cabins, and 4 exposed frame duplex cabins.

Page 148, column 3, "Other National Register Properties in the Park" — Change title to "Inner Canyon National Register Properties"; include discussion of the Grandview Mine Historic District under this title as the first entry.

Page 148, column 3, "Cross Canyon Corridor Historic District" — Add the following text before sentence 1:

> The Cross Canyon Corridor Historic District was determined eligible for listing on the National Register in 1980. This district includes 44 buildings. . . .

Page 148, column 3 — Add new section at end as follows:

> DRAFT NATIONAL REGISTER NOMINATIONS
>
> - **Grand Canyon Village Historic District**
>
> The draft revision of this nomination is discussed above under "South Rim National Register Properties."
>
> - **Yavapai Observation Station**
>
> A draft nomination for the Yavapai observation station was prepared in 1990. This nomination needs to be updated and resubmitted as a historic district to include the rustic stone and glass observation building constructed in 1928, a low stone wall along the canyon rim leading to a terraced vista point with metal guardrails, six carved log benches, and the associated tourist facilities.
>
> - **Roads and Trails of Grand Canyon National Park**
>
> A draft multiple property nomination, along with draft individual nominations for nine trails, was prepared in 1992. The individual trails with draft nominations are Hermit, Grandview, Bright Angel, South Kaibab, North Kaibab, North Bass, South Bass, Colorado River, New Hance, and Thunder River. These trails are considered structures and will be listed on the park's list of classified structures. Associated with most of these trails are historic sites and structures, such as rest houses, that should be included as contributing resources in the nominations.

Original Uses map. Page 150 — Change the designation of residences along Apache Street from residential (green) to historic (purple).

VISITOR EXPERIENCE

Tuweep

Page 153, column 6, sentence 1 — Change to read as follows:

> Compared to the North Rim developed area, remote and primitive aptly describe the visitor experience at Tuweep.

Page 154, column 1, paragraph 2, sentence 1 — Change to read as follows:

> ~~Tuweep receives almost no promotion in the region, and few visitors to the area know of its existence. Even so,~~ The number of visitors, especially foreign visitors, is increasing. . . .

THE SOCIOECONOMIC IMPACT AREA

The Park's Effect on Local Economies

South Rim Communities. Page 157, column 4, paragraph 1, sentence 1 — Change to read as follows:

> Tusayan residents are participating in a Coconino County sponsored planning process that has resulted in the *Tusayan Area Plan*.

Williams. Page 157, column 5, paragraph 3, last sentence — Change to read as follows:

> The railroad company is building a major new hotel in Williams.

East Rim Communities. Page 158, column 3, "Cameron" — Make the following changes:

Paragraph 1, sentence 1 — Change to read as follows:

> Cameron is ~~an unincorporated community~~ next to the turnoff from U.S. 89 leading to the East Rim by way of Arizona 64.

Paragraph 1 — Insert the following text at the end of the paragraph:

> The Navajo Nation's 1990 census counted 1,035 residents.

Page 158, column 3, "Tuba City" — Make the following changes —

Paragraph 1, sentence 1 — Change to read as follows:

> Tuba City ~~an unincorporated community~~ is 10 miles east of U.S. 89 on U.S. 160.

Paragraph 1 — Insert the following text at the end of the paragraph:

> The Navajo Nation's 1990 census counted 27,983 residents.

ACCESS AND TRANSPORTATION

Access and Transportation on the South Rim

Local Access Routes and Transportation. Page 161, column 3, "Rail Transportation" — Make the following changes:

Paragraph 3, sentence 1 — Change to read as follows:

> Grand Canyon Railroad is planning on constructing a new spur line in Tusayan and providing train service between Tusayan ~~the airport~~ and Grand Canyon Village.

Paragraph 3, last sentence — Change to read as follows:

> GCRR would provide up to eight trains per day on the proposed ~~airport~~ spur route.

Access and Transportation on the North Rim

Local Access and Transportation to the North Rim. Page 164, column 2, after paragraph 2 — Insert the following new paragraph:

> Arizona 67 is not open for motorized access to the North Rim in winter for several reasons. Primarily it is a problem of heavy snowfall over a long winter season. The Arizona Department of Transportation and the U.S. Forest Service do not plow the road. Also, NPS and concessioner buildings on the North Rim, for the most part, are not winterized. The buildings are prepared for winter and closed up for most of the year.

AREA OPERATIONS

Housing

South Rim. Page 173, column 3, "Employees" — Change to read as follows:

> Table 27 illustrates the additional housing needed for new employees and to replace substandard units.

North Rim. Page 174, column 4, paragraph 1, sentence 1 — Change to read as follows:

> Table 29 summarizes the number of additional units needed for new employees and to replace substandard units.

Lees Ferry. Columns 1–2, bottom/top paragraph — Delete:

> ~~Grand Canyon employees living and working at Lees Ferry tend to feel more removed from the park. . . . they are more closely related to these employees than with most Grand Canyon employees.~~

Community Services

Regional Services. Page 175, column 4, paragraph 1 — Insert the following text at end of paragraph:

> Tusayan is involved in forming a fire district for the community.

Management Support

South Rim. Page 180, column 3, paragraph 2 — Rewrite as follows:

> Table 34 shows the greatest facility and space needs as identified by park personnel.

Page 180, column 3, "Hermits Rest," sentence 2 — Change to read as follows:

> The area . . . is served only by transit during the peak season and is considered to be an operational extension of the village.

Utilities

Water and Wastewater. Page 182, column 1, "Cameron," sentence 1 — Change to read as follows:

> Cameron consists of three motels, two restaurants, a butcher shop, and several ~~approximately 20~~ residences.

Page 182, "Park Water Supply," column 5, paragraph 1, sentence 1 — Change sentence to read as follows:

> If a groundwater classification is not achieved, ~~Regardless of the state's classification of the source,~~ treatment will be required to comply with turbidity standards.

ENVIRONMENTAL CONSEQUENCES

METHODS FOR ANALYZING IMPACTS

Cultural Resources

Summary of Regulations, Policies, and Past Planning Objectives. Page 189, column 3, paragraph 1, sentence 1 — Change to read as follows:

> The treatment of archeological resources, traditional cultural properties, and historic properties is governed by the National Historic Preservation Act of 1966 and its subsequent amendments.

Traditional Cultural Properties. Page 189, columns 5–6 — Change heading to **Ethnographic Resources**. The use of the phrase "traditional cultural properties" is correct in column 5 as the discussion is about resources protected under the National Historic Preservation Act. The phrase should be changed to "ethnographic resources" for the rest of the page where the discussion focuses on that broader group of resources protected under NPS policy.

Historic Structures and Landscapes. Page 190, column 1, paragraph 2, sentence 1 — Change to read as follows:

> An effect on a ~~significant~~ historic property occurs if an action has the potential to change the characteristics that qualify that property for listing on the national register.

Page 190, column 1, paragraph 3, list (2) — Change to read as follows:

> (2) that location was compared with the location of properties ~~resources~~ listed on, or determined eligible for listing on, the National Register of Historic Places

Visitor Experience

Page 190, column 2, line 8 — Change bibliographic reference to Texas A&M University.

IMPACTS COMMON TO ALL ALTERNATIVES

Impacts on Natural Resources

Page 193, column 1 — Insert the following new section before "Geologic Resources, Soils, Vegetation, and Wildlife":

> SPECIES OF SPECIAL MANAGEMENT CONCERN
>
> Actions to implement the management objectives listed on page 6 would result in positive impacts on sensitive species. Current information indicates that no alternative would likely adversely affect species of special management concern (see table 9) for actions inside the park. The sentry milkvetch (endan-

gered) would be positively affected in all alternatives, but to different degrees as discussed for each alternative. The American peregrine falcon (endangered) and possibly the northern goshawk (category 2) transit through areas affected by plan alternatives, but neither is expected to be affected. Habitat for the Mexican spotted owl (threatened) would not be directly affected by plan alternatives. The Navajo Mountain Mexican vole (category 2) occurs in potential project areas, but a very small part of its habitat in the park would be potentially involved, and ample mitigation opportunities appear to exist for any actions that might affect it. Although no impacts are expected, site-specific consultation with the U.S. Fish and Wildlife Service and site-specific environmental compliance documentation would be completed on all implementation actions for this plan, and a more detailed analysis of potential impacts and mitigation would be made based on information current at that time.

Under all alternatives the continued use of mules on corridor trails could indirectly affect the southwestern willow flycatcher (threatened) by providing conditions favorable for brown-headed cowbirds, which adversely affect the flycatcher. Alternative 3 would have less potential for effects due to less mule use, but site-specific management actions conducted as part of the recovery plan for this species are expected to mitigate this effect under all alternatives.

Outside the park impacts on species listed in table 9 would vary by alternative. In all cases, however, the Park Service would cooperate with the affected agency or landowner to consult with the Fish and Wildlife Service, and seek to avoid, or at least mitigate, impacts to any potentially affected species from future, plan-related actions.

Water Resources. Page 193, column 4, paragraph 1, sentence 3 — Change to read as follows:

> Information gained through expanded water monitoring <u>and hydrogeologic studies</u> would improve the park's ability to protect water rights and water resources.

Page 193, column 5, paragraph 1 — Replace with the following text:

> A floodplains statement of findings is attached to this document as appendix D, in compliance with Executive Order 11988 and NPS policies. It addresses the implications of maintaining existing facilities, as well as the possibility of constructing new facilities, within developments historically located in floodplains along the corridor trails. Regarding wetlands, implementation actions in all alternatives would avoid impacts to wetlands wherever possible, consistent with NPS policy. Site-specific environmental compliance documents for implementation projects would specifically address wetlands wherever impacts to wetlands might be a possibility, in full compliance with Executive Order 11990 and NPS policies.

Impacts on Cultural Resources

Historic Structures and Landscapes. Page 194, column 2 — Insert the following text before the first paragraph:

> The rehabilitation and adaptive utilization of some historic structures would occur, and the historic functions of some buildings would be changed, thus resulting in adverse impacts to historic properties. Some elements of historic landscapes, particularly in Grand Canyon Village, could be impacted, thus possibly constituting an adverse impact to historic properties.

Page 194, column 3, top paragraph, last sentence — Change to read as follows:

> If the station was determined to be eligible for listing, ~~its rehabilitation and~~ the expansion of its water system could constitute an adverse impact on a historic property.

Impacts on the Visitor Experience

Page 194, column 3 — Add the following paragraph at the end of this section:

> The existing conditions on the Colorado River are the minimum acceptable conditions for a "wilderness river experience." The existing conditions restrict some types of river use, especially during the three-month nonmotorized season on the river, which would continue. These conditions and restrictions were extensively analyzed when the *Colorado River Management Plan* was revised (NPS 1989b and supporting documentation). Possible changes to the existing conditions to provide more of a wilderness river experience would be extensively analyzed and considered in a public process for a future revision of the river management plan.

Impacts on Area Operations

Utilities. "Wastewater Treatment," page 194, column 5, paragraph 1, sentence 1 — Rewrite as follows:

> Effluent surfaces from the existing septic tank at the Tuweep ranger residence, indicating a failing drainfield that needs repair.

NO-ACTION ALTERNATIVE — EXISTING CONDITION / ONGOING PROGRAMS

Impacts on Natural Resources

Parkwide Effects. Page 195, column 5, "Geologic Resources, Soils, Vegetation, and Wildlife," paragraph 4 — Replace with the following text:

> Currently, through the federal highway program, native plant species are being successfully grown in the park.

Impacts on Cultural Resources

Archeological Resources and Ethnographic Resources. ~~Traditional Cultural Properties.~~ Page 198, column 3, "South Rim, Grand Canyon Village," sentence 1 — Rewrite as follows:

> Proposed housing in the Pinyon Park area would cause impacts to at least three known archeological sites.

Page 198, column 4, "South Rim, Desert View," sentence 1 — Rewrite as follows:

> A Hopi shrine is currently being affected by visitors in the area. Under the no-action alternative these impacts would continue. Impacts could also occur in the future. . . .

Page 198, column 5, "Conclusion," sentence 1 — Rewrite as follows:

> At least four archeological sites would receive adverse effects from planned housing development in the Pinyon Park area.

Historic Structures and Landscapes. Page 199, column 2, "North Rim," bottom paragraph, sentence 2 — Change to read as follows:

> Routine maintenance of these properties would be conducted, except for the exterior of the historic exposed frame cabins at the inn, which would be boarded up and allowed to deteriorate. . . .

Impacts on the Socioeconomic Environment

South Rim. Page 202, column 6 — Change to read as follows:

Paragraph 1, sentence 1 — Rewrite as follows:

> The community of Tusayan is surrounded by USFS lands, and further business growth in Tusayan is constrained by limited amounts of undeveloped private land along Arizona 64. There are proposals to expand Tusayan that would greatly increase the land available for development. With expansion, Tusayan would have sufficient land area to accommodate much of the growing demand that is expected for lodging, eating and drinking, retail, short-range transportation, and personal services. ~~Both~~ Expansion proposals would also provide substantial land for residential and community facility development.

Paragraph 2, sentences 1–2 — Rewrite as follows:

> One way to provide for community expansion is to exchange USFS lands adjacent to Tusayan for private inholdings elsewhere in the Kaibab National Forest. This proposal is being analyzed in a separate environmental impact statement being prepared by the U.S. Forest Service. . . .

Paragraph 3 — Replace with the following text:

> Another alternative for community expansion involves the acquisition, by purchase, of USFS lands adjacent to the town of Tusayan under the Townsite Act. USFS land acquired by this method could not be used for commercial development, but could be used to provide residential and community services and facilities.

Paragraph 4, sentence 1 — Delete reference to Tusayan as a townsite.

Page 203, column 1, paragraph 1 — Insert the following text at end of the top paragraph:

> Tusayan businesses have expressed a willingness to provide additional housing for their employees if the land is available.

Page 203, column 1, "Economic Effects without the Expansion of Tusayan," sentence 1 — Delete reference to Tusayan as a townsite.

Page 203, column 2, paragraph 1, sentence 2 — Rewrite as follows:

> The unincorporated community of Valle <u>is closer to the park.</u>

Cumulative Effects. Page 203, column 6, "Tusayan Expansion" — Change to read as follows:

> Expansion of ~~the~~ Tusayan ~~townsite~~ could notably affect business development and population patterns. . . . <u>Community</u> ~~Townsite~~ expansion also would provide land to construct housing for NPS and tourist industry workers. To the extent that Tusayan would attract new tourism business investment and population settlement from other communities, it would <u>impact</u> ~~inhibit~~ employment and settlement growth in these other communities. . . .

Impacts on Area Operations

Housing. Page 207, column 2, "Regional Effects, Employees," last sentence — Rewrite as follows:

> Housing options near the park could become available through the land exchange or other mechanisms for community expansion.

ALTERNATIVE 1 — MINIMUM REQUIREMENTS

Impacts on Cultural Resources

Archeological Resources and <u>Ethnographic Resources.</u> ~~Traditional Cultural Properties.~~ Page 213, column 2, "North Rim" — Rewrite as follows:

> The effects would be the same as the no-action alternative.

Historic Structures and Landscapes. Page 213, "South Rim," column 4, paragraph 1, sentence 2 — Rewrite as follows:

> As budgets permit and needs arise, national register evaluation work and cultural resource planning would continue on a case-by-case basis.

Page 213, column 4, "North Rim," paragraph 1, sentence 3 — Change to read as follows:

> Routine maintenance of these properties would be conducted, except for the exterior of the historic exposed frame cabins at the inn, which would be boarded up and allowed to deteriorate naturally (an adverse effect).

Page 213, column 5, "Conclusion," paragraph 1, sentence 4 — Rewrite as follows:

> Additional properties would be evaluated for their eligibility for listing on the national register, and those meeting the national register criteria would be recommended for listing.

Impacts on the Visitor Experience

Page 214, column 1, paragraph 2, sentence 2 — Change to read as follows:

> Depending on the size, design, and location of the ~~existing~~ structure chosen for the center, some visitors could bypass the facility. . . .

Page 214, column 1, paragraph 3, sentence 1 — Change to read as follows:

> Providing NPS staff at ~~the~~ existing USFS visitor centers at Jacob Lake and Williams would help visitors. . . .

Page 214, columns 1–2, bottom/top paragraph, last sentence — Change to read as follows:

> The small building and limited parking at Jacob Lake could be inadequate to meet demands of additional visitor use.

Impacts on the Socioeconomic Environment

South Rim. Page 217, column 1, "Economic Effects with the Expansion of Tusayan," paragraphs 1 and 2 — Delete references to Tusayan as a townsite.

Page 218, column 2, paragraph 4, sentence 1 — Change to read as follows:

> USFS Road 302/307 would remain a dirt road that would be open ~~closed~~ to through-traffic.

North Rim. Page 219, column 5, "Parking: Outside the Park," last sentence — Change to read as follows:

> It is likely that the majority of the increased parking demand would occur on adjacent USFS lands. ~~at Kaibab Lodge~~.

Impacts on Area Operations

Community Services. Page 222, column 5, paragraph 1, sentence 1 — Change to read as follows:

> The potential land exchange in Tusayan and other planning efforts could provide an array of nearby community services for park and regional residents.

ALTERNATIVE 2 — PROPOSED ACTION

Impacts on Natural Resources

Regional Effects. Page 224, column 1, "Outside the South Rim," paragraph 3 — Delete:

> ~~USFS road 328, which connects to Rowe Well Road, would be upgraded to gravel. . . . The impacts of improving this road would be analyzed . . . document after site specific design.~~

Page 224, column 2, "Outside the North Rim," paragraph 1 — Rewrite as follows:

> A sensitive species, the northern goshawk (category 2), is known from the Jacob Lake vicinity, but adequate mitigation measures appear to be available to allow the construction of the proposed orientation center facilities. Site-specific design and environmental compliance for these facilities would include consultation with the U.S. Fish and Wildlife Service.

Page 224, "Geologic Resources, Soils, Vegetation, and Wildlife," column 3, paragraph 1 — Change to read as follows:

> Site-specific environmental compliance would be conducted, as appropriate, for any new buildings required to establish regional information centers in Cameron or Flagstaff. ~~or Williams~~

Page 224, column 3, paragraph 3 — Delete:

> ~~USFS road 328 would be upgraded to gravel. . . . The impacts would be analyzed in a . . . document after site specific design.~~

Page 224, column 4, "Outside the North Rim," sentence 1 — Delete:

> ~~Site specific environmental compliance would be conducted . . . for any new buildings required to establish a regional information center in Kanab.~~

Page 224, column 6, "Water Resources: Outside the North Rim" — Rewrite as follows:

> Increased water demand could result from increased accommodations adjacent to the park (e.g., in the Kaibab Lodge area or Jacob Lake). Although water from the park's potable water system could not be provided to non-NPS facilities outside the park without specific congressional authorization, this increased demand could result in impacts to park water resources if wells were drilled.

Page 225, column 1, "Natural Quiet and Solitude: Outside the North Rim," paragraph 2, sentence 1 — Delete:

> ~~The purchase of the state owned airstrip outside the park boundary at Tuweep would allow more control of adjacent land uses and noise from aircraft using the strip.~~

Parkwide Effects. Page 225, column 4, paragraph 1, sentence 1 — Change to read as follows:

> Because there would be no limits on the number of people entering the park (only on the number of vehicles), demands for potable water would increase, as would the volume of sewage.

Page 225, column 4, "Air Quality," bullet 3 — Change to read as follows:

- prohibiting additional wood burning stoves and fireplaces in the park, and requiring replacements to meet EPA standards

South Rim. Page 226, "Grand Canyon Village/Mather Point," column 2, paragraph 3 — Delete:

> ~~Changes at the business center would involve no new disturbance; new landscaping there would increase semi-natural habitat in that area.~~

Page 226, column 3 — Insert the following text after paragraph 2:

> The scatter of historic trash at the proposed new mule barn site would be evaluated under cultural resource laws and policies, and then removed to provide for the health and safety of mules and people at the site.

Page 226, columns 3–4, bottom/top paragraph — Replace with the following text:

> To accommodate the NPS maintenance facilities and increased transit parking proposed for the dry dump site, in addition to the current helibase and transit parking, approximately 13.5 acres of forest would have to be removed, including excavation and other ground disturbance, with impacts as discussed in "Impacts Common to All Alternatives."

Tuweep. Page 227, column 6, "Geologic Resources, Soils, Vegetation, and Wildlife," paragraph 2, last sentence — Rewrite as follows:

> However, if ephemeral pools could not be avoided in slickrock areas, vegetated areas might need to be impacted to provide parking.

Corridor Trails. Page 228, column 2, "Geologic Resources, Soils, Vegetation, and Wildlife," paragraph 2 — Change to read as follows:

> Stock use would remain at current levels, or in the case of visitor mules on the North Kaibab Trail, be reduced if resource impacts and visitor use conflicts were not adequately mitigated by measures being implemented by the concessioner. ~~to harden trails and construct bypasses~~

Conclusion. Page 228, column 4, paragraph 1 — Insert the following new sentence after sentence 2:

> New acreage would also be disturbed on adjacent USFS lands for the transportation/staging and housing development.

Cumulative Effects. Page 228, column 5, sentence 1 — Change to read as follows:

> The development of an orientation/transit center and ~~new federal~~ housing ~~community~~ outside the park in Tusayan would be part of a larger development. . . .

Impacts on Cultural Resources

Archeological <u>and Ethnographic</u> Resources. ~~and Traditional Cultural Properties.~~ Page 229, column 1, paragraph 1, sentence 1 — Change reference to traditional cultural properties to ethnographic resources.

Page 229, columns 1–3, "South Rim" — Make the following changes:

Column 1, paragraph 1 — Replace with the following text:

> At least three archeological sites would be affected by the construction of the new Mather Point development. Recent reconnaissance surveys of the area suggest that as many as 14 sites may be in the area. It is anticipated that sensitive design and site monitoring would avoid most impacts.

Columns 1–2, paragraph 2 — Replace with the following text:

> A new mule barn south of the West Rim Drive would be placed near a thin scatter of recent historic trash. It is not anticipated that this historic trash would be determined eligible for the National Register of Historic Places. If it was, all consultation procedures would be followed as usual. It is recognized that the trash could pose a hazard to the mules. Whether or not the site was found to be significant, and if the site could not be avoided in the construction of the proposed new mule barn, all trash would be removed. If it was found to be significant, removal would be done by a professional historical archeologist. If it was not significant, all trash would be removed as a part of the construction phase.

Column 3, paragraph 2, sentence 1 — Change to read as follows:

> The proposed <u>new</u> ~~Maswik~~ road could directly or indirectly affect six archeological sites.

Column 3, paragraph 4 — Insert the following paragraph after the third paragraph:

> The construction of a bicycle/pedestrian trail following the utility line alignment would have the potential to indirectly affect a number of potentially significant archeological and ethnographic resources. The trail would be routed to avoid any direct affects on archeological or ethnographic resources.

Page 229, column 4, "North Rim," paragraph 1 — Delete:

> ~~No archeological surveys have been conducted of the CC Hill area. There is a potential for an unknown number of archeological sites related to the historic CCC camps in the area to be affected.~~

Page 229, columns 4–5, "Tuweep," sentence 1 — Make the following changes:

Sentence 1 — Delete:

> ~~A toilet in the campground . . . would be removed from the resource~~.

Column 5, paragraph 1 — Replace with the following text:

> Moving the parking lot away from the rim would help protect some of the sacred values of Lava Falls to the Southern Paiute.

Page 229, column 5, "Conclusion," sentence 3 — Rewrite as follows:

The park's ~~presence of a synthetic~~ research plan would allow archeologists to place mitigative actions within an appropriate research context. . . .

Page 229, column 6, "Cumulative Impacts," paragraph 1, part 2 of sentence 2 — Change to read as follows:

. . . and facilities such as utility lines or roads could clip the edges of sites, resulting in a slow "whittling away" of resources over time. ~~as broken lines are repaired and road alignments changed to accommodate differing sized vehicles.~~

Historic Structures and Landscapes. Page 230, columns 1–3, "South Rim" — Make the following changes:

Column 1, paragraph 1, sentence 2 — Change as follows:

> The buildings . . . that make up the Mary Jane Colter National Historic Landmark would be converted to types of use consistent with their historic use.

Column 1, paragraph 2, sentence 4 — Change to read as follows:

> A positive effect on the structures and their setting would be accomplished by providing for adaptive reuse, consistent with their historic use. Rehabilitation and restoration would be consistent with federal historic preservation laws and NPS *Management Policies*. Historic structure reports would be prepared before rehabilitation or restoration occurred.

Column 1, paragraph 3, sentences 1 and 2— Change to read as follows:

> In Grand Canyon Village, the historic NPS maintenance area would be preserved. . . . Removing roads to Hopi Point and Maricopa Point and revegetating these overlooks would help to restore ~~change~~ the historic landscapes. . . .

Column 2, paragraph 1, sentence 3 — Change to read as follows:

Eliminating ~~the blacksmith shop and~~ the mule corrals and facilities would constitute an adverse effect.

Column 3, paragraph 3 — Replace with the following text:

The historic schoolhouse in Grand Canyon Village would be converted into personnel and sales offices, while the existing nonhistoric personnel building would be removed and the site revegetated. These actions would have a positive effect on the Grand Canyon Village Historic District.

Page 230, columns 3–4, "North Rim" — Make the following changes:

Column 3, paragraph 1 — Replace with the following text:

The proposed action would affect historic structures and historic districts on the North Rim. An orientation center at CC Hill, with parking facilities and transit pickup/drop-off, would be constructed. This development, along with the expansion of trails and a redesign of overlook parking and picnic sites, would require consultation with the Arizona state historic preservation officer under the provisions of the programmatic agreement.

Column 4, paragraph 1, sentence 1 — Change to read as follows:

Grand Canyon Lodge is a designated national historic landmark, and its proposed rehabilitation encompasses the kitchen, office spaces, buffeteria, and bar.

Column 4, paragraph 2 — Replace with the following text:

Historic cabins for visitors in both the Grand Canyon Lodge and the Grand Canyon Inn (North Rim Inn) and Campground Historic Districts would be converted from employee housing to their historic uses as guest lodging. This would have a positive effect. If modifications were made, a determination of effect would be conducted, using the criteria of effect developed by the Advisory Council on Historic Preservation.

Column 4, paragraph 3 — Insert the following text at the end of the paragraph:

This action would be conducted after further consultation with the Arizona state historic preservation officer under the provisions of the programmatic agreement.

Column 4 — Insert the following paragraph at the end of the North Rim section:

Redesign of the campground at the North Rim Inn would constitute an adverse action on the Grand Canyon Inn (North Rim Inn) and Campground Historic District.

Page 230, column 5, "Corridor Trails" — Make the following changes:

Paragraph 1, sentence 3 — Change to read as follows:

> This would constitute an adverse effect, requiring consultation with the Arizona state historic preservation officer. There may be a need to widen the trail to facilitate safe passing of mules and hikers in a few limited locations, especially on the North Kaibab Trail.

Paragraph 2, last sentence — Rewrite as follows:

> Care would be taken to ensure that trail maintenance, area redesign, and hardening of trail surfaces would comply with historic preservation laws and NPS *Management Policies*.

Page 230, columns 5–6, bottom/top paragraph, sentence 3 — Change to read as follows:

> Eligibility for listing on the National Register of Historic Places would be determined for several resources.

Page 230, column 6, "Cumulative Impacts," sentences 4 and 5 — Rewrite as follows:

> Development on the South and North Rims would be minimized. Adverse cumulative effects on cultural resources would be the subject of further consultation with the Arizona state historic preservation officer under the provisions of the programmatic agreement.

Impacts on the Visitor Experience

Regional Information and Services. Page 231, column 1, last paragraph, sentence 2 — Change to read as follows:

> The location of this new center would take into consideration visitor traffic flows, visibility from the highway, parking needs, the proximity of other facilities, and the needs of the local communities.

South Rim. Page 231, column 6, "Visitor Services," last paragraph, sentence 1 — Change to read as follows:

> Converting the historic rim structures designed by Mary Jane Colter from gift sales to other uses and downsizing the Bright Angel gift shop would be offset by developing a ~~major~~ gift shop near other visitor facilities in the powerhouse area.

Page 232, column 1, paragraph 1, sentence 1 — Delete:

> ~~Visitors would be able to relax and enjoy the business center . . . a landscaped environment.~~

Corridor Trails. Page 233, "Orientation and Interpretation," column 4, paragraph 2, sentence 1 — Delete:

> ~~Additional amphitheater seating at Phantom Ranch would better accommodate audiences~~.

Impacts on the Socioeconomic Environment

South Rim. Page 235, "Distribution of Economic and Population Effects," column 6, paragraph 1, sentences 4–5, through paragraph 2, sentence 1–5 — Rewrite as follows:

> Because the parking/staging area would be north of Tusayan, depending on subsequent planning and an environmental assessment, there would be minimal effects on existing Tusayan businesses, the same as alternative 3. Transit passengers would be transferred to buses after they had driven through the Tusayan business district. The volume of drive-by traffic available to businesses catering to automobile travelers would not be affected by this facility.

Page 236, column 1, "Economic Effects with the Expansion of Tusayan" — Delete references to Tusayan as a townsite.

Page 236, "Economic Effects without the Expansion of Tusayan," column 2, paragraph 1 — Delete reference in line 1 to Tusayan as a townsite.

Impacts on Transportation, Parking, and Transit

South Rim. Page 237, column 1, "Access and Circulation, Outside the Park," paragraph 2 — Delete:

> ~~The proposed information/bus staging areas in Cameron, Flagstaff, and Williams would be used by some visitors. . . . The demand for this service is unknown.~~

Page 237, column 2, paragraph 3, sentence 1 — Change to read as follows:

> USFS Road 302/307 would remain a dirt surfaced road open ~~closed~~ to through-traffic.

Tuweep. Page 239, column 3, paragraph 1, last sentence — Change to read as follows:

> Access would be limited to 30 vehicles at one time or 85 people at one time.

Impacts on Area Operations

Housing. Page 239, "Region, Employees," column 6 — Make the following changes:

> Paragraph 1, sentence 2 — Change to read as follows:
>
> > The six employees at Tusayan would be provided housing ~~in the new planned community~~ in Tusayan.
>
> Paragraph 2 — Change to read as follows:
>
> > The majority of new employees on the South Rim would be housed ~~in the new planned community~~ in Tusayan.

Page 239, column 6, "Housing Needs," sentence 1 — Change to read as follows:

> Under this alternative 487 new housing units would be required in ~~a new community in~~ Tusayan. . . .

Page 240, table 49 — Note the following corrections:

Tusayan:
Total units needed this alternative = 487 ~~303~~
Units = 487 ~~303~~
Acres = 42.9 ~~37.3~~

Grand Canyon Village
Total units needed this alternative = 919 ~~1,099~~
Units = -39 ~~77~~
Acres = -2.6 ~~minus 15.9~~

Page 242, column 1, "Tuweep," paragraph 1 — Rewrite as follows:

One new seasonal ranger at Tuweep would be provided under this alternative. A substandard trailer would be removed, and one new unit would be built in the park or be purchased just outside the boundaries.

Community Services. Page 242, column 4, "Region: Facility and Space Needs," sentence 2 — Rewrite first part of sentence to read as follows:

If approved, the Tusayan land exchange might provide residents with a variety of services not currently available in the park or in Tusayan.

Page 242, column 5, "Community Characteristics," sentence 1 — Change to read as follows and insert new sentence:

~~The town of~~ Tusayan would experience significant changes to its community as a result of this alternative, primarily through the development of housing for federal employees. Additional significant impacts could occur if the community was expanded through a land exchange or Townsite Act acquisition.

Page 242, column 6, "South Rim: Grand Canyon Village," paragraph 1, sentence 1 — Change to read as follows:

~~The proposed new~~ Community expansion ~~outside the park~~ in Tusayan would also benefit park employees in providing much needed church, school, and shopping facilities.

Management Support Facilities. Page 244, "South Rim: Grand Canyon Village," column 2, paragraph 3 — Delete:

~~Relocating the helicopter base to the lagoon area would improve conditions for helicopter operations, with more room for landings and take-offs without affecting surrounding uses.~~

Page 244, column 5, "Operational Relationships," paragraphs 3 and 4 — Delete:

~~Locating the helicopter base at the sewage lagoon site would have some detrimental effects. . . . accessible in inclement weather.~~
~~The emergency helipad at the clinic . . . for vehicles at the clinic.~~

Utilities. Page 247, column 1, "Water Supply: Corridor Trails" — Change to read as follows:

> The removal of a few campsites ~~and restrooms~~ at Phantom Ranch would reduce the use of potable water and reclaimed water by a small amount.

Page 247, column 3, "Wastewater: Corridor Trails" — Change to read as follows:

> Removing a few campsites ~~and converting existing restroom to composting toilets~~ at Phantom Ranch would reduce wastewater generation.

ALTERNATIVE 3 — REDUCED DEVELOPMENT WITHIN THE PARK

Impacts on Cultural Resources

Archeological <u>and Ethnographic</u> Resources. ~~Traditional Cultural Properties.~~ Page 250 — Change all references to traditional cultural resources on this page to ethnographic resources.

Page 250, column 2, "Tuweep," last sentence — Rewrite as follows:

> As in alternative 2, removing the parking lot from the rim would help protect some of the sacred values of Lava Falls to the Southern Paiute. There would be no other effects to known ethnographic resources.

Historic Structures and Landscapes. Page 250, column 4, "North Rim," sentence 2 — Change to read as follows:

> Should any modifications be made, a determination of effect would <u>be carried out following the procedures developed by</u> the Advisory Council on Historic Preservation.

Page 250, "Conclusion," columns 5–6, bottom/top paragraph, last sentence — Rewrite second half to read as follows:

> . . . and rehabilitating historic structures <u>and landscapes would enhance their significance and interpretive value</u>.

Impacts on the Socioeconomic Environment

South Rim. Page 255, columns 2–3, "Economic Effects with the Expansion of Tusayan" and "Economic Effects without the Expansion of Tusayan" — Delete references to Tusayan as a townsite.

Impacts on Area Operations

Housing. Page 259, column 2, "South Rim, Grand Canyon Village: Employees," paragraph 2, last sentence — Change to read as follows:

> All impacts associated with housing for new employees would be experienced outside the park ~~in the new NPS/USFS community~~ in Tusayan.

ALTERNATIVE 4 — INCREASED DEVELOPMENT WITHIN THE PARK

Impacts on Cultural Resources

Archeological and Ethnographic Resources ~~and Traditional Cultural Properties.~~
Page 268 — Change all references to traditional cultural resources on this page to ethnographic resources.

Page 268, column 2, "South Rim" — Insert the following paragraph before last paragraph:

> The construction of a bicycle/pedestrian trail following the utility line corridor would have the potential to indirectly affect a number of potentially significant archeological and ethnographic resources. The trail would be routed to avoid any direct affects on archeological or ethnographic resources.

Impacts on the Socioeconomic Environment

South Rim. Page 273, columns 2–3, "Economic Effects with the Expansion of Tusayan" and "Economic Effects with the Expansion of Tusayan" — Delete references to Tusayan as a townsite.

CONSULTATION AND COORDINATION

DEVELOPMENT OF THE PROPOSAL AND PREPARATION OF THE DRAFT AND FINAL DOCUMENTS

Page 283, column 1, line 1 — Change to read: March 7–9 and June 12–13, 1990.

Page 284, end of section — Insert the following text:

PUBLIC REVIEW OF THE DRAFT DOCUMENT

Since the publication of the *Draft General Management Plan and Environmental Impact Statement,* coordination and consultation with other agencies and public participation in the plan has continued, as follows:

March 13, 1995: The *Federal Register* (vol. 60, no. 48) printed a notice of availability of the draft document, specifying that comments were to be mailed by April 24, 1995, and listing the times, dates, and locations of four public meetings. Copies of the plan were mailed to everyone on the mailing list and to the individuals or organizations shown on page 285 of the draft document. In addition, copies were made available to the public at several regional libraries and by request through the park superintendent and the team leader at the Denver Service Center.

March 20–9, 1995: A series of workgroups and public meetings were held to explain the contents of the draft document and to answer questions about the proposal and alternatives as follows:

March 20, 1995: The Native American Workgroup, Tusayan, AZ — 12 participants representing the Havasupai, Hualapai, Hopi, Navajo, and Zuni tribes, one representative for three Paiute tribes, and two representatives from the district of the Bureau of Indian Affairs that provides assistance to the Havasupai tribe

March 21, 1995: South Rim Workgroup, Tusayan, Arizona — 11 people attended.

March 22, 1995: South Rim Community Workgroup, Tusayan, Arizona — 15 people attended.

March 24, 1995: North Rim Workgroup, Kanab, Utah — 10 people attended.

March 25, 1995: Public meeting, Kanab, Utah — 39 people attended.

March 27, 1995: Public meeting, Grand Canyon Village, Grand Canyon National Park — 69 people attended.

March 28, 1995: Public meeting, Flagstaff, Arizona — 117 people attended.

March 29, 1995: Public meeting, Phoenix, Arizona — 48 people attended.

April 21, 1995: The National Park Service sent a press release to the Associated Press announcing a 15-day extension to the comment period, to end May 11, 1995.

April 25, 1995: The NPS Western Region director sent a letter to the director of the Office of Federal Activities, U.S. Environmental Protection Agency, advising of a 15-day extension to the review period.

April 26, 1995: The U.S. Fish and Wildlife Service replied to the NPS request for an update to a consultation under the Endangered Species Act (see appendix B).

May 1–2, 1995: NPS representative met with the state historic preservation officer and his staff in Phoenix, Arizona, to develop a programmatic agreement on the consideration and treatment of cultural resources under the proposed general management plan (see appendix B).

May 4, 1995: The *Federal Register* (vol. 60, no. 86) printed a notice extending the comment period on the draft document to 60 days, ending May 11, 1995.

June 24–28, 1995: A series of meetings were held with representatives of American Indian tribes to inform them of the contents of the draft programmatic agreement between the National Park Service, the Arizona State Historic Preservation Office, and the Advisory Council on Historic Preservation, and to request their concurrence with the agreement. NPS representatives met with the tribes on the following dates:

June 24, 1995: The Havasupai Tribe in Supai, Arizona, and the San Juan Southern Paiute Tribe in Tuba City, Arizona; in separate meetings.

June 25, 1995: The Kaibab Paiute Tribe in Pipe Spring, Arizona, and the Paiute Indian Tribe of Utah in Cedar City, Utah; in separate meetings.

June 26, 1995: The Hualapai Tribe in Peach Springs, Arizona.

June 27, 1995: The Navajo Nation in Window Rock, Arizona, and the Pueblo of Zuni in Zuni, New Mexico; in separate meetings.

June 28, 1995: The Hopi Tribe in Kykotsmovi, Arizona.

REVIEWERS OF THE DOCUMENT

Page 285, column 1, "American Indian Groups" — Delete San Juan Northern Paiute Tribe; add Kaibab Paiute Tribe and Paiute Indian Tribe of Utah.

Page 285, column 2, "Local Agencies" — Delete Southern Utah Council of Governments; add Five County Association of Governments.

COMMENTS AND RESPONSES

OVERVIEW OF COMMENTS

Comments on the *Draft General Management Plan and Environmental Impact Statement* (hereafter referred to as the draft GMP/EIS) were received in the following categories:

Category	Number of Comments
Aircraft overflights	23
Airport enlargement	3
Bike trails	13
Boundary expansion	3
Business center access	3
Entrance fees	8
General management plan funding	14
Housing	9
Information/education	6
Light rail/monorail	5
Mules	29
Orphan Mine	4
Primitive area access	2
Trail improvements	2
Trail access	20
Trains	12
Water concerns	7
Wild and scenic river status	4
Wilderness status	4

The order of responses for substantive comments generally follows the organization of the draft GMP/EIS: Parkwide concerns are addressed first, including those relating to the National Environmental Policy Act and to natural and cultural resources, followed by concerns related to the South Rim, the North Rim, Tuweep, and the corridor trails. Issues related to the park's geographic areas are further subdivided as they relate to visitor experience (including access and transportation, orientation and interpretation, and visitor services) and area operations (management support, community services, housing, and utilities).

PARK MANAGEMENT

REGIONAL PLANNING

Comment: A management objective should be included in the plan focusing on cooperative regional growth planning with all potentially affected parties.

Response: That management objective is already included; see page 7, column 1, first full paragraph.

Comment: The draft GMP/EIS does not discuss in any detail the potential effects from land use decisions by other entities outside the park. The final document should identify spatially or temporally related projects, and it should address cumulative and indirect impacts, including all impacts that may be out of the control of the National Park Service.

Response: The draft GMP/EIS does identify related projects, but cannot address the results of other agency planning efforts where the outcomes are not fully known, for example, for the proposed Tusayan land exchange. Such efforts can only be discussed very generally, without assuming any specific result. Standard criteria were used in this document to analyze cumulative effects — that is, the incremental impacts of plan alternatives added to other past, present, and reasonably foreseeable future actions (regardless of who takes the action, and regardless of whether the actions are connected or unrelated) that would create an effect on the environment when combined with plan alternatives.

Past actions considered include all the developments in the park, as well as neighboring developments in Tusayan, Valle, Kaibab Lodge/De Motte Park, and Jacob Lake. They also include past management practices on park and neighboring lands.

Present actions include the plans and projects listed on pages 8 and 9 of the draft GMP/EIS, in addition to ongoing regional planning efforts, and adjacent land management practices, including development proposals for Tusayan, Kaibab Lodge, De Motte Park, and Ten X Campground. The ultimate results of most of these planning efforts are unknown at this time, but there are some, such as the recently approved railroad spurline from Grand Canyon Airport to the Maswik transportation center, and the *Tusayan Area Plan,* which only await implementation. Other current actions such as water well drilling in the area are evaluated to the extent that the actions and their effects are known.

Reasonably foreseeable future actions include actions described as common to all alternatives and those of the individual alternatives, and implementation of the visions and management objectives for this plan. They also include attempts to locate additional water sources, and subsequent regional growth if water sources are found, and increasing regional visitation and accompanying pressures to accommodate additional visitation with various types of developments in a variety of locations.

Because the proposed actions in this document are for the most part conceptual, requiring additional site-specific planning, design, and environmental analysis before implementation, cumulative effects were only discussed on a conceptual level. As projects become less speculative, environmental analysis documents would evaluate their cumulative effects in more detail.

Comment: The threat of casinos and other development on adjacent reservation lands poses a threat to the Grand Canyon visitor experience. Will the general management plan be revised and actions taken to pursue intergovernmental agreements to prohibit these activities adjacent to the park?

Response: The proposed action is very clear in its focus to pursue cooperative regional planning and resource management. As a participant in regional planning efforts, the Park Service would be interested in discussing any proposals that might have a negative impact on park resources. It would be inappropriate for the Park Service to pursue "intergovernmental agreements" to prohibit certain activities on the park boundary at a time when cooperative regional planning and resource management are being proposed.

Comment: The final GMP/EIS must include specific information on the mechanism and funding for regional planning and must define a leadership role for the National Park Service in developing an "ecosystem management" approach in the greater Grand Canyon region.

Response: The draft GMP/EIS clearly states the NPS intention to cooperate with other entities beyond park boundaries to solve regional problems. The park already has representation on several cooperative planning efforts in the region, and it is committed to working with regional neighbors in identifying a common vision and working to achieve it. However, the Park Service has no jurisdiction beyond park boundaries and thus must be an equal partner with park neighbors in solving problems.

Comment: The final GMP/EIS should discuss the potential outcome of the land swap in the Tusayan area.

Response: The probable outcome of the Tusayan land exchange is unknown, and land use plans outside the South Rim are in flux at this time. The final GMP/EIS will not speculate on the potential outcome.

Comment: The final GMP/EIS should not refer to the proposed land exchange. That is but one of many proposals pending or soon to be proposed for the Tusayan area.

The park should rephrase the text on page 20 referring to the U.S. Forest Service land exchange in Tusayan as a way to satisfy community services. The park is unnecessarily limiting itself and unfairly singling out just one proposal to meet its needs.

Response: The draft GMP/EIS appropriately refers to the Kaibab National Forest land exchange environmental impact statement on page 9 (as corrected), for which the Park Service is a cooperating federal agency with the U.S. Forest Service. When completed, that document will influence park access and operations at the park's main entrance. Other ongoing planning efforts are also recognized on page 9 of the draft document.

The general management plan is not limiting itself to any particular land exchange. As a long-term plan, it must be flexible enough that changes can be handled, as long as the visions and objectives of the park, as articulated in the plan, can be met. At various places in the plan the text has been modified to recognize the work of the Tusayan Planning Committee, and the *Tusayan Area Plan* has been cited in the selected references.

BOUNDARY ISSUES

Comment: Will the general management plan be revised, and actions taken to extend the boundary with state land several miles to the south? Will actions be taken to effect a boundary change with Kaibab National Forest, which would move the park boundary several miles to the south?

Response: No. The general management plan seeks to promote cooperative regional planning with federal, state, tribal, and local governmental agencies, and private landowners as applicable. Regional planning efforts would focus on 1) the conservation and maintenance of the major ecosystems in the region, 2) the appropriate types and limits of visitor use and tourism, and 3) the appropriate economic development for the region in the context of ecosystem planning and visitor use limits. The concept is to provide adequate tourism in the region without adversely affecting the ecosystem. Major park expansion to the south is not considered necessary to the long-term protection of park resources; however, the Park Service would be interested in learning about contiguous properties that may become available through donation.

SUSTAINABLE PRACTICES

Comment: The objective to "educate and influence the public . . . to preserve and protect the world they live in, including but not limited to the park" should strive for a broader message to also include the concepts of sustainability and wise use of resources.

Response: Sustainability is addressed in a management objective in the section on facility design. The wise use of resources outside the park would be part of the message to preserve and protect the world visitors live in, since not all areas can be managed to preserve resources, as parks are charged to do.

AIRCRAFT OVERFLIGHTS

Comment: The draft document pays considerable attention to air pollution and noise pollution caused by cars, buses, and trains, but very little to aircraft overflights and noise from aircraft. If the general management plan does not directly address this large problem, which affects virtually the entire park, it is incomplete and flawed. Another comment proposes several detailed suggestions to expand this discussion.

Response: On September 12, 1994, the *Report on the Effects of Aircraft Overflights on the National Park System* was submitted by the National Park Service to Congress, in compliance with the requirements of Public Law 100-91. Among other things, the report specifically addresses the issues and provides recommendations regarding aircraft overflights for Grand Canyon National Park.

During public scoping for the general management plan, aircraft overflights and noise issues were raised by the public and recognized by the Park Service as important to address. However, they were already being addressed in a separate interagency study and planning effort on a different time schedule than the general management plan. The Park Service will continue to work with Congress, the Federal Aviation Administration, and the public to address overflight issues, with a commitment in the general management plan to implement the results

of the aircraft overflights study and planning effort and with guidance on protecting natural quiet and solitude. A clarifying section on "Aircraft Management Recommendations" has been added to page 9.

Comment: The Hualapai Tribe has expressed its opposition to implementing flight restrictions over the Hualapai Reservation without tribal consent. To do so is a "taking" of a property right of the tribe.

Response: The draft GMP/EIS does not directly address flight restrictions (see page 8, column 6). The Park Service will apply this comment to planning efforts specifically regarding aircraft overflights and will contact the Hualapai Tribe to discuss and clarify the comment. Any rulemaking by the Federal Aviation Administration will also provide for public review and comment to address such concerns.

Comment: The National Park Service should prohibit, not simply discourage, changes at the Grand Canyon airport or any other aircraft operation that increases noise pollution from air traffic. It should reduce current levels of noise pollution, requiring strict noise limits and minimum altitudes on aircraft flying over the canyon.

Response: The draft GMP/EIS does not directly address flight restrictions (see page 8, column 6). The Park Service will apply this comment to planning efforts specifically regarding aircraft overflights. The management objectives on page 6 and the statements about aircraft on page 47 provide a framework for addressing aircraft issues in the future. The Park Service has no direct authority over aircraft overflights or the airport outside the park, but is working with other agencies, Congress, and the public on the issue, and a report has been submitted to Congress as discussed above with specific recommendations to address aircraft noise concerns in the park.

Comment: The National Park Service's aircraft management proposal in the September 1994 report to Congress is incompatible with the proposed plan, the 1988 *Backcountry Management Plan,* and the 1993 *Wilderness Proposal* because the areas most affected by aircraft would be the places where solitude is supposed to be the easiest to find.

Response: The aircraft overflight issue is being addressed separately from the general management plan. The recommendations in the 1994 report to Congress would greatly improve the situation relative to aircraft flying over remote areas, compared to the current situation. Overflights are different from all other types of use in the park because they are not under direct NPS control, and they rapidly travel over many different use areas on the ground. It is impossible to reasonably allow overflights in the park without experiencing some incompatibility with other park management practices on the ground.

Comment: Air tourism has been neglected in the plan as one possible means of environmentally responsible access to the park. Air access should be seriously considered as a possible solution to the challenge of providing visitor access without creating a lasting impact on the canyon. The final GMP/EIS should indicate that the National Park Service will encourage future expansion of facilities at Grand Canyon Airport that support the intermodal approach to reduce automobile congestion in the park.

Response: Shuttles from airports in Tusayan and elsewhere would be encouraged under the proposed action as an alternative to private automobiles

(see pages 48–9). In other documents the park has stated that providing a quality aerial viewing experience is an objective for aircraft management at the park. The proposed action recognizes air travel as an important intermodal means of travel into the Grand Canyon region and one that provides visitors with an alternative to private automobiles. However, aircraft overflights have impacts on park resources and visitors that must be weighed against the potential benefits. Issues regarding air tours and other overflights are being addressed in separate planning efforts.

Comment: It is important for the airport in Tusayan to be allowed to grow and evolve in whatever manner is required to serve airport users. Many of the proposed airport improvements are intended to expedite the flow of air traffic in order to increase safety and efficiency, and some improvements would reduce aircraft sound impacts from aircraft in holding patterns adjacent to the park boundary.

Response: Airport neighbors are involved in influencing the growth and management of airports all over the country. The airport in Tusayan is 2 miles from a national park, where natural quiet is an important resource. The Park Service has consistently opposed any expansion of facilities at the airport in Tusayan that would support unconstrained use or increased demand. The Park Service is concerned that the addition of a second runway and other facilities would result in even more takeoffs and landings, generating greater noise in park areas. The Park Service will continue to cooperate with its neighbors to resolve these issues, but increased capacity can and should be accommodated far enough away from the park that approaches and departures never need to occur over the park.

WILDERNESS STATUS

Comment: The "wilderness study designation" for Grand Canyon National Park should be dropped.

Response: The status of the park's wilderness proposal is described on page 9, column 1, under the heading "Wilderness." The Park Service prepared the wilderness proposal at the request of Congress and cannot unilaterally rescind the proposal. Even if the National Park Service could do so, such an action would not be in the best long-term interests of resource protection and visitor use.

Comment: What is the relationship of the boundaries of proposed wilderness in the park to the proposed development on the South and North Rims, especially pertaining to new trail construction? A new rim foot trail on the North Rim should not extend into wilderness backcountry along the Cape Royal Road as shown on page 57, specifically trails from Atoko Point to Naji Point. The trail between Pinal and Papago Points on the South Rim is also inappropriately within wilderness, and would turn these areas into frontcountry.

Response: As shown on the Management Zones map on page 15, a natural zone and a development zone would be established inside the park. Proposed wilderness, as presented in the 1993 wilderness proposal update, would be a subzone within the natural zone. The diagonal line symbol depicts the proposed

wilderness subzone. No proposed development on the South Rim would be within the proposed wilderness subzone.

The trails shown paralleling the Cape Royal Road and East Rim Drive on page 57 (Park Developed Areas map for the proposed action) are anticipated to be within the 600′ wide road corridor and not within wilderness. There could actually be two trails: one for pedestrians and one for bicycles. The impacts of trail development and use in terms of turning backcountry into frontcountry would be fully evaluated during site-specific planning, design, and environmental analysis for the trails. However, areas of paved roads and paved overlooks are already considered frontcountry, and trails alone would not significantly degrade the existing scene. The other trails shown on Walhalla Plateau would be within proposed wilderness, but they would be unsurfaced trails fully compatible with wilderness. The Wilderness Act and NPS *Management Policies* allow trails for foot or stock use within wilderness, and even allow the construction of new trails (which are not, however, anticipated in the wilderness portion of Walhalla Plateau). The Wilderness Act and NPS *Management Policies* do not allow mechanized use of trails, including bicycles, or most types of surfaced trails within wilderness.

Comment: Concern was expressed about continued access for visitors to proposed wilderness areas and the Colorado River by way of the South Rim.

Response: The proposed action recognizes that the South Rim has major access points for backcountry travel in the park. Reasonably convenient access to the corridor trails, the Colorado River, and proposed wilderness areas for backcountry travelers will always be available in the park. The text changes for page 49, column 5, regarding private vehicle access to trailheads on East Rim Drive reflect this concern.

Comment: Wilderness portions of the canyon or rim should not be opened up to development of any kind.

Response: The draft GMP/EIS recognizes that all wilderness study areas must be managed as wilderness, pending congressional action. None of the proposals open up any wilderness areas to development. Foot and stock trails within proposed wilderness areas are fully consistent with the Wilderness Act; however, trails for bicycles and other mechanized forms of travel are not.

Comment: Rejecting possible new development to relieve congestion because of a wilderness proposal seems to be making a decision on the wilderness issue before the congressional decision, making public input irrelevant.

Response: NPS *Management Policies* require that no action be taken that would diminish the wilderness suitability of an area until the legislative process is complete. Extensive public comment was received on the wilderness issue in the late 1970s. The possibility of opening new areas of the park to development was in fact seriously considered early in the current general management planning process. However, the Park Service decided that limiting development to existing areas was best for the long-term management of the park. Even if Congress does not legislate wilderness in all the areas shown as proposed wilderness in the plan, the Park Service would continue to manage those areas as

undeveloped natural areas, consistent with the proposed management zones in the general management plan.

Comment: Implementing the objective "Provide access that is appropriate and consistent" could include the possibility of reopening several roads that have been closed in the last several years (which may require revising wilderness recommendations) in order to distribute use, particularly in the Tuweep and Point Sublime areas.

Response: This objective does not imply the possibility of reopening "closed roads." It means that if a road in the park is a road corridor in wilderness or leads to a destination in wilderness, then the road providing access to that road should be similar in appearance to the park road. In the case of Tuweep, for example, a paved road to the park boundary would be inappropriate and inconsistent with the desired visitor experience for this park area. Motor vehicle use is allowed only on designated roads within the park. The "roads" referred to in the comment were never designated as open to vehicle use.

COLORADO RIVER

Comment: Since more regional resource preservation is emphasized in the plan, more effort should be put into restoring the natural water flow of the Colorado River through the dams upstream, and into controlling stack emissions from coal-burning power plants in the vicinity. These have probably done more damage to the canyon than anything else.

Response: These issues are being addressed in other park planning efforts. The draft GMP/EIS provides general guidance to resolve such issues, especially through the management objectives, as stated on pages 6–7.

Comment: Proceeding with the plan to eliminate motors on the Colorado River would deprive hundreds of common people of a fantastic river experience, and make it more dangerous. Why do the votes of preservationists weigh more heavily than the votes of local citizens on these issues?

Response: The draft document does **not** propose eliminating motors on the Colorado River. Such issues will be decided when the *Colorado River Management Plan* is updated, as explained on page 9.

The selection of a final plan is not subject to a vote. In making management decisions, the laws, regulations, and policies that govern the National Park Service and Grand Canyon National Park must be followed. The Park Service must consider the merits of comments received from a diverse public and other agencies, and also consider resource information and sound management practices. All the issues and information summarized in both the draft and final documents, including the issues raised in these comments, have been seriously considered.

Comment: Where are the boundaries of the 29,820 acres of potential wilderness, and does this include any of the Colorado River? The river does not and should not qualify for wilderness designation because of the historic and continuing use of motorized rafts. Designation of the Colorado River as a wilderness study area should be dropped. What does the statement mean on page 9 that "A wilderness river experience would be provided on the river"? Does this mean that the Park Service would attempt to eliminate the historic

use of motorized rafts on the river? If so, where is the documentation and discussion of the effects of this in the document? There was no opportunity for public comment and debate on such an important issue regarding river management.

Response: The Colorado River corridor accounts for most of the potential wilderness acreage. Designation as a wilderness study area simply means that the area is suitable for wilderness designation pending removal of nonconforming uses. "Nonconforming use" is the technical term used in wilderness management for any use, such as motorized rafts in this case, that does not conform to criteria for acceptable uses in wilderness. It is up to Congress to decide whether any of the park is actually designated as wilderness. The Wilderness Act contains a provision allowing the continued use of motorized boats where such use was established prior to wilderness designation. So, Congress could designate the Colorado River as wilderness in the park while continuing to allow some level of motorized boat use. The National Park Service is required to manage the area in such a way that congressional options to designate wilderness are not precluded. The Park Service cannot drop areas that appear to meet wilderness criteria from wilderness study status.

There is no question that the Colorado River would meet all definitions of wilderness if motorboats were not used on the river, but they are, so the question changes to how much of a wilderness river experience can still be provided with some level of motorboat use. This question has sparked considerable controversy in the past, and it was an early decision during the general management planning process to defer such decisions to a revision of the *Colorado River Management Plan.* However, the general management plan sets the direction for implementation plans, and in this case the general management plan does so by stating the management objective of providing a wilderness river experience on the river. The plan does not, however, specify how that would be done, and most people would agree that such an experience is provided at least part of the year now.

The statement in the draft GMP/EIS on page 9 that a wilderness river experience will be provided on the river would not necessarily preclude the use of motorboats if, as in this case, such use was established prior to wilderness designation. The text under the heading *"Colorado River Management Plan"* has been rewritten to more clearly explain the relationship between the final GMP/EIS and a revised river management plan.

Other aspects of a wilderness river experience than motorized boats could be affected by a revised river management plan. For example, according to the management objectives for the river, permanent improvements, such as toilets and erosion control structures, would **not** be allowed, although temporary scientific devices that are the minimum tool and that meet other criteria could be allowed. The river corridor would be managed to preserve its natural conditions to the maximum extent possible, given the influence of managed flows from Glen Canyon Dam. The river corridor would also be managed to provide outstanding opportunities for solitude or a primitive and unconfined type of recreation. The task of the river management plan would be to measure aspects of current river trips (such as generators, party size, launch schedules, and motorized boat use) against these statements to determine how they might be affected by the general management plan's direction to provide a wilderness river experience, and whether such effects would be for part of the year or the entire year.

The *Colorado River Management Plan* could allow no more impacts on the wilderness river experience than current conditions. To further clarify, the current policies on the river would be the minimum for meeting the criteria for a wilderness river experience. Because current conditions have been extensively analyzed in previous documents, and because any change in current conditions would be extensively analyzed during public review of the river management plan when it is updated, the previous analysis is not repeated in the final GMP/EIS. Clarifying language has been added to "Impacts Common to All Alternatives" on page 194 under "Visitor Experience." The draft GMP/EIS, as well as the *Scoping Summary,* has undergone extensive public review, and the exact wording about providing a wilderness river experience was part of the *Preliminary Alternatives* workbook reviewed during fall 1993.

Comment: A diversity of visitor opportunities should be maintained on the Colorado River, consistent with the first management objective for visitor experience on page 6. Wilderness and wild river designations may preclude this. Also, the opportunity for almost continual solitude that may be gained through a "wilderness river experience" should **not** be provided on the river and is contrary to park and NPS legislation.

Response: Nothing in the general management plan precludes providing a diversity of visitor experiences on the Colorado River. Decisions may be made in the revised *Colorado River Management Plan* on such things as where, when, and how to provide the wilderness river experience stated, but it must not be less than currently provided. However, "diversity" does not mean that all types of experiences desired by all people would be provided. The Park Service would decide on the appropriate mix of experiences through established processes. Also, a wilderness river experience does not necessarily require an opportunity for "almost continual solitude"; it must provide outstanding opportunities for solitude, but some level of contact with other parties is appropriate and inevitable in wilderness.

Comment: It is premature to specify in the general management plan that the Colorado River should be designated as a wild river versus a scenic river under the Wild and Scenic Rivers Act. The plan should defer the designation recommendation for a more appropriate forum, where the pros and cons of the designation possibilities can be more fully considered. The scope of a general management plan tends to dilute public scrutiny of such issues.

Response: Because the Park Service has not made a suitability determination for the river segments in the park that appear to meet eligibility criteria, the management objective on page 6 has been changed to actively pursue designation of eligible segments under the Wild and Scenic Rivers Act. However, NPS policies require that no actions be taken that would adversely affect the values that cause a river segment to be eligible for inclusion in the national wild and scenic rivers system, and most of the river appears to meet the requirements for wild river designation.

CONCESSIONS

Comment: Regarding concessions in the park, will the final GMP/EIS be revised to ensure

a. competitive bidding with no preference to incumbents?
b. reasonable rate of return for the park?
c. buyout of possessory interest?
d. contractual requirement to implement general management plan goals?

Response: The proposed general management plan provides direction for park management regarding long-term strategies for resource protection, visitor use, and appropriate development. The items specified in the comment really relate to NPS concession management policy questions that are outside the scope of this plan. These items could be negotiated in a concessions contract renewal if they conform to existing concession management policy. The general management plan, however, cannot guarantee that these particular items would be included in any contract negotiations, and the final document will not be revised to include them.

GMP IMPLEMENTATION AND FUNDING

Comment: During the public comment period on the draft GMP/EIS the cost tables on pages 293–306 were often discussed. As a result of the current efforts to eliminate the national debt, people studying these tables wanted to know how the National Park Service intended to secure funding to implement the proposed action (alternative 2).

Response: General management plans are usually written for parks in 20–25 year cycles. The most recent one for Grand Canyon National Park was the 1976 *Master Plan.* The cost of development to resolve administrative, resource, and visitation issues is never inexpensive, and cost estimating so far into the future can only be done in gross figures.

In a general management plan it is imperative that the National Park Service articulate a desired future for the park in its preferred alternative. This alternative must be able to resolve existing management problems, and it must also be reasonable and achievable. Costs of implementation certainly have a strong bearing on the efficacy of the proposed plan; however, they should not limit imaginative and visionary solutions. The Park Service has a long-term commitment and dedication to resource protection and appropriate visitor use of parks, and general management plans are often bold in their long-term proposals.

Over time the National Park Service has come to the conclusion that the most consistent presentation of estimated costs for congressional consideration is one that shows the proposed item, the quantity, the gross construction costs from current government estimating tables (which include remote location factors), planning and design costs (usually calculated from a percentage of the gross, which necessarily varies park by park for obvious reasons like remoteness, travel involved, and special expertise required), and the sum of the two columns. These cost totals are shown as being borne by the Park Service or the concessioner, as appropriate.

The National Park Service cannot present private sector estimated construction costs in its planning documents. To achieve consistency in its cost estimates to Congress the Park Service only uses approved government

estimating tables. Considering all the variables, it is not unlikely that many private sector estimates would be less for particular construction proposals; however, the brief period that those estimates remain viable in the competitive private sector prohibits their use for long-term planning.

Appendix C of the final GMP/EIS includes the phasing schedule for the proposed action. After each item the estimated year of completion, the estimated cost, and anticipated funding source are noted. In reality the Park Service knows that not all items in the cost tables will be federally funded, but the costs are shown for consistency of estimates. In the phasing schedule for the proposed action various funding sources are listed (congressional appropriations, concessioner, private, or a combination of the three). No one expects all items in the proposal to be funded solely by appropriations to the Park Service. For instance, a nongovernment organization may wish to support the park by contributing to the conversion of the community building to an education center, and a portion of the construction costs for the gateway information center in Tusayan is expected to be privately funded.

It is anticipated that as the private sector learns of the proposed actions in the plan it will take greater interest as economic opportunities become available. Over time, renegotiation of concessioner contracts can create a major funding source for development of items specifically related to visitor services in the park. Other government funding sources would not be overlooked, for instance, the Federal Lands Highway program which provides funding to improve federal roads. Also, a change in fee legislation could direct that a certain portion of the park entrance fees be placed in a general management plan implementation fund. Collaboration with regional governments and business interests is likely to identify or even generate new funding sources. To ensure that multiple funding sources are sought out, the national park intends to establish a general management plan implementation team to develop the regional information and coordination stressed in the plan. Cooperation with neighboring agencies and tribes is also emphasized in the plan. The potential for agencies and tribes to share funding on mutually beneficial projects along boundaries would not be overlooked.

This general management plan attempts to estimate the costs of future development in and around the park that will help resolve resource and visitor use issues identified at the start of the planning process. Before release of the draft GMP/EIS, the Park Service recognized that the estimated total would cause concern in a time of fiscal austerity. However, the best vision for the continued preservation of the Grand Canyon had to be presented. Over the long-term the vision for protecting this public treasure will change little, but the economic picture will be ever-changing. A multiple funding source strategy is preferred and will be pursued.

Costs common to all alternatives have been deleted from the cost tables, and the totals have been revised to reflect these changes (see appendix C in this final document). These costs are not normally shown within a particular alternative because such actions and their associated costs represent the efforts and expenses that would be incurred, regardless of alternative, to manage the park at a certain desired standard. Actions common to all alternatives usually do not have estimated costs associated with them unless they are discrete, straightforward actions. For example, sustainable development practices (see page 14) would be followed under all alternatives, such as water conservation and reclamation. Because the details upon which to base a cost estimate for a

water conservation and reclamation plan are not known at this time, it is impossible to estimate what those costs would be under each alternative. However, it is still appropriate to highlight such a need in this conceptual plan.

Comment: Who made the cost estimates? Where are the funds coming from? What are the priorities? How would cost overruns be handled? What if Congress and the concessioner do not come up with the funds?

Response: From year to year, government funding is uncertain. Some projects are planned and designed for years and never get funded; others are designed and built in the same year. The fact that a plan is being done before funds are secured to implement it is not unique to the Grand Canyon. Today's political climate suggests that congressional funding of the entire plan is out of the question, and that specific congressional funding for any particular project in the plan is not guaranteed. The costs reflect what is needed to upgrade infrastructure to current standards, and after 30 years of not keeping up with needed facility improvements, the cost is high.

At the same time, however, there are new opportunities for funding that have not been traditionally used in the National Park Service. Grand Canyon National Park collects more fees at the entrance station than any other park in the system. These fees go back to the general treasury. Legislation is being considered to allow a portion of these funds to help implement the general management plan. Legislation is also being considered that would return a higher percentage of the concessioner's gross receipts to the government, some of which could be kept in parks. More commercial business is conducted annually in Grand Canyon National Park than in any other park in the system (over $110 million). The contract under which the primary South Rim concessioner operates expires at the end of 1998, creating an opportunity for renegotiation and a potential source of additional funding. Also, the political climate dictates that the private sector be considered as a funding source.

Priorities are identified in the phasing schedule. If no funding is forthcoming to implement the general management plan, then the number of visitors allowed access to the park would be limited, and facilities would continue to deteriorate.

The cost estimates in this document for both the "Construction Planning" and "Gross Construction" categories reflect the regulations with which the government must comply either before construction (environmental, historic preservation, procurement regulations) or during construction (labor standards, the Buy-American Act, and many others). Projects funded by alternative sources would not be constrained by many of the regulations that affect federally funded projects.

Comment: The draft GMP/EIS identifies Congress as the only source of funding for the proposed projects. The Park Service should indicate whether there is approved funding for all of the proposed projects, and if not, alternative sources of funding should be explored in the final document.

Response: Appendix C identifies several potential sources of funding for specific items in the phased implementation of the proposed action. Congress is not identified as the sole source of funding. Multiple funding sources will be required to implement the general management plan. The Park Service does not envision all of the funding coming from congressional appropriations.

Comment: Under the proposed action the listed annual operation cost seems inadequate to fund visitor services at all the regional contact points (including Fredonia/Kanab, Jacob Lake, Cameron, Flagstaff, Williams, and Tusayan).

Response: This figure is not intended to fund NPS salaries at regional contact points, but to assist those contact stations (and other providers of information) in providing accurate and up-to-date information to visitors or potential visitors. It would be impracticable for Grand Canyon to provide paid staff at all the regional contact points, although in some cases that may be required, and estimated costs would be increased.

Comment: Within the context of funding, the final GMP/EIS should identify a process for setting priorities that includes public involvement. Prioritization criteria should also be developed, with opportunities for public comment, either as part of the final document or in a later prioritization process.

Response: If guaranteed funding had been clearly identified for various projects outlined in the phasing plan, further prioritization would be the responsible thing to do. However, since funding is uncertain, flexibility must be maintained; consequently, the phasing plan is not more specific. As soon as a final plan has been approved, a park-based team would focus on implementation. As long as projects have been listed in the correct sequence, the team would have the flexibility to move from project to project, working on various funding sources.

Comment: Before a final decision is reached on the general management plan, a cost/benefit analysis must be done to compare the cost of the proposed action (both economically and environmentally) to the costs of limiting day visitation.

Response: A review of the cost estimates for alternative 2 suggests that such a lengthy analysis is unnecessary. The proposals for increasing the scope of the transportation system are necessary today and would have been welcome in any of the past six or seven summers. The need for better orientation centers (visitor centers) was a constant throughout the scoping process, and the proposal is an answer to a current problem. Relocating employee housing from the rim or other visitor areas is a land use issue, having virtually nothing to do with the level of visitation. The proposed support facilities in new locations are due to the fact that the current facilities are inadequate. All in all, the vast majority of the estimated costs associated with alternative 2 have more to do with the lack of infrastructure improvements over the last 30 to 40 years than they do with the level of visitation.

Comment: Action should be taken where the benefits exceed the costs, doing the greatest good for the greatest number. The plan seems to have rejected the idea of balance, which should be an economic issue. The National Park Service should set ground rules, but then allow the businesses to make the decisions about how to provide services that cater to the public's desire for a high-quality visitor experience. The plan has too many details for things the concessioners should be planning (e.g., where the mule barn should be, where and how big hotels should be).

Response: The greatest good for the greatest number always needs to consider future generations in the case of parks because the National Park Service is charged with conserving park resources and providing for their

enjoyment "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The Park Service has that responsibility, not private business. Economics and costs vs. benefits are considered in the process, as are other important topics. The Park Service and other federal agencies are bound by the National Environmental Policy Act and other laws to ensure that all interested parties are heard before a decision is made. Private businesses are not always so constrained. The Park Service considers all comments, then makes its decision and presents the rationale in the plan.

Comment: Several comments had specific suggestions for actions that really suggest an alternative way to implement a particular part of the plan, rather than a difference in the results of that part of the plan. For example, rather than one large parking lot in a certain location, build several smaller parking lots.

Response: These suggestions would be considered in future implementation phases, when site-specific details are being considered for how best to accomplish planning, comprehensive design, and environmental compliance for a particular project.

Comment: Proposed elements of the final GMP/EIS must conform to existing resource management plans for the park. The final document should specifically define the role of resource protection in management decisions and the NPS responsibility to protect and restore the park's resources, and it should ensure adequate funding to carry out the resource management components of the plan.

Response: In NPS planning, general management plans are the parkwide conceptual plans that establish the parameter for plans such as resource management plans. The proposed general management plan and the park's *Resource Management Plan* are consistent with each other. The proposed general management plan provides strong direction and commitments concerning resource management, specifically in the park purpose and significance (pages 3–4), management objectives (pages 6–7), actions common to all alternatives (page 16), and the proposed action (pages 47–8). Ensuring a certain level of funding for any specific park program is outside the scope of a general management plan.

FEES

Comment: Several comments were received about entrance fees, ranging from the need to address the entry fee issue and make a recommendation in the plan to various ways that the National Park Service might structure or modify fee revenues to provide funding to implement the plan. One comment suggested that the park fee should have three elements (a basic entrance fee, a daily incremental charge for longer stays, and an impact multiplier based on the kind of recreation pursued in the park), while another suggested that a short-term, lower priced visitor pass be issued for different periods (such as two or three hours, or a half-day), so that people could view the canyon and then be on their way. One comment pointed out the difference in entrance fees charged for private cars versus mass transit, suggesting it would be better to encourage and reward those traveling on some form of mass transit by reducing entry fees relative to those traveling in individual private cars. Another commenter suggested that each person entering the park pay a flat fee, with additional fees charged for autos. Such a system could be leveraged to benefit buses if that

proved to be environmentally and ecologically better. People should be charged less for using bikes, as their environmental impact is less than an automobile.

Another commenter said the Park Service should consider a two-tiered fee system: Since U.S. citizens and resident aliens support the park system through tax dollars, why not increase park entrance fees, and then give citizens and resident aliens a discount? Finally, one commenter was concerned that the park would limit visitation through the use of fees, and suggested that a free shuttle service be provided, with the cost of the shuttle service included as part of the entrance fee.

> Response: The entrance fees charged at national parks are established by Congress. It is not within the authority of a general management plan to establish an entrance fee amount, or to determine how it would be collected.

Comment: The final GMP/EIS should address whether the entrance fees will go up in any of the alternatives, particularly the proposed action, and should address any "environmental justice" impacts (Executive Order 12898) due to an increase in fees.

> Response: As previously stated, entrance fee increases would require congressional action. Entrance fees and user fees could be possible components of any of the funding to implement the general management plan, especially where Congress is identified as a possible funding source in appendix C. If or when a legislative proposal goes forth to request funding to implement any plan components, it must meet all requirements of EO 12898.

Comment: If current concessioner and entry fees remain the same, a carload of four visitors who can now enjoy a full day at the park for less than $10 would have to pay in excess of $100, plus meals — a tenfold increase.

> Response: This suggestion is speculative and without foundation. While a change in the entrance fee structure might be one way to provide incentives for mass transit in lieu of automobile travel, there has been no investigation by the Park Service about what entrance fees or the cost of shuttle transportation into the park might be, although it would be appropriate to combine entrance fees with transportation fares (if any).

Comment: The transit system should operate on a "user pay" basis. In addition, visitors entering the park by car or train should also have to pay a transit fee.

> Response: The specific funding method for the NPS visitor transit system is not been identified in the general management plan. These details would be determined at a later date.

COMMENTS RELATED TO THE NATIONAL ENVIRONMENTAL POLICY ACT

Comment: It is recognized that many specific design and management issues, and many site-specific development measures, will be the subject of future detailed plans and studies, and that a more detailed analysis of impacts on certain aspects of the environment is necessary on a project-by-project basis. However, much more information should be included in the final environmental impact statement, such as specific mitigation measures, and guidelines and procedures for several specific subjects. This information would then be utilized as a baseline reference or framework for subsequent NEPA documents. Having this framework in the final document would help others understand the basis for later NEPA documents and would help identify what should be addressed in any future cooperative agreements between agencies.

> Response: The park's purpose, significance, and vision statements, along with the management objectives — all as stated in the "Purpose of and Need for Action" of the draft GMP/EIS (as amended in this final GMP/EIS) — form the basis for future management decisions and supporting documentation for the park. This final document affirms the NPS commitment to this framework and to site-specific NEPA documentation for all implementation projects resulting from the direction provided in the final plan. While the complexity and detail in the draft GMP/EIS have given some individuals the impression that many individual actions have been designed to the point of being ready to build without additional design and NEPA analysis, this is **not** the case. The shaded box on page 9 ("Selection of Impact Topics") verifies this point.
>
> Specific mitigation measures, guidelines, and procedures cannot be developed beyond those already discussed in the draft and final documents. These will be developed in the documentation for later projects, after comprehensive designs have been undertaken that explore alternatives for specific projects in more depth. Care will be taken to evaluate cumulative impacts and the implications for all resources for all projects generally outlined in this proposed general management plan.
>
> Regulations and policies will be strictly adhered to in implementing the approved general management plan.

Comment: The final GMP/EIS should discuss land uses and construction impacts on areas where the Park Service knows there will be development, trail management, construction, and relocation. A number of important issues are not covered in detail in the plan. It is assumed that more detailed impact analysis will occur in future tiered documents. However, the draft statement is vague about the measures that would or could be employed to mitigate adverse impacts.

> Response: The draft GMP/EIS discusses all impacts for all areas where the Park Service knows there will be impacts, at a level of detail consistent with the level of detail in the design and planning for those areas. Fully consistent with 40 CFR 1508.28, a general management plan is an "early stage" of planning that will be supplemented by more detailed planning and site-specific comprehensive design and environmental compliance as discussed on page 9 of the draft GMP/EIS, including detailed mitigating measures designed into the projects or specified in accompanying NEPA documentation.

Comment: The final GMP/EIS should discuss any foreseeable changes in existing site and location plans that could either affect the priorities identified in the draft document or introduce significant new resource management issues.

Response: The draft GMP/EIS discusses all foreseeable changes.

Comment: The final GMP/EIS should explain how the Park Service will monitor impacts from these projects to ensure that consistent management techniques will be applied throughout the park.

Response: The most appropriate management techniques will be applied to specific situations and will be guided by the plan's vision statements and management objectives. The draft GMP/EIS and NPS policies commit to monitoring impacts in the most appropriate manner. Such details are beyond the scope of a general management plan, but they are included in the procedures for preparing site-specific design and construction documents and, where appropriate, in site-specific environmental compliance documents, where specific direction for monitoring project mitigation is needed.

Comment: The final GMP/EIS should discuss in detail the realignment of the East Rim Drive near the Watchtower and anticipated impacts from the realignment. This is not accounted for in the phasing section.

Response: The draft GMP/EIS discusses the concept of realigning the road at Desert View and addresses the impacts at a conceptual level of detail. Site-specific designs, including the exact location of the road realignment, would be accomplished in a subsequent phase of planning, with NEPA documentation detailing the project and impacts at that time. A detailed discussion of the road alignment and associated impacts is not possible at this stage of planning. The road realignment is listed in appendix C as "Construct Desert View bypass road."

Comment: The National Park Service should include a preliminary erosion control plan in the final GMP/EIS as the reference for future environmental documents.

Response: An erosion control plan is much too detailed to include in a general management plan. However, such plans meeting all state and federal requirements are standard in NPS construction documents. Erosion control is an important mitigation for all construction projects and will be addressed in site-specific planning and compliance for implementation projects.

Comment: The final GMP/EIS should contain a glossary of text terms.

Response: This is not a requirement. Terms have been defined as necessary where used in the document.

Comment: The plan should be strengthened by an explanation of what factors were used to guide the selection of the preferred alternative.

Response: The proposed action is the alternative that is felt to best meet the park's vision statements and management objectives (see pages 4–7 of the draft GMP/EIS and subsequent revisions for these pages in this document).

Comment: The scale of proposed developments in the plan is far too great and would unacceptably degrade the visitor experience. A proposal that combines the best elements of alternatives 1 and 2 was presented as an option.

Response: The suggested optional alternative would result in a reduction in peak visitation to the South Rim to about one-third the current peak levels, to a limit of 7,000 visitors at any one time. Such a reduction in visitation would be too severe when there are ways, as proposed in alternative 2, to accomplish the visitor and resource goals without such a drastic reduction. Because the suggested alternative would satisfy such a small amount of the current demand, some visitors could wait several years before being assured of an opportunity to visit the park. In contrast, alternative 2 proposes a limit of 22,500 visitors at one time, close to today's peak levels; this limit would be adjusted based on a monitoring program and indicators and standards for visitor and resource attributes. This limit would probably not be reached until about 2015; however, even if the limit was reached sooner, or if the monitoring program indicated a need to reduce the limit, or if a reservation system had to be imposed, visitors would still be able to visit the park within a few days of one's preferred date.

The suggested alternative is so dependent on a drastic reduction in visitation, that the other actions would not work if the reduction was not instituted. If such a reduction was viable, it would have been included as an alternative in the plan, probably similar to the one suggested in the comment. After careful consideration of public scoping comments and reviews of the preliminary alternatives as part of this planning process, such a reduction in visitation was not considered viable or necessary. Language has been added to "Actions Considered but Rejected" on page 92 to clarify this.

NATURAL RESOURCES

GEOLOGIC RESOURCES

Comment: The Park Service needs to find alternatives to minimize blasting, such as changes in the design of structures. If blasting is the only method available for certain projects, then a tiered environmental impact statement should be prepared for those projects.

Response: The potential impacts of blasting are generally described in the draft GMP/EIS on page 193. As with all construction tools, alternatives will be evaluated for, among other things, impacts and safety, and if an environmental impact statement is appropriate, one will be prepared. There is no reason to automatically require an environmental impact statement for blasting under all circumstances.

VEGETATION, WILDLIFE, AND ECOSYSTEMS

Comment: The draft GMP/EIS states that the amount of new disturbed areas could be offset, acre for acre, by revegetating other areas that would no longer be used (e.g., parking lots). However, the table on pages 126–8 shows fewer restored acres than disturbed acres. It would be helpful if the final GMP/EIS included a table or summary that indicated the amount and type of lost vegetation and the amount of revegetation measures that would occur to offset the losses.

Response: The statement on page 47 ("If projects result in vegetation loss, the revegetation of other disturbed areas could be required, acre for acre") refers to a possible mitigation measure to minimize vegetation loss, not an absolute requirement for all disturbed acreage. As shown in the table on pages 126–8, it would not be possible to revegetate all disturbed acres in the developed zones. As for the vegetation types of disturbed vs. revegetated acreage, exactly which acreages and vegetation types would be disturbed vs. revegetated must be decided in the future after site-specific design and NEPA documentation. The tables contain the best possible estimates, given the level of conceptual planning, but due to gradation of vegetation types in many of the potential development areas, type-specific acreages would be too speculative and subject to change due to site-specific design considerations to be of value in this document.

Comment: In the "Environmental Consequences" section, only the number of threatened and endangered species in the areas of concern is indicated. The actual names are only offered in table 9 in the "Affected Environment" section. There is no significant discussion of the potential impacts to these species. The final GMP/EIS should indicate the names of the species and exactly where these species are found in project areas. The final document should also discuss in detail the ecosystem management techniques to mitigate adverse impacts to these species proposed in the alternative as a reference for future development projects.

Response: In the final GMP/EIS potential impacts are clarified in the "Impacts Common to All Alternatives" (see revision for page 193); also, updated

correspondence from the U.S. Fish and Wildlife Service is included in the revised appendix B, and the species list in table 9 has been updated based on that correspondence (see revision for page 136). To protect threatened or endangered species, detailed location information has not been provided, especially since adverse effects are unlikely. Site-specific consultation will be conducted with the Fish and Wildlife Service, and NEPA compliance will be conducted for implementation actions, including detailed evaluations of potential impacts to species of concern. Ecosystem management techniques are too detailed for a general management plan, but the management objectives on page 6 and the text on page 47 provide the desired framework and ensure that an ecosystem approach to managing threatened and endangered species would be developed and implemented as a result of the general management plan.

Comment: Page 224 states there are no known sensitive species in the Jacob Lake area; however, the northern goshawk is in the area.

Response: The text has been corrected.

Comment: The monitoring called for throughout the plan should include adjacent national forest lands that could be affected by NPS actions under the proposed general management plan.

Response: Details of monitoring programs would be developed in cooperation with all affected parties. These programs could include lands outside the park, but the emphasis would probably be primarily inside the park.

WATER RESOURCES

Comment: The proposed action mentions a 15% increase in water use, but it fails to state what impacts such use would have on Bright Angel Creek, which is already affected by the current diversion of water for potable use.

Response: One of the actions that would be common to all alternatives states: "Water withdrawals needed for the administrative use of the park would be limited to current levels and would be conducted in a way that would minimize impacts to park resources" (page 16, column 3, paragraph 3). One of the park's management objectives is to "Preserve natural spring and stream flows and water quality. Withdraw only the minimum water necessary to meet park purposes. To the maximum extent feasible, strive to meet increases in water demand by conserving and reusing water" (page 6, column 3, paragraph 7). The 15% increase in use would be accommodated by improved water conservation, more efficient use, greater pumping and less spilling of water at Indian Garden, increased use of reclaimed water, and other measures, not by additional water withdrawals. Safeguards for Bright Angel Creek under the proposed action are specified on page 47, column 6: "Minimum flow requirements in Bright Angel Creek for aquatic wildlife and recreational activities during droughts would be established. Water withdrawals might have to be curtailed to meet these requirements."

Comment: Why is replacement of the transcanyon waterline included only in cost estimates for alternatives 1 and 4?

Response: The cost of replacing the transcanyon waterline has been included as an action common to all alternatives (see appendix C in this document). These common costs have been separated from the costs of the alternatives because such actions represent the efforts and expenses that would be incurred to manage the park at a certain desired standard, regardless of the alternative that is selected. Research into alternative water sources is still proposed; however, it is impossible to estimate the costs of such new sources.

Comment: Protecting park water resources should be a high priority. Strict water conservation should be practiced. Visitors should be encouraged to bring their own drinks; low-volume fixtures and non-water-flushing toilets should be used wherever possible. Water supplied to NPS facilities outside the park should be conserved and rationed the same way. Water should never be sold to other entities outside the park.

Response: The management objectives on page 6 and the actions common to all alternatives on page 16 affirm the high priority that the Park Service places on protecting park water resources. The proposed action calls for meeting potable water needs through conservation and more efficient use (see pages 31 and 47). The specific measures to do this would result from site-specific planning, design, and environmental compliance subsequent to the general management plan.

Public Law 95-586 provides the only authority to sell water outside the park and requires specific conditions to be met before doing so. Similar to the way in which the Park Service provides water to support park facilities inside the park, the proposed action calls for the Park Service to provide water to support park facilities that would be located outside the park, "unless other sources were developed that had less impacts on park resources" (page 47, column 6). Some of the water conservation measures that would be employed under the proposed action for the South Rim are described on page 53, column 3, "Utilities."

Comment: The focus on cooperative regional planning throughout the document must also extend to water availability and use. The U.S. Forest Service cannot meet its commitment to making USFS lands available for uses that would accommodate park visitors and alleviate management problems in the park if unreasonable limitations on the availability of water were imposed. The Park Service and Forest Service must work together to find a satisfactory regional solution to this dilemma.

Response: The Park Service would coordinate with all interested parties to evaluate all alternatives for water sources, use, and impacts. However, because protecting park resources unimpaired for the enjoyment of future generations is one of the primary NPS mandates, the Park Service would actively oppose any alternative that would cause unacceptable impacts to park resources. However, the Park Service is confident there are alternatives to provide adequate water to meet regional as well as park needs in an acceptable manner and would work with others toward this end.

Comment: The final GMP/EIS must provide more detailed information on the park's intent to carry out a hydrogeologic study, inventory of park waters, and study of alternative water sources.

Response: The draft and final GMP/EIS call for all of these things, but how and when they would be accomplished is outside the scope of a general management plan.

Comment: The draft GMP/EIS states that the park's water supply system does not currently comply with the Safe Drinking Water Act (SDWA). There is no discussion in the plan of measures that will be taken to remedy the situation. The section titled "Impacts Common to all Alternatives" (page 194) states that the Roaring Springs source does not meet all of the standards for safe drinking water, and that the most feasible approach to meeting the standards would be implemented with each alternative. Yet, there is no discussion of this "feasible approach" in the "Environmental Consequences" section. The final GMP/EIS should identify all of the actions that the Park Service is going to take to ensure that this source meets all of the SDWA standards.

Response: The draft GMP/EIS states that the water does not meet requirements for safe drinking water, meaning the Arizona Department of Environmental Quality (ADEQ) standards. The water does meet SDWA requirements. ADEQ requirements are more stringent.

Major developments have occurred concerning state water classification since the draft plan was written. During the past few months the Park Service has learned that the Department of Environmental Quality is proposing new drinking water rules, which are expected to be final soon. These new rules would result in a much greater chance for Roaring Springs to become classified as a groundwater source. If a groundwater classification was achieved, treatment would not be required, but the park could elect to treat the water for aesthetic reasons. The revision for page 182, column 5, reflects this.

The final draft of the consent order has been sent to Arizona Department of Environmental Quality for signatures. Once a final classification is made and if treatment is required, the National Park Service will provide water treatment.

Compliance with drinking water standards is not a general management plan issue. The draft GMP/EIS correctly assumes compliance will be achieved (i.e., noncompliance is not an option), but at this time the method to be used to achieve compliance has not been determined.

Comment: The draft GMP/EIS does not state the level of direct or indirect impacts to wetlands. There is a single statement on page 227 that vernal pools in the Tuweep area might be affected, but the sources of the impacts and number of acres are not identified. The final document should discuss Executive Order 11990 and make a preliminary determination whether section 404 of the Clean Water Act applies to this project. It would be prudent to discuss the current management techniques used at existing wetlands and to incorporate appropriate management techniques into the final document.

There is no mention of Executive Order 11988, "Floodplain Management," in the draft GMP/EIS; the final document should address this, especially since there will be some trail and campground development in floodplain areas.

Response: A revision for page 13, column 4, clarifies that the Park Service will fully comply with all requirements when site-specific planning for individual projects is conducted. Regarding wetlands, NPS policies that require the

avoidance of impacts whenever possible will be strictly followed. It should be possible to avoid impacts to vernal pools at Tuweep, and the statement on page 227 has been revised to reflect this. Some of the floodplain and wetlands discussion on pages 137–8 has been clarified. Specific wetland management techniques are too detailed for a general management plan.

A floodplain statement of findings is attached to this final document as appendix D, in full compliance with the executive order and NPS policies and as promised on page 193 of the draft document.

NATURAL QUIET

Comment: On page 6, column 3, the management objective should say "re-establish the natural quiet" rather than "protect the natural quiet" since apparently the desired condition is different from the existing condition.

Response: Natural quiet and the other resources mentioned in the management objectives are present in some locations or at some times, so the term "re-establish" would not be universally applicable. The management objectives describe desired conditions, so the present condition does not need to be part of the wording for the objective.

Comment: One crucial element of the Grand Canyon is not recognized or addressed. This element is the silence of a natural setting. The quality of silence and the protection of this natural resource should be addressed, and the National Park Service should adhere to future plans that would protect this vital attribute.

Response: Natural quiet and solitude are recognized in the "Park Significance" section on page 4, and in management objectives on page 6. Specific measures to protect these resources will be considered in other planning efforts.

Comment: The proposed transit system would greatly increase the use of buses, and the increased bus noise would be detrimental to the canyon environment. The draft GMP/EIS states that buses must meet "locally established air and noise standards," but there seem to be none beyond requiring mufflers. The final document must establish guidelines for bus noise emissions based on the quietest technology currently available.

Response: The exact standards to be used would be decided in a subsequent planning effort. Guidelines for emissions are too detailed for a general management plan, but the draft GMP/EIS does provide overall guidance in the management objective on page 6 regarding natural quiet and noise. The text on page 47 regarding emission standards has been revised, with the intent of encouraging use of the quietest technology consistent with providing an effective transit system.

Comment: With the number of trains increasing under the proposed action, the detrimental effect of the whistle on natural quiet would also increase. The final GMP/EIS should require trains in the park to use a signal system designed to alert people in the immediate vicinity of the train about its impending movements, rather than one heard great distances away. For example, low-volume horns or quiet whistles could be mounted on individual cars to ensure the signal was audible at the rear of the train. The train whistles should be sounded only when absolutely necessary for safety.

Response: As stated on page 47 for the proposed action, trains are to minimize the use of whistles and bells, commensurate with safety. The suggested system is one way this might be accomplished and is to be considered further in subsequent planning and management regarding trains in the park.

AIR QUALITY

Comment: The environmental impacts on air quality for alternative 2 (page 225) state local air pollution would be reduced by not allowing new wood stoves. What about an exception for North Rim winter housing?

Response: The wording on page 225 has been changed to read "prohibiting additional wood burning stoves and fireplaces in the park." It would be acceptable to replace an existing wood burning stove or fireplace with a model meeting EPA standards.

Comment: The draft GMP/EIS states that the National Park Service does not feel there would be a significant reduction in the amount of air pollution along the North Rim because of the types of buses that would be used. There is no indication about what types of buses would be purchased for the park transit system, so the criteria that the Park Service used to come to that conclusion are unclear. It is assumed that the buses would not be diesel powered. The final GMP/EIS should identify the types of buses that would be purchased and who would operate the system.

Response: Page 227 states, "The use of shuttle buses on the North Rim would reduce the number of private vehicles, but would have a small effect on air pollution because of the size of the buses and because the options for clean fuel sources are limited on the North Rim for the near future." The types of buses would be controlled by the size requirement imposed by the proposed action (22′ long, 8′ wide), but further details on the types of buses and who would operate them is not known at this stage of planning. Clean fuel sources are not available close enough to the North Rim to make their use likely for the foreseeable future (although the Park Service would take advantage of them if they did become reasonably available there). Also, requiring visitors to park their cars and use transit buses would reduce pollution even if diesel-powered buses were used (which is a possibility). Using a cleaner fuel would not further reduce emissions by a large amount.

Comment: The Park Service plans on issuing valid emission stickers to commercial buses (page 47). What kind of sticker would this be and who would issue the sticker? There is currently no national program for issuing such a sticker.

Response: The Park Service does not plan to issue emission stickers, but to rely on existing programs and stickers. The text revision for page 47 clarifies this.

SCENIC RESOURCES AND VISUAL QUALITY

Comment: Requiring shielding for all new light sources is an excellent idea, but all present light sources should also be shielded as soon as possible.

> Response: Consistent with requirements to protect cultural resources in places such as the Grand Canyon Village Historic District, the park is already beginning to shield existing lighting (see the revision for page 48). The proposed action calls for identifying components of the human environment, including lights, that adversely affect scenic resources, and working to minimize or reduce such visual intrusions (see page 47, column 6, "Scenic Resources").

Comment: The section on "Affected Environment, Visual Quality" seems to be very short and considers only long-distance views. Why aren't the visual effects of structures as seen from various park roads considered?

> Response: The visual emphasis at a scenic wonder such as the Grand Canyon is invariably on the distant horizons, the sweeping panoramas, and the multi-colored depths of the canyon. The visual intrusions that are most often remarked upon by visitors are those intrusions noticed in the distant views, and so those intrusions are discussed. This is not to say that the visual effects of structures as seen from various roads are not important. The effect of the built environment on the visitor experience is very important. The 1994 *Architectural Character Guidelines* for Grand Canyon National Park will help ensure that any new construction or renovation of an older building is compatible with the overall architectural character of developed areas.

CULTURAL RESOURCES

CULTURAL RESOURCE MANAGEMENT

Comment: A commenter disagreed with the assessment of environmental consequences of the proposed action on cultural resources as outlined on pages 198–9, stating that the comprehensive inventory, research design, and ethnographic surveys and consultations listed under the proposal are required by existing historic preservation law, and that they could be initiated under the no-action alternative. Therefore, inventory and consultation under section 106 of the National Historic Preservation Act (NHPA) would be done under the no-action alternative as well as the proposal.

Response: The draft GMP/EIS describes actions regarding the management and protection of cultural resources that are common to all alternatives on page 16, columns 5 and 6. The listed studies would meet the minimum requirements of all sections of NHPA. Ethnographic surveys are not required by that act except where they concern traditional cultural properties. The draft GMP/EIS acknowledges the need for surveys for all types of historic properties prior to development in any alternatives, including the no-action alternative (page 19, column 4).

The difference in effects, both direct and indirect, on cultural resources between the no-action alternative and the proposal is one of quality. The no-action alternative, as described on page 13, column 1, continues the present course of action. Under current staffing and funding levels much of the cultural resource management program must be concentrated on fulfilling obligations under section 106 of the NHPA, in advance of project-specific planning. Without an overall comprehensive plan, all inventory, evaluation, and consultation would take place within a rather narrow frame of reference, with broader studies taking place on a low-priority basis. It is much more difficult to predict and control for the impacts of projects undertaken in reaction to problems as they arise than of projects undertaken within the framework of an overall plan.

The National Park Service, by making a strong statement for the need for additional cultural resource studies in all alternatives except the no-action alternative (pages 31, 48, 69, and 87), commits to fulfilling both the letter and the intent of all sections of the NHPA in a manner that would best predict and control the broadest types of effects. By placing these studies within the context of the general management plan, funding and staffing would be raised to complete the necessary broader studies. Additional development under any alternative besides no action could occur when information about resources was of high professional quality (as indicated by the list of required studies) because professional cultural resource management personnel would have comparative data by which to best evaluate effects and guide project planning.

Comment: One respondent commented that oral histories should be included in the list of additional studies that would be undertaken under the proposal as a part of the comprehensive inventory and data management system for cultural resources.

Response: The collection of oral histories is a standard methodology of data collection for many of the studies listed on page 48, column 1. The historic resource studies, park administrative history, historic structure reports, cultural landscape reports, archeological studies, and all ethnographic studies,

including those used to identify ethnographic resources for resource management, protection, and interpretive purposes, would all rely heavily on oral histories as a source of information. Oral histories are considered only one of the specific studies listed in *NPS-28: Cultural Resource Management Guideline* under the term "ethnographic studies." It was not considered necessary to list all of the data collection tools used by cultural resource managers in achieving the goals of the types of studies recommended in the draft document.

Comment: Cultural landscape significance at the Grand Canyon should be incorporated in the cultural resources sections of the general management plan.

Response: Material has been incorporated in revised/updated cultural resource sections using data supplied by the NPS Western Regional Office, Park Historic Preservation Division

AMERICAN INDIAN TRADITIONAL USES AND SACRED SITES

Comment: The use of the terms "ethnographic resource" and "traditional cultural property" appear to be used interchangeably in some cases, and inconsistently in others. What is the difference?

Response: The term "traditional cultural properties" has been replaced by "ethnographic resources" except in those limited contexts that refer specifically to actions that are taken in compliance with section 106 of the National Historic Preservation Act (NHPA). For the purposes of a general management plan, the National Park Service intends to preserve and protect a larger body of resources of importance to American Indian groups than those that are embodied within the context of the NHPA. Traditional cultural properties differ from ethnographic resources to the extent that the former are sites that have boundaries, can be placed on a map, and have experienced continuous use. Ethnographic resources may not necessarily possess those qualities, but may have qualities of sacredness and cultural value that cannot be mapped or have been visited continuously over time. All mentions of traditional cultural properties before page 115, column 1, have been correctly attributed to the narrower interpretation under the NHPA. The use of "traditional cultural properties" generally applies to the no-action alternative and alternative 1; the use of "ethnographic resources" generally applies to alternatives 2, 3, and 4.

Comment: The Hualapai and Havasupai Tribes are concerned about having the opportunity to comment on activities that might affect cultural resources.

Response: The National Park Service fully intends to involve all interested American Indian tribes in developing steps to implement the proposed general management plan. On page 48, column 2, the second full paragraph of the draft GMP/EIS states that Park Service would negotiate memoranda of agreement (MOAs) with all the tribes, and that these MOAs would detail how to conduct consultation on all matters that might affect ethnographic resources in the broadest sense of the term. Ethnographic resources would include all cultural resources that might be of concern to the Hualapai and Havasupai people. Until those MOAs have been completed, the Park Service intends to consult with the tribes on any actions taken to implement the proposal.

Comment: The Hualapai Tribe is interested in contracting for cultural resource management in the park under PL 93-638.

Response: The Hualapai Tribe will be notified when contracts for cultural resource management projects are advertised and will be given every opportunity to compete for those contracts.

PL 93-638 applies only to contracting services provided by the Bureau of Indian Affairs on reservation land and is not applicable to other federal agencies or properties. PL 103-413 (generally known as the Indian Self-Determination Contract Reform Act of 1994, enacted on October 25, 1994) provides for tribes meeting certain conditions under the act to contract for programs, functions, and activities of agencies in the Department of the Interior other than the Bureau of Indian Affairs (see title IV, "Tribal Self-Governance"). The Park Service will negotiate annual funding agreements under this authority at the request of an eligible tribe when appropriate and feasible. At the current time, the Hualapai are not a listed tribe under that act.

Comment: The National Park Service should describe the measures taken to fully analyze the environmental effects of the draft GMP/EIS on minority communities and low income populations, as directed by Executive Order EO 12898, in regards to concerned tribal governments. In addition, tribal governments should have access to all public information relating to environmental planning of the park.

Response: EO 12898, signed by President Clinton on February 11, 1994, directs all federal agencies to take steps to ensure that minority communities and low-income populations are afforded an opportunity to participate in matters relating to human health or the environment. The executive order in particular directs federal agencies to analyze impacts under the auspices of NEPA, to address significant and adverse environmental effects of the proposed actions, to provide for the communities' input into the NEPA process, and to improve the accessibility of meetings, crucial documents, and notices. The executive order further gives the Environmental Protection Agency the authority to ensure that other federal agencies have fully analyzed these effects.

As outlined in the section of the draft GMP/EIS entitled "Consultation and Coordination," pages 283–4, the Park Service met separately with tribal government representatives of the Hopi, the San Juan Southern Paiute Tribe, the Kaibab Paiute Tribe, the Hualapai Tribe, the Navajo Nation, the Zuni Tribe, the Gap-Bodeway Chapter of the Navajo Nation, the Cameron Chapter of the Navajo Nation, and the Havasupai Tribe. In addition, the Park Service invited and paid travel expenses for two representatives of each interested tribal government to attend the Native American workgroup meetings held on November 4, 1991, and March 20, 1994. In each instance, the purpose of the meetings was to provide an opportunity for the tribal governments to provide input into the planning process, under the auspices of NEPA.

As stated on page 194, column 2, under "Ethnographic Resources," the consulted American Indian tribes were reluctant to divulge the locations of sacred sites and other ethnographic resources for the purposes of the draft GMP/EIS. Therefore, as stipulated on page 16, column 6, bullet 5, the Park Service would prepare an ethnographic overview and assessment. In addition, as shown on page 48, column 1, bullets 5 and 6, the Park Service would prepare specific ethnographic studies for each tribe associated with the park, as well as

studies specifically to identify ethnographic resources for resource management and protection purposes. These documents would serve to build a foundation of knowledge for the Park Service to use in identifying those projects that could have an effect on ethnographic resources.

In addition, as stated on page 48, column 2, second full paragraph, memoranda of agreement would be executed with each tribe to stipulate how and under what conditions consultation to determine the effects of proposed actions to implement the general management plan would be undertaken.

Until these studies and memoranda had been completed, the Park Service would consult with the concerned tribes for each project that was undertaken to implement the final plan. The Park Service fully intends to avoid ethnographic resources if at all possible, as detailed on page 194, column 2, the paragraph entitled "Ethnographic Resources."

To that effect, the superintendent of Grand Canyon National Park has designated a staff person to act as American Indian liaison to keep the tribes apprised of all NPS actions that could affect resources of concern to them, not just those actions arising from the general management plan.

Comment: Under EO 12898, the National Park Service should work closely with the tribal councils or governments in the areas where there will be trail development in or near sacred tribal lands, and should notify tribal governments of any trail alignments well in advance of development so that the tribes have ample opportunity to notify the Park Service of their suitability.

Response: The draft GMP/EIS does not propose building or improving access to any trails on tribal lands. New trails within the park would be designed as stated in the response above, and the concerned tribes would be consulted regarding the potential effects on ethnographic resources, including sacred sites.

Comment: Under EO 12898, the National Park Service should recognize and develop mitigation measures for environmental impacts that are identified by the tribal councils or governments.

Response: Mitigating measures will be addressed in the memoranda of agreement that are stipulated on page 48, column 2, second full paragraph, and in all documentation of NEPA processes on projects undertaken to implement the general management plan.

Comment: Native American people should be able to access the park free of charge.

Response: Fees to national parks and the way they are assessed are operational decisions that are outside the scope of the general management plan. However, this issue was raised during the scoping meetings held with all of the concerned American Indian tribes in the vicinity of Grand Canyon National Park. Due to the canyon's prominence in eight tribes' religious and traditional stories and practices, and under the auspices of the American Indian Religious Freedom Act, the park has already waived entrance fees for any American Indian wishing to enter the park to conduct activities related to religious or traditional cultural practices. Any member of the eight tribes with traditional cultural ties to the canyon may enter the park free of charge when

they tell the entrance station attendant that they are visiting the park for those purposes.

Comment: Native American people ought to be able to sell their own crafts at a designated location near or in the Watchtower or the Hopi House. Those structures were originally built with that purpose in mind, and these buildings should be returned to that historic purpose. The buildings today are tourist attractions in and of themselves and are selling imported products that look like and are easily confused with those made by American Indians. Those products are being sold under the pretense of being made by American Indians. Navajo people have not been allowed to sell their arts and crafts in the park. They want to be able to meet their customers personally, and not sell their products through a middleman, such as the concessioner. One letter stated: "The use of a Tribal name like Hopi House to represent other cultures is not right. We want our Park associated groups represented."

Response: Both the Desert View Watchtower and the Hopi House were built by the Santa Fe Railroad for the Fred Harvey Company for the express purpose of offering services to their customers. Grand Canyon National Park Lodges (GCNPL), the successor of the Fred Harvey Company, owns both structures. The Desert View Watchtower was constructed for the purpose of offering light refreshments, primarily lemonade and tea, to people touring on the Harvey Cars — tour buses operating out of the Grand Canyon Village. Craft sales, as part of the sale of gifts and souvenirs, were incidental to the providing refreshments.

The original purpose of the Hopi House was to house American Indian craftsmen, primarily Hopis, as they produced crafts for sale by the Fred Harvey Company. The building was named in 1904 by Mary Jane Colter and the Fred Harvey Company because the inspiration for its architecture was drawn from the Hopi village of Oraibi. Its name, therefore, has to do with its architectural style, not with what happens in the building. The Fred Harvey Company also employed and housed Hopi artisans at the Hopi House, as they created art work for sale to visitors to the canyon.

Grand Canyon National Park Lodges has recently renovated the Hopi House and has dedicated the building to the sale of southwest American Indian arts and crafts, not just those of the Hopi. A portion of the building is committed to the display and sale of high-quality arts by American Indians. Grand Canyon National Park Lodges has hired an American Indian to manage the facility, and the company periodically brings in American Indian experts to show and teach visitors about their arts.

The sale of souvenirs and gifts is regulated by concessions law (National Park Service Establishment Act of 1916 and the Concessions Policy Act of 1965, as regulated by 36 CFR 51) and NPS concessions policy (NPS-48, 1965). Under these laws, the concessioners have a preferential right to sell American Indian handicrafts, as well as other souvenirs and gifts, in the park. Under the concessioners' contracts, they cannot sell imported items where the country of origin is not clearly labeled. NPS concessions policy encourages concessioners to give preference to the sale of items made by American Indians. These handicrafts are displayed in a separate location from imported items to further distinguish them in the gift shops in the park.

This concern was raised by several American Indian tribes during the scoping and development of alternatives. The issue was one of the several reasons that the Park Service proposes the creation of an American Indian

cultural center in the powerhouse area of Grand Canyon Village, as mentioned on page 51, column 3, bullet 3 under the "Grand Canyon Village" heading. The concept of the center is to provide a place where American Indians can tell their tribal stories of the canyon, and where they have the opportunity to produce and, possibly, sell handicrafts. That opportunity can be further defined when the existing concession contracts expire.

Comment: The six American Indian cultural groups should be stressed in the park's interpretive themes. The Dineh (Navajo) want to be able to tell their own stories, without being represented by people who are not American Indians.

Response: The Park Service agrees that it is desirable to have American Indians tell their own stories, as well as those told by NPS personnel portraying the archeological and scientific stories. The importance of the six American Indian cultures in the history of the park and the importance of the park to the contemporary cultures of these groups is implied in the statement for interpretation on page 14, column 4, under the heading "Ethnography." In order to accommodate American Indian interpretation, the Park Service proposes to work with American Indians in the development of interpretive programs dealing with American Indians, including who would do that interpretation, and how it would be presented. An interpretive prospectus (see page 14, column 4) is being developed in consultation with an American Indian workgroup composed of representatives of the tribes interested in the canyon, as well as the Council for American Indian Interpretation, which is associated with the National Association of Interpreters.

ARCHEOLOGICAL AND ETHNOGRAPHIC SITES

Comment: Unprotected cultural resource locations should be held strictly confidential unless identification/certification of the inquiring party/parties is supplied to the archeology division of the park and written permits are issued for the inspection/study of the sites.

Response: Under the Archeological Resources Protection Act (ARPA) and the National Historic Preservation Act, it is the policy of the National Park Service to withhold from public information the location of archeological and ethnographic resources in order to protect them from vandalism, looting, and commercial exploitation, to guard against invasions of privacy, and to protect traditional religious uses of resources (NPS-28, chapter 6B4, page 82). These data are exempt from requests under the Freedom of Information Act. Researchers who need access to that information can apply for permits under the regulations for the implementation of ARPA.

Comment: Illegal collection would increase over that occurring under the no-action alternative due to expanded development.

Response: Increased development is proposed in response to projected increases in visitation, which would occur whether or not the proposal was implemented. Illegal collection, therefore, would also increase under the no-action alternative. There is currently no comprehensive program to monitor the condition of archeological sites in the vicinity of development areas as is prescribed in the proposal (page 229). The monitoring program would be

instituted in order to evaluate when cultural resources began to be affected, so that those effects could be mitigated.

HISTORIC STRUCTURES

Comment: Rehabilitating the stables/blacksmith shop buildings in the Grand Canyon Village Historic District for adaptive nonhistoric uses constitutes an adverse effect and degrades the value of historic buildings

Response: The use of the blacksmith shop would not be changed (see the revision for page 52, column 3). The proposed action provides for rehabilitation and adaptive reuse of the stables to improve the visitor experience and park interpretive opportunities in the village. Under current NPS management policies and guidelines rehabilitation and adaptive reuse of historic structures are acceptable if they provide for "an efficient contemporary use while preserving those features that are significant" and character-defining. Rehabilitation of the stables would be undertaken within the parameters of federal historic preservation legislation and NPS *Management Policies.*

Comment: How are buildings determined to have historical significance and integrity? What are the consequences of this determination for the Thunderbird and Kachina Lodges?

Response: Buildings that are more than 50 years of age are evaluated for their historical significance and integrity under the criteria for listing on the National Register of Historic Places, as authorized under the provisions of the National Historic Preservation Act. If they meet the criteria, they are listed on the national register, and federal agencies are required not only to afford protection/preservation of such historic properties, but also to consider the effect of federal actions on them. The Thunderbird and Kachina Lodges do not meet the criteria to qualify as historic buildings because of their age.

Comment: Concerns were raised about the removal of exposed frame cabins at North Rim Inn.

Response: The National Park Service is recommending the removal of these cabins in the Grand Canyon Inn (North Rim Inn) and Campground Historic District because of their severe state of deterioration; under the proposed action four to six cabins would be retained and adaptively used. The removal of the cabins would be subject to consultations between the National Park Service and the Arizona state historic preservation officer under the terms of a programmatic agreement to meet the agency's responsibilities under section 106 of the National Historic Preservation Act.

Comment: Concerns were mentioned about constructing a new information station in the Grand Canyon Lodge Historic District.

Response: Constructing a new building in the historic district would be subject to consultations between the National Park Service and the Arizona state historic preservation officer under the provisions of a programmatic agreement. Such consultations would enable the agency to meet its responsibilities under section 106 of the National Historic Preservation Act. The

location and architectural style and characteristics of the building would be addressed during the consultations.

Comment: The removal of the Orphan Mine headframe was questioned.

Response: The Orphan Mine Historic District was determined eligible for listing on the National Register of Historic Places in 1994. The Park Service is proposing to clean up the contamination at the site and to seal easily accessible openings for public health and safety reasons. The Park Service is also proposing to remove mine structures on the rim, including the headframe, because they constitute a visual impact on the internationally acclaimed scenery of the South Rim. Discussions are ongoing between the National Park Service and the Arizona state historic preservation officer regarding the proposed action for the Orphan Mine under the provisions of a programmatic agreement developed in compliance with section 106 of the National Historic Preservation Act.

Comment: Can the general management plan make provision to preserve areas of the park for settlement and occupancy under the authority of the National Historic Preservation Act, although the establishing act for the park reserved and withdrew from settlement and occupancy this land as a public park?

Response: Section 2 of the park's 1919 establishing act states that Grand Canyon shall be administered by the National Park Service subject to the bureau's establishing act of August 25, 1916. Section 2 of the latter act authorizes the director of the National Park Service to provide for the supervision, management, and control of park areas under his jurisdiction, and section 3 of the act authorizes the secretary of the interior to make and publish rules and regulations as he may deem necessary for the use and management of park areas under the jurisdiction of the National Park Service. Thus, the Park Service's establishing act authorizes an NPS management/administrative presence in park areas and hence settlement and occupancy by park personnel. Structures having significant association with the historical development of the park have been determined eligible for listing on or have been listed on the National Register of Historic Places in compliance with the provisions of the National Historic Preservation Act. The general management plan, in compliance with the latter act, provides for the preservation and interpretation of national register properties.

COLLECTION MANAGEMENT

Comment: The museum collection storage facility should be moved to Flagstaff; if no existing storage was available, then the facility should be housed with cultural resource collections from other federal agencies, instead of being built near the maintenance facility in the park.

Response: The collection storage facility referenced on page 16, column 5, paragraph 2, under the heading "Cultural Resource Management" is an action that has already begun as part of the no-action alternative. In 1989 a collection storage plan was completed to address substandard collection storage and management facilities in the park. Four alternatives were explored, including moving the collection outside the park. This alternative was rejected primarily

because the distance would become a barrier to staff use on a routine basis. Interpretation and resource management staff use the park's collection — especially the natural resource collections, archives, and photographs — on an almost daily basis in the ordinary course of their work. Also, no other agencies have expressed an interest in building such a facility.

Portions of the cultural resource collection that are not used on a routine basis are currently housed at the NPS curation facility in Tucson, Arizona.

SOUTH RIM

VISITOR EXPERIENCE

Carrying Capacity

Comment: Should park plans continue to allow uncontrolled numbers of visitors into the park? To do this would result in a need for drastic infrastructure improvements to upgrade all facets of services. This means that park development would have to expand into undeveloped areas. Alternative 2 fails to deal with the number of visitors to the park.

Response: The proposed action recognizes that the number of vehicles is the main problem, and it does recognize a limit to the number of visitors that can be accommodated (see page 48, "Visitor Use Patterns" in the draft GMP/EIS plus the revisions in this document). Opening up currently undeveloped areas to accommodate more visitors was an action considered but rejected early in the planning process, and it is not part of any of the alternatives in the document. The best available information indicates that the park can accommodate the numbers of visitors stated with the infrastructure improvements and other actions as proposed.

Comment: The data collected for determining carrying capacity should be summarized in a table comparing the carrying capacity of particular areas to the actual and projected number of persons visiting those areas. This would provide a snapshot of current conditions and of areas experiencing overutilization, and it would give reviewers a better understanding of the rationale for trying to disperse visitors over a wider area as a method of reducing impacts.

Response: The following table has been developed:

Overlook Area	Est. Capacity	1992 Use
Mather Point	491*	258
Yavapai Observation Station	174	202
El Tovar	253	107
Kachina to Lookout	548	320
West Rim, east half	291	136
West Rim, west half	232	119
Navajo Point	43	23
Lipan Point	33	41
Watchtower	197	90
Yaki Point	30	40
Grandview Point	48	84
Moran Point	36	75
Total	**2,376**	**1,495**

* The area available for viewing at Mather Point is proposed for expansion and included in this estimated capacity figure.

Comment: There is little detailed information comparing carrying capacities to actual resource impacts. Lots of visitor impacts on resources are already apparent.

Response: The carrying capacities were based only on areas where visitors are and would continue to be encouraged, such as designated trails and hardened overlooks, not on social trails and currently impacted areas that would be revegetated. Resources are not specifically mentioned in the criteria for determining carrying capacity because a fundamental assumption before beginning to consider carrying capacity was that resources would be protected and resource problems would be corrected.

Comment: Carrying capacity numbers are too high.

Response: The goal is to provide a quality experience for visitors by offering diverse opportunities to enjoy the canyon. The National Park Service does not believe the carrying capacity numbers represent an unacceptably crowded situation. The capacities of individual overlooks were based on the results of interviews with visitors at those overlooks and other data; the capacities established represent a generally acceptable level of density. Conditions at the overlooks would be monitored, and the capacity figures would be adjusted based on the results of that monitoring.

What is an acceptable experience to some visitors may be entirely too crowded for others. Visitors have been self-distributing for many years; for example, repeat visitors who do not like crowds may choose to visit the South Rim in November or to visit other parts of the park, like the North Rim or Tuweep. The proposed action seeks to offer a variety of opportunities for a wide range of visitors, from repeat visitors to first-time visitors.

Comment: A visit to the Grand Canyon should be a natural experience, but this is compromised when there are too many people at every visitor stop in the park.

Response: How many visitors is too many is the subject of the carrying capacity studies and the proposed monitoring system. The text on carrying capacity has been revised to clarify that resources and the visitor experience must meet certain standards and not be degraded (see revisions for pages 16 and 49). However, a variety of experiences and visitor densities is the goal, so a relatively high density of visitors would be acceptable in some areas.

Comment: There should be more demographic data on visitors in a monitoring and evaluation program to ensure that appropriate types of facilities are being provided and that visitors' needs are being met in terms of visitor experience.

Response: Demographic information was consulted in developing the proposed action. The monitoring program that would be established to track carrying capacity would also result in more demographic data on park visitors.

Reservation Systems

Comment: Day reservations, as called for in alternative 1, are needed now. It will take years for funding to materialize for alternative 2, and the current situation warrants reservations today.

Response: In response to comments on the draft GMP/EIS, text has been added on page 48, stating that if visitation increased faster than anticipated or funding was not forthcoming for the proposed transportation changes, a reservation system similar to that proposed in alternative 1 would be implemented. Therefore, information is being gathered about reservation systems of the size and capability that would be necessary for such a complex situation as Grand Canyon National Park. A reservation system cannot be considered lightly and could not be put in place overnight. The National Park Service believes the proposed transportation changes are the more appropriate way to handle the problem, but work on a contingency reservation system would continue.

Comment: The draft GMP/EIS considers day use reservations politically unfeasible, which is inconsistent with the "wide range" of alternatives required by NEPA. More study is needed, and more alternatives should be analyzed, including reservations and cost comparisons with non-reservation alternatives.

Response: Day use reservations are considered in alternative 1 and were definitely considered in the range of alternatives. In response to comments on the draft GMP/EIS, text has been added to the proposed action that would impose a reservation system if visitation increased substantially faster than anticipated or if funding was not forthcoming for the proposed transportation system (see the revisions for page 48). The estimated cost of the proposed action is not directly related to projected visitation. Most of the proposed actions are needed now simply to bring the park's infrastructure and visitor facilities up to a reasonable standard. The existing facilities were built 30 to 40 years ago and are inadequate to provide the type of service that the Park Service feels should be provided at the Grand Canyon today.

Comment: If day use reservations were proposed, parking lots could be much smaller or other options for parking could be considered.

Response: The 1,225 parking spaces proposed at Mather Point would accommodate less than half the current demand on a summer day on the South Rim. Turning away thousands of people per day would unnecessarily deny them one of the most memorable experiences a human being can have with the landscape. The majority of visitors interviewed have said that, despite the numbers of people, their visits are enjoyable.

Access/Transportation

Roads. Comment: The road system in the vicinity of the Mather Point parking area should be modified so that all visitors arriving from the south would automatically go to the Mather orientation center, including those traveling on the East Rim Drive.

Response: Mather Point was chosen as the primary orientation site because of its central location and excellent views. Although it would be desirable to

route all entering vehicles through this site to ensure proper visitor orientation, it was not considered feasible considering the road modifications that would be required.

Comment: Road 302/307 should be paved either all the way across the Tusayan ranger district or at least to the Grandview area to take the pressure off the East Rim Drive. The argument that neither the park, the forest, nor the Arizona Department of Transportation would be willing to fund the road construction flies in the face of all talk of partnerships.

Response: First, the traffic volumes on East Rim Drive, even by 2010 and after restrictions on automobiles are in place in the village, are not expected to require an alternate route. It is the parking that drives the decisions on East Rim Drive rather than the traffic volumes on the road. In addition, the issue of funding for this road is not to be considered lightly. The estimated cost of this road could be as much as 25% of the entire alternative 2 estimated cost. Those funds, even if only partially provided by the Park Service, would be more productively used elsewhere. Finally, the Northern Arizona Council of Governments (NACOG) is embarking on a regional transportation study that intends to look more closely at this concept. While the final GMP/EIS does not propose a paved road through the Tusayan ranger district, if such a road was recommended by NACOG and endorsed by the Forest Service, and if funding was available to construct and maintain it, the Park Service would probably not oppose it and would make adjustments within the park to reduce traffic on East Rim Drive.

Private Vehicle Use. Comment: Why can't cars get an even break on the East Rim?

Response: The parking areas at the developed sites on the East Rim would have to be enlarged to accommodate the anticipated demands of private vehicles using these sites if allowed. It was determined that resource damage would be too great to allow this type of expansion on the East Rim. As a result, each developed area on the East Rim would be evaluated during the comprehensive design process to determine which sites would be limited to buses only and which sites would allow private vehicle access. The bus-only sites would be selected based on the ability of the site to accommodate buses without road and parking lot expansion. Desert View would be accessible to both private vehicles and tour buses.

Comment: Traffic on USFS Route 302/307 could increase if the Park Service restricted private vehicle access to Arizona Highway 64 through the park. The draft GMP/EIS is unclear on this access issue.

Response: The proposed action includes unrestricted year-round private vehicle access on Arizona 64 through the park. Traffic volumes on USFS 302/307 are not expected to increase significantly as a result of the East Rim access provided in the proposed action. The access restrictions on the East Rim only pertain to access to individual sites. About half of the developed areas on the East Rim would be accessible to private vehicles. The other areas would be limited to tour buses only. Desert View would be accessible to both private vehicles and tour buses.

Private Transit Service. Comment: The alternatives do not take advantage of private transit systems that are currently in place.

Response: The alternatives were developed using various access concepts relating to private transit. The proposed action was designed with the intent that the private tour and transit providers would carry their passengers to as many in-park destinations as possible within the context of the alternative. Traffic and parking conditions in the village and on the West Rim were considered to be unworkable if private buses were allowed unlimited access. Therefore, alternative 2 was structured to allow private tour bus access to Mather Point and the Maswik transportation center only. This access limitation was considered essential to the proper operation and function of the village and West Rim areas. However, text has been added to the plan that could allow tour operators who maintained a good track record in the park, who received training for their drivers/guides from park interpreters, and who operated a clean-burning fleet broader access to the park than would otherwise be available (see the revision for page 49, column 5).

Comment: How would alternative 1 affect private transit providers?

Response: In alternative 1 all buses would be admitted to the park at all times, assuming the bus meets the required noise and air quality emissions standards. During times when the South Rim's vehicle capacity was reached, private shuttles and tour buses would still be allowed to enter the park to pick-up and drop-off passengers, but they would not be allowed to park and wait within the park.

Comment: How will day visitors arriving by tour bus access the village in the proposed action?

Response: Tour buses carrying day-use visitors would be allowed to drive to two locations in the vicinity of the village — Mather Point and the Maswik transportation center. It is anticipated that tour buses would initially go to Mather Point, where passengers would receive orientation and have their first view of the canyon. The tour buses would then go to the Maswik transportation center, from where passengers would walk to the village. Short-term parking for tour buses would be at the Maswik transportation center, where there is space to accommodate the loading and unloading of passengers. Long-term parking for tour buses would be provided at the Mather Point parking area. Internal circulation of visitors within the village area would be provided by an NPS shuttle service. However, text has been added to the plan that could allow tour operators who maintained a good track record in the park, who received training for their drivers/guides from park interpreters, and who operated a clean-burning fleet broader access to the park than would otherwise be available (see the revision for page 49, column 5).

Comment: Tour bus operators take exception to having to release their passengers to other drivers and guides.

Response: The proposed action has been structured to minimize the need for passenger transfers between private tour buses and other transit and tour providers. Private bus tour access would be allowed at about half of the developed sites on the East Rim and would therefore not require any passenger

transfers. Access to the village would also not require passenger transfers due to the fact that the tour buses would be allowed to load and unload passengers at the Maswik transportation center.

Private tour bus passengers would have to use the NPS shuttle service to access the West Rim and areas within the village. These areas of the South Rim have significant vehicle capacity restrictions and would be served by NPS shuttles and concession tours only. This vehicle restriction is an effort to protect the resource and minimize the need for major infrastructure improvements to the roads and parking areas in these areas. See also the revision for page 49, column 5, which could allow tour operators who maintained a good track record in the park, who received training for their drivers/guides from park interpreters, and who operated a clean-burning fleet broader access to the park than would otherwise be available.

Not all bus operators can be allowed access to overlooks or other popular destinations for the following reasons: (1) There is no way to keep popular spots from becoming overused; with shuttle buses, schedules and routes can be adjusted to keep from overcrowding popular areas; (2) opening West Rim Drive or the road behind the Bright Angel to all buses would defeat the intended purpose of making the rim quieter.

Comment: Would tour bus visitors have to change buses when entering the park at Desert View?

Response: No. Tour bus visitors would be permitted to access Desert View and about half of the developed areas on East Rim Drive.

Comment: The East Rim seems to be set aside for the private tour bus industry while doing nothing to protect the resource.

Response: The proposed action is designed to encourage visitors to access the park using various forms of mass transit in lieu of using private vehicles. Limiting access to some of the developed sites on East Rim Drive to buses only would enable the park to provide site access to a relatively large number of visitors without having to make significant road and parking lot expansions. The actual access conditions at each site would be determined during the comprehensive design phase, based on whether the site could accommodate buses without modifications to the road or parking area. It is anticipated that about half of the sites on the East Rim would be designated for buses only, while the other half would be limited to private vehicles only. Desert View would be accessible to both tour buses and private vehicles.

Comment: Will alterations be made to the Maswik transportation center? Commercial buses cannot now use it due to inadequate turning radii.

Response: Shuttle buses could begin using the Maswik transportation center this year. When the proposed road from Center Road to Maswik is constructed, accommodation for motor coaches will then be made.

Comment: Would private tour buses be allowed access into the park under alternative 3?

Response: Tour buses would not be allowed in the park under alternate 3. All travel within the park would be provided by NPS shuttle service or by concession tour.

Comment: There is concern that only concession-operated tours would be allowed in the park under alternative 4.

Response: Under alternative 4 tour buses would be allowed access to Desert View and all East Rim developed areas, Mather Point, and the Maswik transportation center.

Park Transit System. Comment: In alternative 3 the Tusayan parking area would generate 10,000 visitors who have to ride a transit system that consists of twenty-five 100-passenger buses (2,500 ride capacity). The math of this kind of transit system is questioned.

Response: The transit system considered under alternative 3 was sized to accommodate 50% of the anticipated peak visitor demand during a one-hour period. The transit system operating between Tusayan and Mather Point in alternative 3 would consist of twenty-five 100-passenger buses that could make the round trip about twice per hour. This size system could handle approximately 5,000 rides per hour, which is considered satisfactory for the anticipated conditions.

Comment: The transit system should originate outside the park, preferably at the airport.

Response: A portion of the transit operation will originate outside the park. The general management planning team examined several staging locations in the vicinity of Tusayan, including the airport site. The proposed action identifies the north end of Tusayan as the most desirable location for the staging area. This decision was based on a variety of factors, including the ease of private vehicle and transit access, traffic and noise impacts to the community of Tusayan, transit operational costs, and transit travel time requirements.

Comment: The proposed transit services within the park will have to be convenient and quick. The current system is not effective. How will the proposed transit system differ from the existing system.

Response: The proposed NPS visitor transit system would be sized to provide adequate capacity during all times of the day. The new generation of transit vehicles would include wide doors and low floor technology to reduce loading and unloading times. Restricting private vehicles from roads in the village and on West Rim Drive would allow the transit system to operate on a dependable schedule. The anticipated time between buses would vary, depending on demand. High use routes would have headways of less than 5 minutes. All of the routes within the system have been sized to provide vehicle headways of less than 20 minutes.

Comment: The transit system must be housed outside the park.

Response: It is considered desirable, from an economic and operational standpoint, to house the transit fleet at the transit maintenance site. It is also

very desirable that the maintenance facility be centrally located with respect to the transit service area. As a result, under the proposed action the transit maintenance area would be at the current transit maintenance area within the park boundary. This location would best serve the fueling and maintenance needs of the proposed transit system.

Comment: The draft GMP/EIS does not call for clean fueled transit vehicles until the year 2010. How about setting the compliance date at the year 2000? Shouldn't the National Park Service get out of the bus ownership business and contract that service to someone who could provide clean fueled vehicles now?

Response: The conversion date of 2010 was established based on anticipated funding for transit vehicle conversions. If funding for new transit vehicles exceeded the projections, then the Park Service would accelerate the transit conversion schedule. Allowing the private sector to provide the necessary transit vehicles is considered a possible alternative to NPS vehicle ownership. The decision to either own or contract transit vehicles would be evaluated when considering future transit vehicle purchases at the park.

Comment: The proposed shuttle route on the village loop road, between the business center loop intersections and passing in front of the NPS headquarters, would cause visitor confusion and unnecessary duplication of routes. It should be eliminated and routed into the business center loop entirely.

Response: The proposed shuttle system is comprised of several intersecting loops, based on primary visitor use patterns and demand. The shuttle route from the Mather Point transit center to the historic village is a very high demand segment of the system. A lower demand shuttle loop is proposed to operate in the business center only, intersecting at two primary points with the village loop segment. Visitors could transfer from one loop to another at those intersecting shuttle stops. Routing the village loop system through the business center would place an unnecessary burden on the business center loop, making it inefficient and more cumbersome than necessary.

Trailhead Access. Comment: Several comments were received about trailhead access on East Rim Drive and in Grand Canyon Village:

It is hard for people backpacking in the canyon to deal with transit-only access at many trailheads. If a reserved backpack trip is scheduled to begin and end at a remote location, it should be relatively simple to issue a vehicle permit to allow that party to travel and park at otherwise closed roads and trailhead parking lots.

No matter which transit plan is adopted, private vehicle access to all trailheads in areas limited to transit should be provided for hikers, or a demand system that would allow hikers to call for a shuttle 24 hours a day and be picked up within a 20-30 minute timeframe.

Because the plan says that all overnight visitors would be given identification for their cars, why can't this include backpackers so they can park at trailheads? A small number of parking places should remain near the trailheads for parking for backpackers.

Hikers starting early on the trails minimize impacts by spreading out hiker density on the trails, beating the heat, and experiencing increased solitude. They should not have to pay an exorbitant fee for an early morning shuttle service, or be forced to forgo early starts altogether. Hiker shuttle service should begin no later than 4:00 A.M. and cease no

earlier than two hours after last light (12:00 midnight in June). If a $2 or $3 surcharge is needed for night service, so be it; just don't take away the canyon at night.

People should be allowed to drive personal vehicles into the restricted areas, for example, from 7 P.M. to 7 A.M. (or 4 A.M. to 7 A.M.), and allow them to exit the restricted areas at any time. If too many vehicles began taking advantage of this, then the hours could be adjusted. A similar plan has been used in the White River National Forest in Colorado.

For hiker access to trails, is there any chance of small, locked parking lots in a few of the most popular trailhead areas, using locks with combinations that change frequently to discourage abuse, such as many campgrounds use?

Response: In implementing the proposed actions, efforts to make the system "user-friendly" for backpackers would be emphasized. The suggestions above would be considered during more detailed planning for implementing the park transit systems and closing areas to private vehicles. However, as with the Hance Trail now, a rim hike might also have to be part of canyon hikes in several areas, no matter which alternatives for trailhead access were selected in the future planning.

Parking. Comment: How would parking at the Mather Point parking area be monitored and controlled so that traffic jams at the entrance to the parking area did not occur?

Response: The Mather Point parking area would be open to the public at the beginning of each day and remain open until the lot filled, when the gates leading to this parking area would be closed. The vehicle occupancy of the lot would be monitored. Several periodic controlled openings of the parking lot would occur during the day to allow the lot to refill.

Vehicle staging at or near the closed gate leading to the Mather parking area would be prohibited by using appropriate regulatory signing and active enforcement.

Parking area use would be monitored to determine the number of vehicles in the lot during the day. The monitoring process would likely be automated, using traffic counters and inductance loops in the pavement to count and calculate the parking lot occupancy. The monitoring method would be determined during the comprehensive design process.

Comment: Will the people at the entrance gate know whether the lot at Mather Point is open?

Response: The NPS staff at both entrance stations on the South Rim would receive real time information on the current status of the Mather parking lot.

Comment: The Mather Point parking area should be aesthetically designed to avoid the Walmart look.

Response: The design of the Mather Point parking area would include naturally landscaped islands equal to about 25% of the total parking lot area. Picnic tables and restrooms would be located adjacent to the parking area to meet the needs of the visitors.

Comment: Day visitors should have unrestricted access with a two-hour time limit on parking at the business center, and the existing parking lot should remain the same size to

accommodate demand. Access to business center parking should only be restricted when the area is full of day visitor vehicles.

> Response: The text has been revised so that the size of the business center parking lot would not be reduced. The type of situation described in this comment is another form of restricted parking. The text in the document and the drawings that accompany it do not identify what type of restriction would be imposed; that decision would be made at a later date.

Comment: The idea of a parking fee to make people pay for the privilege of parking inside the park is reasonable, but it seems un-American to penalize people who arrive later in the day by making them park outside the park and pay a transit fee when those lucky enough to have schedules allowing them to arrive early in the day are allowed to park in the park for free. A parking fee would help subsidize the whole project, without penalizing anyone.

> Response: This suggestion would be considered when specific alternatives for implementing vehicle closures and transit were considered. Such fees might require congressional action.

Comment: Why is Hermits Rest included with the village parking spaces?

> Response: The parking spaces at Hermits Rest are included in the total village spaces because it functions as part of the overall village transit system. The parking and visitation demand at Hermits Rest were used in conjunction with other village components when determining the number of people who would likely travel from the village to Hermits Rest, both by bus and by private automobile.

Comment: Limiting the pull-outs on East Rim Drive to buses and not allowing private vehicles is unacceptable. Those pull-outs should allow private vehicles the right to access on a first-come, first-served basis.

> Response: The projected visitation to East Rim Drive indicates a severe shortage of parking spaces at overlooks during much of the season and through all peak use periods. Rather than build more parking at the overlooks, creating new disturbance, traffic, and noise, the plan emphasizes mass transit alternatives, providing access to the overlooks while reducing the appeal of driving private automobiles. Limiting access for private vehicles at pull-outs would allow those visitors passing through the park on East Rim Drive to distant destinations the opportunity to briefly experience some of the scenic vistas along the route. This restriction would only be in place during periods of high use; private automobiles access would be allowed to pull-outs and viewpoints during the off-season or low use periods.

Comment: Without day use restrictions, the only fair solution on East Rim Drive is the "shuttle only" solution shown in alternative 3.

> Response: While alternative 3 might be fairer to visitors, who would all have the same access to East Rim overlooks, it would be equally unfair to through-traffic, which would have to drive around the park — from Tusayan through Flagstaff to Page. This detour would place a lot of pressure on the USFS roads that provide through-access but are not designed to accommodate this type of traffic.

Trains. Comment: Page 17, column 1, the draft GMP/EIS states that Grand Canyon Railway would "carry no more than 20% of the daily visitation into the park." Is this merely an assumption or is it a regulation? If a regulation, why would the railway be restricted to 20%?

Response: This is neither an assumption nor a regulation, but would probably be a condition of the agreement entered into with the railway. The reason is that geographic constraints prevent any enlargement of the Maswik transportation center on the west edge of Grand Canyon Village, so suitable orientation facilities for visitors driving and parking could not be provided there. This area is located such that visitors must filter through the village on their way to the rim. This would be an appropriate means of arrival for a significant portion of the total day visitors; however, the majority would arrive at the park by way of Mather Point.

Comment: To maximize the efficiency of the railroad system and the transportation staging area concept, the National Park Service should consider allocating land in the final GMP/EIS for a shorter, more direct rail route from the preferred Tusayan staging area location to the Maswik transportation center (see accompanying illustration). Consider working with the Grand Canyon Railway and Kaibab National Forest to get a staging area and rail transit system into the park by amending the 1993 record of decision on the rail spur line.

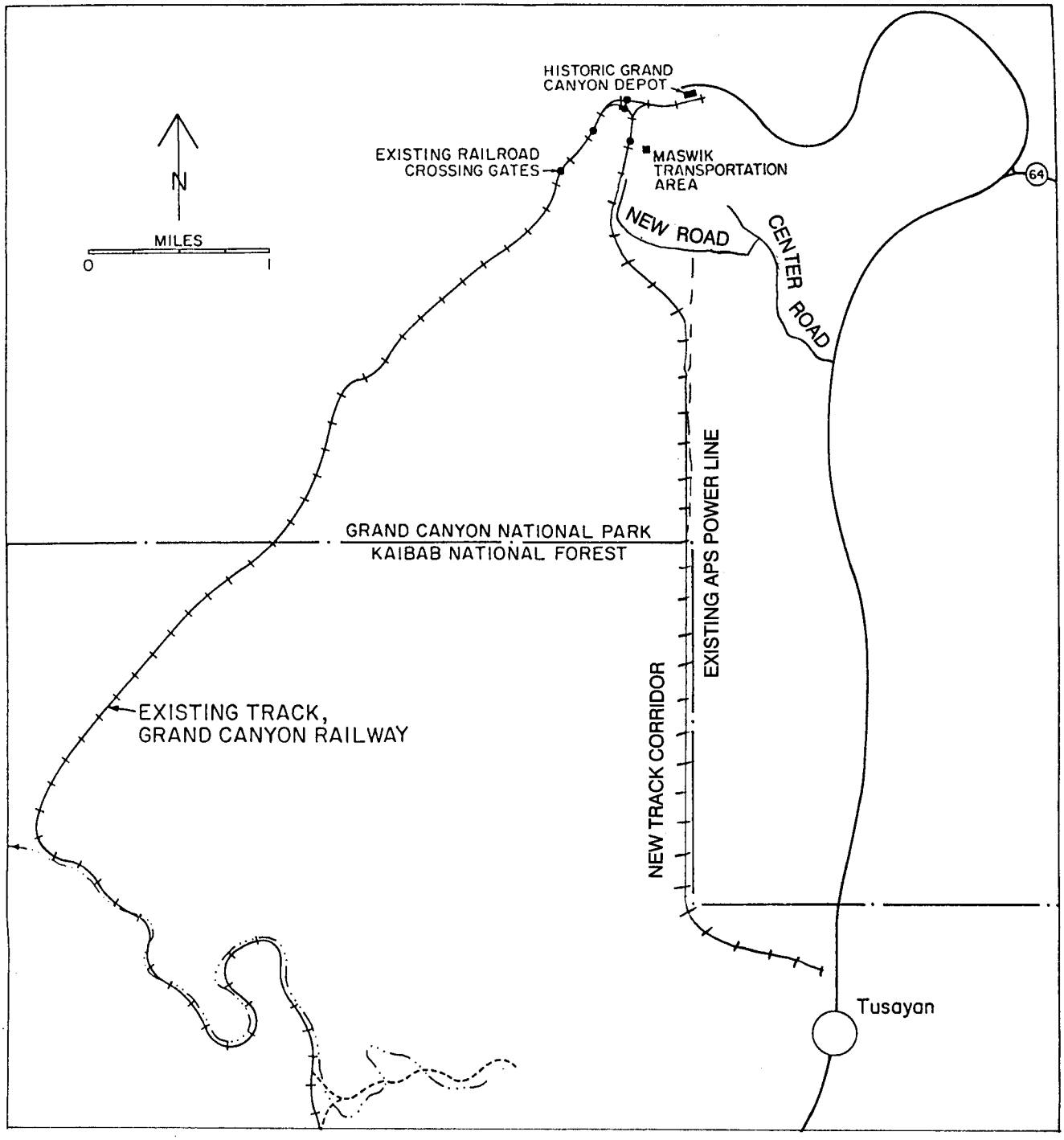
Response: In response to this and other similar comments, text has been added to the final document outlining the criteria to be considered in identifying potential rail routes from the north side of Tusayan to the Maswik transportation center through the park (see the revision for page 49, column 1). This matter would be decided in an amendment to the EIS on the rail shuttle, after further environmental review.

Bicycle Use. Comment: Would bicycle use be allowed on trails in wilderness? Specific suggestions for off-road bicycling and primitive bicycle camping opportunities were submitted (specific roads are discussed in response below).

Response: The National Park Service follows the Wilderness Act regarding bicycle use in wilderness, where it is considered a mechanized use and therefore not allowed. As stated on page 9 of the draft GMP/EIS, the Park Service must manage wilderness study areas within the park the same as designated wilderness, until Congress completes the legislative process. The park's *Backcountry Management Plan* would continue to govern bicycle use and camping opportunities in nonwilderness portions of the park.

With regard to the roads specifically mentioned in the comments, the road from Desert View to Cape Solitude would be available for bicycle use only as far as Straight Canyon, which is the proposed wilderness boundary. The following dirt/gravel roads are generally available for bicycling, consistent with the *Backcountry Management Plan:* roads to the South Bass trailhead, Havasupai Point, the Waldron trailhead, and the road to Point Sublime. Tiyo Point and the Kanabownits area on the North Rim, and the Dripping Springs trailhead on the South Rim are within the proposed wilderness, so they would not be open to bicycle use.

The decision on which road corridors would exist within the proposed wilderness boundaries was based on extensive public involvement leading to the park's wilderness proposal.



Suggested Train Route
Tusayan Staging Area — Maswik Transportation Center

Comment: No special consideration for bicycles should be given. If allowed in the park, they should share the roads with vehicles in a designated lane.

Response: The plan calls for bicycle use primarily as an alternative means of transportation and to better distribute visitors, not as an additional experience. By encouraging bicycle use, the number of transit vehicles and their noise, pollution, and other detrimental effects could be reduced. Many of the park's roads are narrow and would require significant widening in order to accommodate a safe width for designated bike lanes. The proposed action would enable safer bike travel by providing separate bike paths removed from vehicular traffic; bike paths would be developed along utility corridors and in other previously disturbed areas to the greatest extent possible, reducing many environmental impacts that would be encountered with either road widening or pathway construction.

Comment: Bicycles should be discouraged and no additional paved trails provided for them. People on foot can hardly enjoy the view or the quiet when they are constantly being harassed by speeding bicycles.

Response: Separate trails for bicycles and pedestrians could be provided. Specific alternatives would be further analyzed. The opportunity for public review and comment would be provided during the environmental analysis phase of planning for such trails.

Comment: East Rim Drive and Cape Royal Road do not need bikeways since there are plenty of better biking roads already on Forest Service lands close by. Also, the canyon is rarely visible from these roads, so cyclists would be tempted to cut through the forest to get to rim areas away from tourist overlooks. Both bikeways are too long for most people to ride roundtrip in a day, and there would be a strong temptation to camp illegally. Because these bikeways would not be a very practical means of viewing the canyon, they would probably attract those more interested in a challenging ride than in enjoying the canyon.

Response: There are a variety of ways to experience the park, and bicycling is one way for some people. With regard to the length of round trips, buses would have bike racks to make it feasible for many people to ride bicycles one way and take buses back. The Forest Service roads offer mountain biking but not road biking possibilities. Safeguards concerning illegal camping and cutting through the forest would be instituted.

Orientation and Information

Comment: The proposed NPS visitor contact stations outside park boundaries cannot be staffed the required 14 hours per day in order to adequately serve visitors who are arriving during off-peak periods.

Response: The visitor contact stations are proposed to be cooperative ventures between the Park Service and outside interests, including the U.S. Forest Service and private business. This would allow staffing needs to be met by various entities. Under the proposed action these contact stations would also have 24-hour information kiosks for visitors arriving during off-hours.

Comment: The plan mentions an information center in Kanab. It should also mention potential centers in Fredonia, where there is a Forest Service office and plans for an Arizona Department of Transportation (ADOT) tourist information center, and Valle, where an ADOT tourist center is also planned.

Response: Kanab is mentioned specifically because there is already an information center functioning. It would clearly be in the park's interest to participate in additional information centers when they are constructed.

Comment: The change in the preferred location of the Tusayan staging area from south of town near the airport to nearer the park north of town is an apparent decision without any evaluation or documentation.

Response: The draft GMP/EIS clearly states that the Park Service prefers the site north of Tusayan and that the decision is to be left to the Forest Service. If the staging area was developed through the special use permit being requested by the Grand Canyon Railway, further environmental review would be required. If it was developed as a result of the land exchange, that environmental impact statement is currently underway, and further public comment is upcoming. If neither of those possibilities materialized and the Park Service requested a special use permit from the Forest Service, the NEPA process would be used, and the public would have multiple opportunities to comment.

Comment: The proposed plan forces orientation lectures and bus tours on people before they can see the canyon. This is not a man-made amusement park, it is a natural environment. It should be unstructured and informal.

Response: People would not be forced to receive orientation or to take bus tours. They would be encouraged to get information so they would know their options and how best to plan their visits, but return visitors, who would already know what they wanted to do, would not be required to sit through an orientation program each time they visited. Some structured programs would be needed in some areas to deal with large numbers of people, but the vast majority of the park would remain undeveloped and the experience very unstructured and informal. People not wishing to be part of a structured experience would have ample opportunities to avoid those situations; however, such things as permits for overnight backcountry use would still be required to ensure a high quality resource and visitor experience in those areas.

Comment: The proposed Mather Point orientation center looks like it will be a very crowded place, particularly if everyone visiting the South Rim goes there for orientation and information. What will the visitor densities be in that area, and could it be located elsewhere to accommodate those uses better?

Response: The exact density of visitors at Mather Point cannot be determined until the final design of the facility. The center's density is a function of the amount of space that is eventually developed and the number of people that can be there at one time, and neither of these figures has been determined at this time. The Mather Point orientation center is intended to serve as a place where arriving visitors can quickly satisfy their demands to first see the canyon, obtain information for their visits, and then move on to other areas of the park. It is anticipated that, while a great number of visitors may pass through the area, it would not be particularly crowded since visitors should be

able to move through it quickly and efficiently and then move on to other areas in the park.

The entire Mather Point area would experience varying degrees of use throughout the day, depending on the time, season, the arrival schedule of buses, and so on. The center would not be extremely crowded at all times of day; however, some periods of use would certainly exceed others on a regular basis when averaged over a long period of time.

There is no other place in the park where this orientation function could be provided in a better way. Mather Point has the scenery and the landbase, and it is close to Grand Canyon Village and East Rim Drive.

Comment: It is questionable how efficient and pleasurable the proposed Mather Point orientation/transit center will be considering the tens of thousands of visitors that would funnel through there daily. A suggested action is to have several such orientation and transit centers in the park to break up the concentrated numbers of people.

Response: There is no doubt that at peak use times the Mather Point facilities would be busy. The suggested action to disperse use by having other orientation and transit centers in the park is integral to the success of the proposed action. The reader may have the mistaken perception that everyone must go through the Mather Point orientation center before they begin their Grand Canyon visit. Such is not the case. For instance, the Grand Canyon Railroad can deliver up to 20% of their daily passengers to the Maswik transportation center, not Mather Point, and the plan calls for major visitor services and interpretation facilities near Maswik. Also, visitors with lodging or camping reservations on the South Rim would already have stopped at the Tusayan gateway information center for check-in and would go to their lodge or campground prior to going to the Mather Point orientation center (see page 49 in the draft GMP/EIS and the revisions for that page in this final document). Visitors coming through the east entrance would receive information at the new orientation center at Desert View. After driving west to the village area, those visitors could bypass the orientation function at Mather Point and go directly to the transit center.

Visitor Services

Comment: The Mather Point orientation center area in the proposed action amounts to a "third village," with as many cars and tourists concentrated in one area as the historic and Mission '66 villages each have now. It would be a duplication of Tusayan facilities and functions proposed in the old powerhouse area. The Mather Point development should not occur, and the existing Maswik transportation center should be used to full advantage as the point of arrival.

Response: The proposed Mather Point orientation center is not intended to be a "village." It is intended to be a facility for orienting visitors to the park so they can get the maximum enjoyment from their visits, including detailed information about visitor options and services in the park (for example, what is to be found at areas such as the powerhouse). It would not provide extensive regional information services and opportunities (as the Tusayan center would provide) or educational displays or programs (as the powerhouse area would provide).

The Mather Point orientation center location is better suited as the primary point of arrival for visitors than Maswik and the business center for the following reasons:

- Its location adjacent to the rim gives visitors the opportunity to satisfy their primary desire to see the Grand Canyon immediately upon arrival. The Maswik transportation center and the business center are a considerable distance from the rim, requiring a longer walk or shuttle ride to rim destinations.
- The Maswik transportation center was not designed for the volume of visitors that would be arriving if it was a primary point of arrival. Its design will accommodate the anticipated number of arriving train passengers and hotel guests, but it would have to be expanded significantly for more visitor arrivals. The Mather Point facility would be designed to fit the volume of arriving visitors.
- If many arriving visitors were to go to the Maswik transportation center, the accompanying noise and activity levels would increase the negative impacts on adjacent residential areas. The physical confines of available land suitable at the Maswik area for large bus and automobile parking, shuttle buses, and expanded facilities make it extremely difficult to meet expanded design requirements. The land available at Mather Point significantly reduces both the physical design constraints and the potential conflicts with the residential community.

Comment: The plan should reconsider the need for food service and gift shops at the Mather Point orientation center and the Tusayan gateway information center.

Response: Neither food service nor gift shops are proposed at the Mather Point orientation center. Both services are provided nearby and to duplicate them at Mather would substantially enlarge the footprint of that facility. At Tusayan, however, it is likely that these services would be provided, particularly if the facility was privately funded.

Comment: Alternative 2 calls for removal of Kachina and Thunderbird Lodges and new units to be built. These lodges should continue to be used and a new facade added instead. It would be much cheaper and would eliminate additional construction/expansion within the park.

Response: The proposal to remove these structures was based on the facts that they do not contribute to the Grand Canyon Village Historic District and that they take up valuable space on the rim. Currently, 104 parties (an estimated 250 overnight guests) can occupy that space. The removal of those buildings would allow many thousands of visitors a day to use this space to enjoy ranger programs, Indian demonstrations or storytelling, or to sit and have a meal.

Comment: The removal of the Thunderbird and Kachina Lodges will be extremely costly. That action should be postponed until late in the life of the plan to allow the remaining useful life of the buildings to be utilized.

Response: This is the intent of the plan and is reflected in the revised phasing schedule.

Comment: The plan to convert the Maswik cafeteria to sit-down dining in the evening will significantly increase prices there and eliminate the only place to get a reasonably priced meal on the South Rim.

Response: The National Park Service monitors and regulates prices in all in-park eating establishments and ensures a variety in terms of price and quality. The Park Service will ensure there are adequate, reasonably priced eating opportunities, including sit-down dining at Maswik.

Comment: It is inappropriate to place the American Indian cultural center in the mule barn as proposed. Dineh (Navajo) people should be able to represent their culture in the open space at the rim of the canyon.

Response: All interpretive and educational functions that take place in the Grand Canyon Village would be staged in the powerhouse area in an attempt to provide a focus for those functions. The mule barn is the largest building and would be the most conducive for adaptation as an American Indian cultural center. The activities that would take place in the center would be developed with the tribes, and they could include cultural demonstrations, interpretation of American Indian culture, and possibly craft sales.

Although staging for this function would be centered in the powerhouse area, American Indian interpretation would not be limited to the cultural center. Such interpretation would be conducted in a number of appropriate places throughout the park (see page 51, column 1, third full paragraph). The details of where and how those activities take place have not been specified in order to give the park and interested tribes the maximum flexibility to design and implement that program. The desire of the Dineh to tell their own stories in the open space near the rim would be considered as that program was developed.

Comment: The plan should specifically address the Yavapai museum facility. It was recently converted from its historical focus on education to a sales area. There is no substitute for this facility anywhere else in the park, and it should be considered essential and irreplaceable.

Response: The reduction of sales and a reemphasis of canyon viewing and education is discussed for the Yavapai observation station in the draft GMP/EIS on page 51, column 4, under the heading "Yavapai/Tusayan."

AREA OPERATIONS

Management Support

Comment: Explain how the level of development within the park is consistent with goals for moving administrative and visitor support services to gateway communities.

Response: The development proposed in the plan would remedy the lack of infrastructure improvements over the last 30 years. As an example, the existing visitor center was built in 1957, and the visitor portion of the building has not been expanded since. There are probably more people using the visitor center now over a July 4th weekend than used it during the entire month of June 1957. At the same time, demands for administrative and visitor support facilities have increased. Rather than disturb new lands to provide for these functions, the proposed action would relocate them outside the park or in existing disturbed areas inside the park whenever possible.

Comment: Relocating jobs to Flagstaff, Williams, or other remote communities would make them less effective in the day-to-day park operations.

Response: No jobs that have day-to-day physical contact with park visitors and/or resources would be relocated to remote locations. The jobs that could be performed at remote locations are those that are functionally removed from day-to-day physical contact with park resources or park visitors, such as the concessioner phone reservations group, resource research positions, professional services, and similar operations.

Comment: Why was the concept of moving nonessential functions (such as concessioner reservations to Phoenix or Flagstaff) outside the region given only lip service and not serious emphasis and funding?

Response: Moving nonessential functions outside the park has been seriously considered. In fact, the concessioner's reservation staff is scheduled to move to Flagstaff late in 1995.

Comment: Does the Albright Training Center really need to be at the rim? Isn't this a nonessential service that could be relocated to Flagstaff or other neighboring community?

Response: The Albright Employee Development Center is a training facility for NPS personnel from all over the country. As such, it is important that the facility be located in a park setting, where park staff can assist in training and where park resources and actual park-based case studies can be used in the curricula.

Comment: Relocating the South Rim mule and blacksmith operations would destroy the historic character and nostalgia associated with those facilities. Those facilities are adequate and are the longest continuously operating commercial mule operations in the United States. Why spend $30 million to build a new facility on a 1930s dumpsite? Why not design and build new buildings for the museum, the American Indian center, and bike rental on the historic dump and leave the mule and shoeing barn in place?

Response: The historically significant powerhouse area includes the current mule and horse barns and blacksmith shop, in addition to warehouses and a power substation. This is an important central location for Grand Canyon Village because nearly every visitor to the historic village passes by this area. The mule facilities are obsolete and too small to adequately support current levels of use. Because the historic nature of the buildings limits expansion capabilities, along with the fact that they have become surrounded by visitor uses, the proposed action is to relocate the mule barn and corrals to larger facilities away from the primary visitor use area and to convert the entire area surrounding the mule barn into a primary visitor use area. The blacksmith shop, however, would remain in its present location.

The proposed action also calls for eating facilities, which are currently in short supply in the village, to be provided in the powerhouse area. Mule barns and eating facilities cannot be in the same area because of aesthetic as well as health reasons. The best choice overall is to move the mule barn and corral functions, while adaptively reusing the barn and other buildings, which would recognize and preserve their historic significance.

Under the proposed action more than 7,000 visitors per day could pass by the current mule barn location as result of potential train passengers boarding

and deboarding at the Maswik transportation center. More visitors would be directly adjacent to the mules in the current location as a result of activities proposed in the surrounding buildings (as proposed in alternative 3). The exposure of mules to that level of visitor traffic would create unsafe and unhealthy conditions for both mules and visitors. Relocating the mule operations to new facilities near the West Rim Drive/Rowe Well Road intersection would put them closer to trailhead access, yet removed enough from visitor traffic patterns for safe and efficient operations to continue.

The estimated cost shown in appendix C for constructing the new mule barn as proposed is $2,146,600, and the cost of adaptively reusing the current mule barn for a Native American cultural center is estimated at $2,808,000. The $30 million figure in the comment is in error.

Comment: The proposed location of the South Rim mule barn and blacksmith shop on an old dump site in alternative 2 would create unsafe and unhealthy conditions for the mules, possibly causing injury from ingesting buried objects that could work their way to the surface.

Response: The proposed location is in an area of a very light surface scatter of 1930s artifacts that could be easily removed by construction crews and/or archeologists, depending on the significance of the site. The Park Service would ensure the safety of mules and people before constructing the new facility. The blacksmith shop would remain in its current location (see the change for page 52, column 3).

Comment: Is the scope of contamination known at the powerhouse, and what is the concessioner's responsibility for cleaning it up? Can funding really be expected for clean-up without totally removing the building?

Response: There has been an assessment and clean-up of that building already. The majority of the problems were addressed jointly by the Park Service and the concessioner. The powerhouse is a national historic landmark, and while some additional clean-up is necessary, the work required is well within a reasonable adaptive reuse of this important structure.

Comment: There is no discussion about where the dry dump would be relocated, nor any discussion of impacts from using the former dry dump area for office facilities or how the Park Service would handle closure of the current facility. The final GMP/EIS should address these.

Response: The dry dump is not a dump (landfill) in the regulatory sense of the word. It is an area used by the park to store maintenance materials (including sand and gravel) and equipment, plus an asphalt mixing pad. Page 53 shows this function being moved to the Southgate disturbed area. The wet dump is the South Rim landfill, or the dump in the regulatory sense of the word, and it is being closed in compliance with all applicable regulations.

Housing

Comment: Relocating 3% of the workforce and constructing up to 300 housing units on Forest Service land just outside the park do not seem to correspond. Who would the 300 units be for? Would these facilities be under the *Tusayan Area Plan* and design review guidelines adopted by Coconino County?

> Response: Up to 500 housing units would be provided near Tusayan (see the correction for page 52, column 5). Regarding the number of relocated employees, 3% is a minimum figure. The ultimate goal is to relocate 20% of the current park staff (NPS) and 5% of the current concessioner (GCNPL) staff to Flagstaff, Williams, or a location where housing would not have to be provided by the employer. Over and above that, park housing needs would require up to 500 housing units for employees whose jobs are still in the park. If these needs could be accommodated on private lands (under county jurisdiction), and if the housing was available and affordable for park and concession employees in Tusayan, then that would be preferable. However, since that might not happen, the proposed action calls for a federally managed housing area as a fallback position. Because the design guidelines being considered for Tusayan at this time (summer 1995) are based on guidelines developed by the Park Service, any housing built in a federally managed housing area, in consultation with county officials, would likely be appropriate for the area at large.

Comment: If there was no land exchange within the Tusayan ranger district, what number and whose employees would be moved into a government housing area outside the park?

> Response: By the year 2010 there would be a need for up to 500 housing units to house an estimated 800 park and concessioner employees in the Tusayan area.

Comment: Wetlands in Tusayan were filled years ago with mine tailings, causing cancer and birth defects to the population of Native Americans living there. Why would you want to relocate employee housing and another population of innocent people to this area, since most of what is left in the area proposed for housing are abandoned foundations?

> Response: Before anything would be built or moved into the Tusayan area, an extensive environmental analysis would be conducted. The federal government would not allow housing to be built in a hazardous area. The National Park Service knows of no information to support this claim regarding hazardous fill in Tusayan.

Comment: Would not the infrastructure required to support the park transit system cause impacts in housing and employment within the park?

> Response: Park transit system employees would have to be housed in or near the park. The impacts resulting from the increased employment and housing have been taken into consideration in the analysis.

Comment: People should not have to move out of Pinyon Park. At a minimum, the Park Service should buy the trailers.

> Response: Grand Canyon Village is both the hub of a national park and a community. However, the first responsibility of park managers is to the

national park. The proposal being considered makes every attempt to keep employees close to their workplaces without impacting large areas of park resources for support facilities. In addition, NPS policy is to eliminate trailers as a form of permanent housing in parks. Therefore, both Pinyon Park and the residential portion of the trailer village are proposed to serve different uses. The way these relocations are to be handled has not yet been decided. The Park Service, along with Grand Canyon National Park Lodges, would strive to make the relocation of trailers or the move to a different form of housing as smooth as possible. The phasing schedule for implementing this part of the plan indicates trailer residents would have about 2-1/2 years in which to find alternative housing.

Utilities

Comment: The statement in the draft GMP/EIS that there is an inadequate water infrastructure system in Tusayan, and that the facility and orientation center would tie into the existing utility system for wastewater, raises concerns. The final document should address how the National Park Service intends to remedy this problem, and a NEPA document should address all impacts from this development, particularly on Tusayan infrastructure. The final document should identify and discuss the pertinent aspects of the design and scope of the development, and if there are any conflicting land use plans currently in existence in areas around the park.

Response: No development would occur in Tusayan until such issues were adequately addressed, but a number of options would appear to resolve these problems. The general management plan expresses a preference from the NPS point of view for the general location and configuration that would provide the best solution for NPS problems. However, the environmental impact statement being prepared by the Forest Service as lead agency will consider a number of other options and may decide upon another approach as a better solution for problems from other points of view.

Comment: A water treatment plant at Roaring Springs and a dechlorination plant at Indian Garden should not be built.

Response: A number of water treatment alternatives are being considered in other planning efforts to ensure that park drinking water meets all state and federal standards. All alternatives will be considered with full public notice and participation and will meet all requirements, such as those of the National Environmental Policy Act. A dechlorination plant is **not** being considered in the park. The park currently has a permit to discharge chlorinated water at Indian Garden, but as discussed on page 16 of the draft GMP/EIS, one of the "Actions Common to All Alternatives" to protect park water resources includes reducing discharges of treated water at Indian Garden, but not through a dechlorination plant.

Comment: The use of reclaimed water is discussed in most alternatives, but no specific cost is given for constructing or retrofitting a reclaimed water storage and distribution system.

Response: Costs are not yet available because the additional effort required to make the existing system a complete system, with actual reclaimed effluent

use requirements (such as toilet flush water and irrigation water), requires a lengthy study. This study is already underway as part of the water treatment design effort.

Comment: There is an inadequate discussion of what appears to be an expansion of the Desert View wastewater treatment facility. Several discrepancies are cited. The final GMP/EIS should clarify discrepancies and identify exactly what level of expansion of this facility will occur with development of the proposed alternative, and the associated impacts.

Response: Expansion details must be developed in a subsequent stage of planning, when detailed alternatives for meeting the projected demand would be considered. All legal and policy requirements for such facilities will be met. An expansion may mean several things; the lagoons might be made larger due to increased use, or an entirely different treatment process could be implemented. This would be determined during subsequent comprehensive design.

Comment: The additional guest rooms proposed on the South Rim will tax the water and wastewater capabilities of the existing systems.

Response: There is ample room for improvement in water conservation efforts on the South Rim. Additional pumping from Indian Garden, along with conservation, would meet the water needs for these guest rooms.

NORTH RIM

VISITOR EXPERIENCE

Comment: The vision for the North Rim to offer "an uncrowded feeling" with "little or no intrusion from other people" seems to overlook its international notoriety, existing levels of development and management, and the possibility of a more realistic vision as a spectrum of settings (with reference to the recreation opportunity spectrum [ROS] system used by the Bureau of Land Management and the Forest Service).

> Response: The ROS system has not been used in this planning effort. The vision statements in this plan are intended to describe future conditions in the park and to convey the general sense of the area rather than specific conditions in each part of an area. In addition, the vision statements attempt to convey relative differences between the different areas of the park, so that, for example, the most developed areas of the North Rim should generally convey a more "uncrowded feeling" with less "intrusion from other people" than developed areas on the South Rim.

Access/Transportation

Comment: An alternative that would solve many of the congestion and impact problems of the park that has not been seriously considered is to open up more access roads to additional viewpoints. The Park Service has a responsibility to open the park to more visitors, not preserve it for an elite few.

> Response: These issues were discussed and carefully considered during the public scoping for this project in October 1991, as evidenced by the discussion on pages 20–3 of the *Scoping Summary* (NPS 1992c; see "Selected References" section of the draft document). Wilderness issues were also carefully discussed and considered during scoping and subsequent planning. Based on a careful review of public comments, resource data, and the rim access points, there are numerous rim viewpoints with access available to people of all levels of physical condition and abilities and with varying amounts of time. These viewpoints provide abundant opportunities to experience the canyon in solitude or in the company of other people, with or without vehicles or developments.
>
> The Park Service disagrees that providing for almost 5 million visitors per year, with projections for more under the proposed action, is in any way preserving the park just for an elite few. The NPS mission is to preserve the resources "unimpaired for the enjoyment of future generations," as well as to provide for the enjoyment of those resources by present generations. The proposed mix of developed and undeveloped areas best meets this mandate and also provides opportunities for the long-term economic well-being of local communities. The proposed action remains as described in the draft document, maintaining the North Rim outside the developed area basically as it is now.

Comment: Closing access to the solitude and beauty of the North Rim in such areas as the 150-Mile Canyon trailhead, Tuckup Point, and Boysag Point as a result of wilderness designation is inconsistent with the plan's stated goals concerning solitude, wildness, and quiet, and trying to manage increased visitor demand and utilize currently existing resources. It also reduces the options for visitors to see the North Rim, resulting in the overwhelming majority having to view the canyon from crowded developed areas, and only when they are seasonally open and visitors have entry permits. Closing unimproved roads

seems to be part of a hidden agenda to keep people out of the park. An alternative is to close the roads 0.5 mile back from the rim.

Response: The decision on which road corridors would remain within proposed wilderness boundaries was based on extensive public involvement leading up to the park's wilderness proposal. There are numerous opportunities for vehicular access to remote canyon rim viewpoints along the North Rim, with roads varying from paved to very primitive. Comments during public scoping and the public review of preliminary alternatives for the general management plan favored keeping access to the North Rim and Tuweep very close to current conditions.

The Management Zones map on page 15 of the draft GMP/EIS failed to show road access to the 150-Mile Canyon trailhead, and also showed the wrong road for access to Kanab Point. The text revisions for page 15 correct these omissions. The 1980 and 1993 wilderness proposals, on which the road access in the proposed general management plan is based, designates as open all currently paved roads and the following dirt/gravel roads for vehicular access within Grand Canyon National Park on the North Rim: 150-Mile Canyon trailhead, Tuckup Point and the Tuckup trailhead, SB Point, Kanab Point, Toroweap overlook, Lava Falls trailhead, North Bass/Powell Plateau trailhead (Swamp Point), and Point Sublime. In addition, numerous U.S. Forest Service roads provide access on national forest lands to breathtaking Grand Canyon viewpoints in places such as Monument Point/Indian Hollow (Thunder River trailhead), Crazy Jug Point, Parissawampitts Point, Fence Point, Nankoweap trailhead, North Canyon trailhead, Marble viewpoint, Dog Point, and East Rim viewpoint. Spectacular vistas of the Kanab Creek portion of the canyon are also available at Sowats Point, Kwagunt Hollow, and "The Goosenecks." Vehicular access is also permitted on lands managed by Lake Mead National Recreation Area to Kelly Point, Twin Point, and Whitmore trailhead.

The comment correctly states that vehicular access to Boysag Point is closed; the point can still be reached by a less than 5-mile walk along the road to SB Point.

Comment: Do you envision new trails for the proposed bike trail to link CC Hill and Bright Angel Point, and a rim trail around Bright Angel Point? The existing trail should be used to decrease impacts.

Response: There may be a need to separate bike trails and pedestrian trails. If so, there would be at least one new trail. The existing trails would be used wherever feasible, but realignments or additional trails would be possible under the proposed action to ensure the usability of the trails, consistent with minimizing resource impacts.

Comment: The current policy of advertising the Point Sublime road, leaving the gate open, and allowing unlimited day use has led to overuse and illegal camping. The former policy of locking the gate and giving permittees the combination worked well and should be reinstated. A backcountry permit should be required for day use as well as overnight camping.

Response: Such details will be considered during the *Backcountry Management Plan* revision. A revision to page 9 clarifies that day use permits for certain backcountry areas may be considered under the plan.

Visitor Services

Comment: Why is the Park Service supporting the latest attempt to expand Kaibab Lodge and its parking?

> Response: This is an expansion proposed in the Forest Service plan for Kaibab National Forest and is well within that agency's mandate. The Park Service believes that expansion would not be a visual intrusion on the approach to the park and, pending review of potential impacts to the park, would support it.

Comment: It is not logical to move the North Rim laundry and shower facilities from their present location to the campground.

> Response: Those facilities are too small for their current level of use, requiring expansion. Rather than continue to have campers needlessly drive to the laundry and shower facility from the campground, providing expanded facilities close to the primary users is proposed.

Comment: There should be no reductions in camping in the park on the North Rim, especially when increased lodging and employee housing are being proposed.

> Response: There is no intention to reduce camping, but the proposed action does recognize a need to redesign some of the current North Rim campground. This could reduce the number of sites by up to five if the existing campground footprint was maintained in order to minimize impacts. If the campground could be improved without reducing the number of sites, that would be done. Site-specific planning, design, and compliance would occur before any changes were implemented.

AREA OPERATIONS

Management Support

Comment: It is not clear where NPS administrative facilities on the North Rim would be relocated as a result of removing the existing building.

> Response: The construction of a new maintenance building and ranger operations building would free up space in existing shops and garage buildings. Administrative office space would be relocated to rehabilitated, vacated facilities. Additional administrative space would be provided in the new maintenance facilities and at the CC Hill visitor center.

Housing

Comment: Rather than increasing visitor lodging and constructing new employee housing on the North Rim, why not restore/improve existing structures used for employee housing and use them for employees rather than additional visitor lodging. Then additional new housing would not have to be built for those employees.

> Response: The main rationale for moving employees out of visitor areas is to separate visitor lodging and employee housing, thus eliminating some of the conflicts that have occurred in the past, not to increase lodging. Employees and visitors often have different time schedules and lifestyles, which make life less

pleasant for both groups when they use the same areas. Separating these groups would significantly improve housing and visitor accommodations in the area.

Utilities

Comment: Information on utility systems is inconsistent throughout the document. The final GMP/EIS needs to be more specific about upgrades, particularly the sewage treatment plant, sewer, and water at the north entrance station and the sewer at Lindbergh Hill.

Response: Determining the actual upgrades, improvements, or changes to any system are impossible at the general management plan level of planning. With general information on visitation, housing, employees, and probable changes in facilities, civil engineers can determine that existing facilities would either maintain, lack, or have excessive capacities, indicating whether or not an improvement was required. If systems are old and require extensive maintenance, they will likely need upgrading. Actual improvements, such as definite capacity, type of treatment process, and exact location, would be determined during comprehensive design. The level of information provided in the document is adequate for general planning purposes.

TUWEEP

VISITOR EXPERIENCE

Comment: The vision statement for Tuweep should be modified to coincide with the classifications under the recreation opportunity spectrum (ROS) used on adjacent BLM lands. Tuweep fits more with the BLM's ROS classifications of "Roaded Natural" along the main roadways, and "Semi-Primitive Motorized" and "Primitive" classifications connecting with those zones on BLM lands. Such an "edgefit" of ROS zoning should probably be done along the entire BLM/NPS boundary, from Marble Canyon to Lake Mead. Several other comments also addressed the differences between the general management plan's use of the term "primitive" and the ROS definition of "primitive zone."

The affected environment regarding Tuweep is inaccurate. It is remote, but not primitive by ROS standards. Opportunities for solitude are excellent much of the time, but not during peak periods. The area is not "little known," but is actively promoted.

> Response: Although the NPS management zoning system is quite different from the BLM's ROS zoning system, compatible zoning on adjacent lands is desired, and the general management plan achieves that. In some cases park lands, when compared to adjacent lands, are managed for more "primitive" attributes where the natural environment predominates. While this may not be the case now in some of the Tuweep area, the objective is to return areas away from designated roads to natural conditions. While the use of the term primitive in the draft GMP/EIS does not correspond with the BLM's "Primitive Opportunity Class" definition, when one walks a short distance away from the relocated parking area back from the Toroweap overlook, for example, one should quickly sense a transition to what could be described as a "Primitive Opportunity Class" condition. The NPS prescriptive zoning scheme used for this plan follows NPS *Management Policies.*
>
> Regarding the comment about the affected environment at Tuweep, the text on pages 153–4 has been revised to reflect this comment.

Comment: The final GMP/EIS should be more specific about how the possible permit system for Tuweep would work.

> Response: A permit system for Tuweep could work in various ways. Communication and coordination with park neighbors will be important aspects in developing a permit system at Tuweep.

Access

Comment: The airstrip at Tuweep should not be acquired and closed by the National Park Service or the Bureau of Land Management. It has been in existence for over 50 years, and closing it would adversely impact air safety by eliminating an alternate airport for aircraft encountering impassable weather conditions. Many river runners have also used it as a means of access out of the canyon.

> Response: The text on page 55 about the Tuweep airstrip has been deleted. Concerns regarding the long-term protection of park interests relative to the

airstrip would be addressed in cooperation with affected landowners (see page 14, column 3).

Comment: Toroweap could be open all year-round and entertain many more visitors, and it could be a great help economically to the nearby communities. Infrastructure, lodges, eating establishments, and the like are not required, just more viewpoints that are more accessible.

Response: The Toroweap overlook and the Tuweep area are currently open all year, and would remain so under the proposed action. They are in fact only closed when weather conditions make the roads impassable, a fact which many people consider one of the area's charms and attractions.

Comment: The Tuweep management strategy should be revised so that the Park Service can accommodate and manage most of the demand for the area. Rather than constraining access, reopen roads and if necessary revise the wilderness recommendation to allow more room to manage and spread use.

Response: The most consistent response received about Tuweep during scoping and preliminary alternatives review was to leave it as it is. These suggestions would cause great changes in the Tuweep area, which would require more management presence and result in more resource impacts and a great change in visitor experience. The proposed action leaves Tuweep very much as it is today and does not try to accommodate demand for the area that would bring great changes to the resources and visitor experience.

Comment: A 22′ limit on vehicles has been proposed for the Tuweep road. Does this road require this restriction? How many vehicles would be impacted by this vehicle restriction?

Response: The Tuweep road and parking areas were not designed to handle large vehicles. The road does not have an all-weather surface, causing problems for large vehicles, especially when the road is muddy or rutted. The vehicle length restriction on the Tuweep road is expected to affect less than 10 vehicles on the peak day of the year.

Parking

Comment: Regarding the people-to-vehicle ratio at the Tuweep campground, it would be difficult for 6 people to get into one vehicle or 11 people to get into two vehicles. The number of vehicles allowed per campsite at Tuweep should be increased by one each.

Response: The text has been revised on page 55 to reflect this suggestion, increasing to a maximum of two vehicles at individual sites and four at group sites.

Comment: The 25-car parking lot proposed near the entrance to the Saddle Horse Canyon trail at Tuweep could affect endangered species and vernal pools.

Response: The Park Service is concerned with protecting the environment in this area. According to NPS information about the site and species mentioned in the comment, there is no reason to believe that the proposed parking lot could not be designed and built to minimize impacts on resources. The concept

for the parking lot was to widen the existing road to the Toroweap overlook at an appropriate spot and then terminate the road at that point. The purpose is to eliminate parking on the rim at the overlook, where 25 or more cars currently park during busy periods. Alternative sites, methods, and mitigation to accomplish this purpose would be fully considered during site-specific design. Appropriate environmental compliance would be completed prior to any construction, including endangered species consultation with the Fish and Wildlife Service and opportunity for public review and comment.

Visitor Services

Comment: The two campsites at the Toroweap overlook should not be removed; they are not a problem.

Response: The text on page 13 of the draft GMP/EIS, under "Actions Common to All Alternatives, Visitor Experience" states, "The anticipation and sense of arrival for first-time visitors as well as returning visitors are key elements of the visitor experience. . . . All alternatives consider actions that would (1) protect and ensure the individual visitor's opportunity to experience the awe-inspiring first look into the Grand Canyon from along the rim."

The Toroweap overlook is a special place, but the campsites at the overlook do present problems. More uses are competing for space and attention at this site than at most other overlooks in the park — for example, views and contemplation of the canyon, camping, and vehicle parking. All these uses make it especially difficult to maintain the overlook's special qualities in the face of increasing visitor demand. The proposed action seeks to ensure that the Toroweap overlook remains special by moving parking and camping back from the overlook, as well as limiting visitation. Moving these uses would also reduce impacts to an American Indian sacred site. People staying at the Tuweep campground would continue to be welcome to enjoy the overlook at any time of the day or night, but the overlook experience would be significantly improved if the rim campsites were no longer competing for space at this site. Campsite maintenance needs as well as impacts due to trash and human waste would also be reduced by consolidating camping in one area. Relocating the campsites from the overlook to the campground would alter that visitor opportunity, but the benefits to the experience for all visitors, as well as the resources at the overlook, would far outweigh that impact.

Comment: The two campsites at the Toroweap overlook should be removed. The portable toilet should also moved off the rim. Its design is incompatible with the immediate surroundings.

Response: The current portable toilet is temporary. The text revision for page 55 has been changed to clarify that the toilet would be moved to the new parking area, in addition to moving the parking and campsites.

AREA OPERATIONS

Comment: There was no coordination and communication with the landowner outside the park at Tuweep about leasing the private residence for seasonal ranger housing.

> Response: With regard to seasonal ranger housing, the proposed action states, "To replace the substandard seasonal housing, either a private residence outside the park would be rented or a new unit built inside the park" (see page 56, column 1). The proposed action simply states a possibility that the park would like to explore further. The possibility has been previously raised with the landowner, but certainly nothing would go forward without the landowner's full concurrence.

CORRIDOR TRAILS

VISITOR EXPERIENCE

Comment: Two of the main impediments to hiking enjoyment on the main trails are the effects of mules and general crowded conditions. Both problems would be alleviated by reducing mules on some trails and eliminating them on others, particularly the Bright Angel Trail, and by restricting the number of hikers.

> Response: Reducing and eliminating mule numbers are both options considered in the various alternatives. The proposed action would leave mule use at current levels, but would add several safeguards (see page 56). A carrying capacity study for hikers and mules would be conducted for the corridor trails.

Comment: In addition to trail maintenance, mule concessioners should police for mule droppings and grade trails so that urine puddles do not accumulate and foul the air and hikers' shoes. This would enhance water quality by removing excess nutrients and curtail artificial feeding of indigenous wildlife.

> Response: The proposed action provides direction for the concessioners to be more responsible for trail maintenance. The details must be worked out in future site-specific planning subsequent to the general management plan.

Comment: There is no mention or budgeting of construction of trail detours around mule urine pools except on page 230 in the impacts section.

> Response: The possibility of trail widening in strategic locations to facilitate the safe passing of mules and hikers was inadvertently left out of the draft proposal on page 56. Trail widening would be a safety measure, not a separate bypass around mule urine pools, and it would be evaluated on a site-specific basis. The text on pages 56 and 230 has been changed to reflect this. Costs for a few minor widenings of the trail are included in the estimated cobbling costs shown on page 298 for the corridor trails.

Comment: Add a discrete mile marker system to identify locations along the main corridor trails.

> Response: Such specific actions could be considered by the park in site-specific implementation plans or the *Backcountry Management Plan.* This suggestion has been referred to park managers for consideration.

Comment: Mule pack service should be completely eliminated. It is part of the experience for backpackers and river runners to carry their own supplies, and eliminating this service would improve conditions on the South Kaibab Trail. Also, eliminating mules from the North Rim and Bright Angel Trail would be a major improvement in the visitor experience for hikers. The relatively small number of potential mule riders that would need to seek a different canyon experience would be more than offset by the large number of hikers that would enjoy improved trail quality.

> Response: The Park Service has recognized limited mule ride and packing services as historic and appropriate uses under certain conditions. Eliminating

mules was considered in alternative 3. Clarifying text has been added on page 56 to address trail maintenance and trail widening for safety, and to conduct a carrying capacity study of the corridor trails for hikers and mules.

Comment: Mule use should be greatly reduced and eventually phased out. Hikers have to avoid mule fecal and urinary waste on the trails as best as possible. After the sun and wind dries out this material, it gets pulverized and becomes airborne, carrying bacteria to be inhaled by hikers. Hikers and campers are required to carry out all their waste, and I believe the same requirement should be imposed on mule concessioners. Trail erosion is another reason to keep mules off the trails.

Response: No cause for health concerns from mule waste on the trails exists under normal hiking conditions. Page 56 of the draft GMP/EIS details several measures to reduce impacts to the trails and resources, and to reduce conflicts between hikers and mules. Additional measures to deal with stock waste may be considered in the future.

Comment: Eliminate crowding and "conflicts" between hikers and stock users by reconstructing trails to adequately handle expected use (e.g., widen trails, construct step-out locations, remove mule urine, consider divided trail sections to prevent bottlenecks). Upgrade the Old Bright Angel Trail for foot and stock optional use, and open up the Grandview and Hermit Trails to optional stock use.

Response: Text has been added on page 56 to clarify that the Old Bright Angel Trail would only be upgraded to the standards of a primitive trail, as defined in the *Backcountry Management Plan,* with no stock use allowed. The Hermit and Grandview Trails are maintained to threshold trail standards. The proposed action would not change prohibitions against stock use on these trails; the proposed action would allow minor trail widening in a few locations on the main corridor trails to facilitate safe passing of hikers and stock. Measures to reduce mule waste are being implemented now, but the other measures suggested in the comment would not be employed.

Comment: Do not use a foreign hardening substance for dust abatement or trail-tread hardening. It would be hard on and hazardous to both hikers and horses, somewhat like walking down a creekbed on the rocks.

Response: Trails are now being hardened with native rock material, which would likely continue as the primary method used under the proposed action. This method has been used for many years on Grand Canyon trails and has proven to be safe and successful in reducing dust and erosion, although it is expensive. Page 56 of the draft GMP/EIS calls for hardening trails with "a natural material that blended well with the environment" so foreign substances, such as concrete, would not be allowed.

Comment: At least during the busy summer season, some limited entry system is needed to control the number of day hikers on corridor trails. The number of day hikers should be limited to about one-third the number now, and the number of mule trips should be limited to half the maximum now.

Response: The proposed action does not call for reducing mules or hikers on corridor trails. However, text has been added to the proposed action on page 56

to conduct a monitoring program, including indicators and standards, to establish a carrying capacity for hikers and mules on the corridor trails.

Comment: The maps and text infer that the Arizona Trail has been completed on national park lands. The links between the USFS segments and the park's cross-canyon corridor are not yet built or signed. The maps should reflect this, and the cost estimates should reflect trail completion.

Response: The Arizona Trail is presented as an action common to all alternatives under the "Access/Transportation" headings for the North and South Rims, as well as under the "Corridor Trails" heading (see page 17 of the draft GMP/EIS). Two links inside the park remain to be completed, and the estimated costs are shown in the cost table for actions common to all alternatives (see appendix C as revised).

AREA OPERATIONS

Comment: Additional toilets should be provided on the main trails to add to the enjoyment of the hike and help preserve the natural environment.

Response: The park is already installing a toilet near the 1.5 mile resthouse on the Bright Angel Trail. Toilets are an example of an implementation decision that would be made in the future, with guidance from the general management plan; but specifying the numbers and locations of toilets on corridor trails is too narrow an issue for the GMP/EIS.

APPENDIXES / SELECTED REFERENCES / PLANNING TEAM AND CONSULTANTS

APPENDIX B: CONSULTATION
(REVISED)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951

Telephone: (602) 640-2720 FAX: (602) 640-2730

April 26, 1995

In Reply Refer To:
AESO/SE
2-21-92-I-204

MEMORANDUM

TO: Regional Director, National Park Service, Denver, Colorado (Attention: Rick Ernenwein)

FROM: State Supervisor

SUBJECT: Updated List of Federally Listed and Candidate Species for Grand Canyon National Park, General Management Plan/Environmental Impact Statement (GMP/EIS)

This memorandum is in response to your April 7, 1995, request for updated information on listed or proposed threatened or endangered species and candidate species that may occur in the area of Grand Canyon National Park (GCNP), Coconino County, Arizona. We also note your request for comments regarding specific sections of the draft GMP/EIS and your current inability to make a determination regarding effects to threatened or endangered species until site specific design or planning is completed. It is our understanding that as specific aspects of the GMP/EIS are further developed or implemented, GCNP will consult with the Fish and Wildlife Service regarding threatened or endangered species.

The following is an updated list of federally listed and candidate species that may occur in Grand Canyon National Park:

Endangered or Threatened
American peregrine falcon (*Falco peregrinus anatum*)
Bald eagle (*Haliaeetus leucocephalus*)
Brady pincushion cactus (*Pediocactus bradyi*)
Humpback chub (*Gila cypha*)
Razorback sucker (*Xyrauchen texanus*)
Sentry milk vetch (*Astragalus cremnophylax* var. *cremnophylax*)
Welsh's milkweed (*Asclepias welshii*)
Mexican Spotted owl (*Strix occidentalis lucida*)
Southwestern willow flycatcher (*Empidonax traillii extimus*)
Desert tortoise, Mohave desert population [*Gopherus (=Xerobates) agassizii*]

2

CANDIDATE CATEGORY 1
Arizona leatherflower (*Clematis hirsutissima* var. *arizonica*)

CANDIDATE CATEGORY 2
Grand Canyon cave psuedoscorpion (*Archeolarca cavicola*)
Tusayan rabbitbrush (*Chrysothamnus molestus*)
Yellow-flowered desert poppy (*Arctomecon californica*)
Roaring Spring prickly poppy (*Argemone arizonica*)
Ditch evening primrose (*Camissonia specuicola* ssp. *hesperia*)
Cliff milk vetch (*Astragalus cremnophylax* var. *myriorraphis*)
Camissonia confertiflora
Grand Canyon rose (*Rosa stellata* ssp. *abyssa*)
Kaibab bladderpod (*Lesquerella kaibabensis*)
Grand Canyon catchfly (*Silene rectiramea*)
Mt. Trumbull beardtongue (*Penstemon distans*)
North Rim primrose (*Primula hunnewellii*)
Chuckwalla (*Sauromalus obesus*)
Lowland leopard frog (*Rana yavapaiensis*)
Roundtail chub (*Gila robusta*)
Northern goshawk (*Accipiter gentilis*)
Ferruginous hawk (*Buteo regalis*)
Western burrowing owl (*Athene cunicularia hypugea*)
*Loggerhead shrike (*Lanius ludovicianus*)
Spotted bat (*Euderma maculatum*)
Small-footed myotis (*Myotis ciliolabrum*)
Fringed myotis (*Myotis thysanodes*)
Cave myotis (*Myotis velifer*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Pale Townsend's big-eared bat (*Plectous townsendii pallescens*)
Occult little brown bat (*Myotis lucifugus occultus*)
Navaho Mountain Mexican vole (*Microtus mexicanus navaho*)
Coconino Arizona pocket mouse (*Perognathus amplus ammodytes*)
Arizona shrew (*Sorex arizonae*)
Prospect Valley pocket gopher (*Thomomys umbrinus muralis*)
Marble Canyon kangaroo rat (*Dipodomys microps leucotis*)
Navaho Mountain Mexican vole (*Microtus mexicanus navaho*)

*This species was omitted from the 1994 Animal Candidate Review. The Fish and Wildlife Service (Service) is conferring with the Washington office to determine if this was intentional or an error. We are retaining it on this list until it is confirmed that it is no longer a candidate species.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. Candidate species are those which the Fish and Wildlife Service (Service) is considering adding to the threatened or endangered species list.

Category 1 candidates are those for which the Service has enough information to support a proposal to list. Category 2 species are those for which the Service presently has insufficient information to support a proposal to list. Although candidate species have no legal protection under the Endangered Species Act, they should be considered in the planning process in the event they become listed or proposed for listing prior to project completion.

We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. In future communications on this project, please refer to consultation number 2-21-92-I-204. If we may be of further assistance, please contact Don Henry or Tom Gatz.

Sincerely,

Sam F. Spiller
State Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
Director, Arizona Game and Fish Department, Phoenix, Arizona
Superintendent, Grand Canyon National Park, National Park Service, Grand Canyon, Arizona

ARIZONA STATE PARKS

1300 W. WASHINGTON
PHOENIX, ARIZONA 85007
TELEPHONE 602-542-4174

FIFE SYMINGTON
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EXECUTIVE DIRECTOR

CHARLES R. EATHERLY
DEPUTY DIRECTOR

10 May 1995

Planning Team Leader
Grand Canyon General Management Plan
National Park Service
Denver Service Center-TWE
PO Box 25287
Denver, CO 80225-0287

Received
MAY 1 3 1995

RE: Grand Canyon, General Management Plan, NPS

Dear Sir:

I have reviewed the recommendations found in the Draft General Management Plan for the Grand Canyon which contains many properties listed on or eligible for the National Register of Historic Places and offer the following comments pursuant to 36 CFR 800:

1. There appears to be a major logical error between Alternatives 2 and 3 with regard to the North Rim Inn's exposed frame cabins. If Alternative 2 is to reflect limited growth while maintaining the resources, then the demolition of the exposed frame cabins is in direct contradiction to this goal; whereas to reduce visitorship in alternative 3 is not met by retaining the cabins. These cabins deserve to be retained in **all** alternatives. The retention of these cabins was shown in the Review Draft of Alternative 2 in September 1994. The philosophy behind Alternative 2 does not support the demolition of these cabins. If there is proof of visitor demand on the North Rim how can balanced growth remove historic cabins which could be used by the visitor?

2. Although I support the general direction of Alternative 2 and feel it addresses the necessity for a balanced approached to park management, specific recommendations for the adaptive reuse of historic buildings, the demolition of buildings in historic districts and the treatment of National Historic Landmarks should continue to be debated on an individual basis. As an example of this type of discussion, I have not determined that the plan actually solves the problem of the

Grand Canyon General Management Plan
10 May 1995
Page Two

Thunderbird and Kachina Lodges as intrusions in the South Rim Village Historic District. This area has always had some type of structures present during the historic period; therefore to simply demolish the intrusions and to leave open space may not, in fact, improve the "feeling" or integrity of the district.

3. The treatment of historic areas and streetscape also will require further consultation. By removing the majority of cars from the village the overall character and integrity should be improved, but the revegetation of the Bright Angel Lodge parking lot may be an adverse effect because Mary Colter specifically designed this parking lot in relationship to the lodge. This relationship with or without cars needs to be preserved.

4. I find the proposals for Desert View and the remaining historic buildings to be very positive.

Thank you for the opportunity to comment on this important project.

Sincerely,

James Garrison
AZSHPO

APPENDIX C: COSTS FOR ALTERNATIVES AND PHASING FOR THE PROPOSED ACTION (REVISED)

ACTIONS COMMON TO ALL ALTERNATIVES

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
SOUTH RIM				
Trails				
Construct Arizona Trail link	13 miles	325,000	81,300	406,300
Visitor Services/Information/Orientation				
*Joint use regional information centers				
- Existing structure in Flagstaff	200 sq ft for NPS	no cost	no cost	no cost
- New structure in Flagstaff	2,000 sq ft building 20 parking spaces, 6,000 sq ft	503,100	96,000	599,100
- Existing structure in Williams	200 sq ft for NPS	no cost	no cost	no cost
- New structure in Cameron	2,000 sq ft building 20 parking spaces, 6,000 sq ft	503,100	96,000	599,100
Management Support				
Add composting toilets	5 toilets	720,500	137,500	858,000
Housing				
Remove substandard housing and revegetate in village, Desert View	113 units in village 11 units at Desert View	1,182,300	225,700	1,408,000
NORTH RIM				
Trails				
Construct Arizona Trail link	15 miles	375,000	93,800	468,800
Housing				
Remove substandard housing	22 units	173,000	33,000	206,000
Management Support				
Construct composting toilets at Walhalla and Widforss	3 toilets	453,300	86,500	539,800
CORRIDOR TRAILS				
Reconstruct transcanyon waterline	8 miles	33,405,000	6,375,000	39,780,000
Provide composting toilets	4 toilets	691,700	132,000	823,700
Replace toilets along N. Kaibab Trail	2 toilets	345,900	66,000	411,900
TUWEEP				
Add seasonal ranger trailer	1 trailer	58,200	11,100	69,300
Add septic system for seasonal ranger	1,000–1,200 gallons	13,100	2,500	15,600
Expand existing water catchment and cistern	9,000–gallon cistern now	13,100	2,500	15,600
Rehabilitate ranger residence septic system	1,500–2,000 gallons now	10,000	1,900	11,900
Add composting toilet	1 toilet	144,100	27,500	171,600
NPS TOTAL		37,910,200	7,276,300	45,186,500
CONCESSIONER TOTAL		1,006,200	192,000	1,198,200
TOTAL		**38,916,400**	**7,468,300**	**46,384,700**

* Either partial or full concessioner cost.

ALTERNATIVE 1

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
SOUTH RIM				
Visitor Services/Information/ Orientation				
Establish regional information office	1,400 sq ft	316,800	60,500	377,300
Establish day use reservation system		98,300	18,800	117,100
Establish private vehicle reservation system		131,000	25,000	156,000
Create telecommunication systems (2 at airports, 4 at regional centers, 2 at gateway centers, 5 at regional area parks)	14 units	91,700	17,500	109,200
Provide multilingual information center	1,800 sq ft	382,000	72,900	454,900
Transportation				
*Help construct Tusayan gravel parking for alternate mode service to park	940 spaces, 8.1 acres NPS provides 470 spaces, 4 acres	902,000	172,200	1,074,200
Construct gravel parking lot at Desert View quarry	54 spaces = 50 car, 3 RV, 1 bus 0.5 acre	98,900	18,900	117,800
Add bus	1 bus	325,000	25,000	350,000
Add gravel parking at Desert View	85 spaces	106,900	20,400	127,300
Management Support				
Add temporary office trailers	5 trailers	242,400	46,300	288,700
Add new or rehabilitate existing sewage lagoons at Desert View	3 acres	589,500	112,500	702,000
Housing				
Add NPS housing units in Grand Canyon Village	59 units, 17.8 acres	13,912,200	2,655,000	16,567,200
*Add concessioner housing units at Grand Canyon Village	226 units, 25.3 acres	53,290,800	10,170,000	63,460,800
Add NPS housing units at Desert View	15 units, 1.4 acres	3,537,000	675,000	4,212,000
*Add concessioner housing units at Desert View	13 units, 1.5 acres	3,065,400	585,000	3,650,400

ALTERNATIVE 1 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
NORTH RIM				
Visitor Services/Information/ Orientation				
No changes				
Transportation				
Add gravel parking lot at CC Hill	30 spaces = 20 car, 10 RV or bus	56,600	10,800	67,400
Add graded road at CC Hill	0.25 mile	131,000	25,000	156,000
Housing				
Add NPS housing units	29 units, 3.5 acres	6,838,200	1,305,000	8,143,200
*Add concessioner housing units	88 units, 6.2 acres	20,730,400	3,956,200	24,686,600
Rehabilitate unit at entry	1,026 sq ft	107,600	20,600	128,200
Upgrade septic system at entry house	1,000 gallons	26,200	5,000	31,200
Management Support				
Add temporary trailers	2 trailers	116,400	22,200	138,600
Expand wastewater treatment plant	2 acres	393,000	75,000	468,000
TUWEEP				
No additional actions beyond actions common to all.				
NPS TOTAL		27,500,700	5,211,400	32,712,100
CONCESSIONER TOTAL		77,988,600	14,883,400	92,872,000
TOTAL		**105,489,300**	**20,094,800**	**125,584,100**

The following cost was not included as it would an ongoing cost:

Provide gateway information (in existing facility – rent space)	3,000 sq ft	2,500/month (30,000/year)

* Either partial or full concessioner cost.

ALTERNATIVE 2: PROPOSED ACTION

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
SOUTH RIM				
Visitor Services/Information/ Orientation				
Create telecommunication systems (same as alt. 1)	14 units	91,700	17,500	109,200
Provide multilingual information brochures	2 million year	78,600	15,000	93,600
*Construct Tusayan gateway information center	15,000 sq ft total 7,500 sq ft for NPS	4,716,000	900,000	5,616,000
Construct Mather Point orientation center	18,000 sq ft	5,659,200	1,080,000	6,739,200
Adaptively reuse powerhouse (education center)	17,632 sq ft	5,543,500	1,058,000	6,601,500
*Adaptively reuse historic laundry (restaurant)	6,375 sq ft	2,296,600	438,300	2,734,900
*Adaptively reuse GCNPL maintenance building (bike rental shop)	3,870 sq ft	1,166,100	222,600	1,388,700
Adaptively reuse historic community building (NPS theater/performance space)	5,738 sq ft	1,728,900	330,000	2,058,900
Adaptively reuse horse barn (children's museum, artist-in-park space) (minimum changes)	6,500 sq ft	1,490,200	284,400	1,774,600
Adaptively reuse mule barn (American Indian cultural center) (50% matching outside funds)	10,000 sq ft	2,358,000	450,000	2,808,000
*Adaptively reuse magistrate building (ATM, post office)	2,101 sq ft	578,000	110,300	688,300
Landscape powerhouse area (ground surfaces, benches, amphitheater, trees/shrubs, stairway to rim)	28.6 acres	3,746,600	715,000	4,461,600
*Replace historic Babbitt's store (grocery, supplies, deli)	10,354 sq ft	2,577,200	491,900	3,069,100
Construct Desert View orientation center	10,000 sq ft	3,144,000	600,000	3,744,000
*Remove one-story Yavapai West units	160 rooms	209,600	40,000	249,600
*Construct two-story Yavapai West units	265 rooms	7,637,300	1,457,500	9,094,800
*Remove Kachina/Thunderbird Lodges	104 rooms	136,300	26,000	162,300

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
*Convert Kachina/Thunderbird space to outdoor picnic, program, dining	2.2 acres	432,300	82,500	514,800
*Rehabilitate Maswik cabins	27 cabins	530,600	101,300	631,900
*Remove Maswik plywood cabins	10 cabins	78,600	15,000	93,600
Redesign RV campground	78 sites before 108 sites after	1,080,000	206,100	1,286,100
*Convert Victor, Victor Annex, Colter, Brandt, and Rouzer dorms to visitor lodging	194 rooms	4,472,900	853,600	5,326,500
*Remodel Hermits Rest, Watchtower, Lookout Studio (interior renovation, minimal exhibits)	6,305 sq ft	1,734,500	331,100	2,065,600
Clean up Orphan Mine, remove headframe	3 acres (upper mine) 1 acre (lower mine)	524,000	100,000	624,000
Add entry station at Desert View; remove existing station revegetate	800 sq ft (new station) 100 sq ft (old station)	923,600	176,300	1,099,900
Add campsites at Desert View	50 sites 392 sq ft restrooms, no showers	256,300	48,900	305,200
*Remove Desert View gift shop/ deli and replace; remove restrooms	3,819 sq ft	1,100,700	210,100	1,310,800
*Convert Bright Angel gift shop/ ice cream shop to restaurant	2,580 sq ft	676,000	129,000	805,000
Construct Yavapai observation station outdoor exhibits	3 kiosks	117,900	22,500	140,400
Transportation				
Construct gateway transit center	3,000 sq ft lighted enclosed area; 15,000 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	1,084,800	207,000	1,291,800
Construct gateway parking lot	2,522 spaces = 2,313 car, 148 RV, 61 bus; 25.3 acres	6,523,200	1,244,900	7,768,100
Construct Mather Point transit center	3,000 sq ft lighted enclosed area; 15,000 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	1,084,800	207,000	1,291,800
Construct Mather Point parking lot	1,195 spaces = 1,021 car, 81 RV, 93 bus; 12.4 acres	3,149,800	601,200	3,751,000
Construct Mather Point orientation center access road	1.5 miles	1,437,800	274,400	1,712,200
Construct access road to link RV campground with south entrance road	0.4 mile	393,000	75,000	468,000
Construct new road (Center Road to Maswik link)	1.4 miles	1,375,600	262,500	1,638,100

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Construct community road to business center	0.4 mile	393,000	75,000	468,000
Construct Desert View bypass; realign access road to Desert View	0.5 mile	491,300	93,800	585,100
Build Desert View transit shelter/ waiting area and bus dropoff	1,000 sq ft lighted enclosed area; 1,200 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	438,600	83,700	522,300
Remove existing Desert View parking lot/revegetate (revegetate about 60%)	144 spaces = 139 car, 5 bus 1 acre	144,100	27,500	171,600
Construct Desert View parking lot	438 spaces = 398 car, 25 RV, 15 bus; 4.5 acres	1,042,200	198,900	1,241,100
Add buses	77 buses (includes spares)	31,425,000	300,000	31,725,000
Add bus shelters	35 lighted shelters = 27 small, 4 medium, 4 large (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space) (large = 1,000 sq ft weatherproof space & 1,300 sq ft loading space)	5,712,600	1,090,200	6,802,800
Construct bike trails	50 miles	8,253,000	1,575,000	9,828,000
Construct pedestrian rim trails and community pedestrian trails	20 miles	2,620,000	500,000	3,120,000
Remove most of parking in village parking lots	650-750 parking spaces (roughly 3.5 acres of striped parking, est is side of road parking)	245,700	46,900	292,600
Management Support				
Expand public transit maintenance facility	38,500 sq ft enclosed 69,300 sq ft paved lot	6,420,000	1,225,400	7,645,400
Rent office space in Flagstaff	7,000 sq ft	costs unknown at this time		
Remove backcountry office and revegetate area	1,440 sq ft	79,300	15,100	94,400
*Build concessioner mule barn	45,867 sq ft	1,802,600	344,000	2,146,600
Build NPS mule/horse barns and blacksmith shop at Southgate	9,000 sq ft	353,700	67,500	421,200
Move dry dump to Southgate		13,100	2,500	15,600
Construct NPS maintenance/ purchasing headquarters	60,000 sq ft	11,790,000	2,250,000	14,040,000
*Construct concession transportation maintenance facility	15,600 sq ft enclosed 21,600 sq ft paved lot	3,121,500	595,700	3,717,200
*Build joint fire/safety building (GCNPL and NPS)	6,000 sq ft total 4,500 sq ft for NPS	2,063,200	393,900	2,457,100

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
*Rehabilitate NPS maintenance/ warehouse for GCNPL	32,400 sq ft	3,395,600	648,000	4,043,600
*Rehabilitate historic schoolhouse for GCNPL	3,094 sq ft	608,000	116,100	724,100
*Remodel general office building for GCNPL	25,998 sq ft	851,500	162,500	1,014,000
Rehabilitate visitor center for NPS administration	22,066 sq ft	722,700	138,000	860,700
Remove GCNPL personnel building and other noncontributing buildings in Village Historic District and revegetate	5,000 sq ft	275,100	52,500	327,600
Expand or build new boat shop at Lees Ferry	3,300 sq ft	432,300	82,500	514,800
Expand sewage treatment at Desert View	1-3 acres	373,400	71,300	444,700
Add restrooms at Yavapai observation station and S. Kaibab trailhead	1,268 sq ft	368,000	70,200	438,200
*Remove Bright Angel salon and convert to women's restrooms	140 sq ft	41,300	7,900	49,200
Construct Desert View ranger operations building	2,116 sq ft	374,300	71,500	445,800
Construct NPS maintenance building at Desert View	7,329 sq ft	1,200,200	229,100	1,429,300
*Construct GCNPL maintenance building at Desert View	3,500 sq ft	573,200	109,400	682,600
Housing				
Add NPS housing units in village	84 units, 2.9 acres	3,886,000	741,600	4,627,600
Add NPS housing units at Desert View	22 units, 1.8 acres	2,223,100	424,300	2,647,400
Add NPS housing units outside park	54 units, 6.6 acres	6,318,400	1,205,800	7,524,200
*Add concession housing units in village	594 units, 22.2 acres	19,060,700	3,637,600	22,698,300
*Add concession housing units at Desert View	48 units, 3.7 acres	4,316,600	823,800	5,140,400
*Add concession housing outside park	249 units, 30.7 acres	27,473,400	5,243,000	32,716,400
Add NPS housing unit at Lees Ferry	1 unit	131,000	25,000	156,000

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Community Services				
Adaptively reuse historic NPS maintenance buildings for exercise, meeting, recreational, work space:	13,678 sq ft	2,508,400	478,700	2,987,100
- GCNPL fire station	2,200 sq ft			
- Boat shop	1,160 sq ft			
- Main warehouse	2,592 sq ft			
- Lumber warehouse	1,500 sq ft			
- Horse barn	960 sq ft			
- Mule barn	1,500 sq ft			
- Paint shop	816 sq ft			
- Blacksmith shop	670 sq ft			
- Storage behind warehouse	1,400 sq ft			
- Jail	250 sq ft			
- Coal shed	630 sq ft			
Construct outdoor park at historic NPS maintenance area (basketball, volleyball, playground)	0.9 acre	196,500	37,500	234,000
NORTH RIM				
Visitor Services/Information/Orientation				
Add building space to Kaibab Plateau visitor center	4,000 sq ft	1,509,200	288,000	1,797,200
Establish day use reservation system		52,400	10,000	62,400
Add CC Hill orientation center	6,000 sq ft	1,886,400	360,000	2,246,400
Add picnic areas	5 acres (25 tables)	327,500	62,500	390,000
Redesign the campground	83 to 78 sites	204,400	39,000	243,400
Construct camper services facility in campground	2,000 sq ft	288,200	55,000	343,200
Construct Point Imperial outdoor exhibits	5 kiosks	196,500	37,500	234,000
*Add portable winter huts (concession or park)	3 huts	39,300	7,500	46,800
*Convert lodge cabins to visitor lodging	16 cabins	419,200	80,000	499,200
Adaptively reuse six historic frame cabins and remove the remainder	6 cabins	157,200	30,000	187,200
Transportation				
Add parking spaces at Kaibab Plateau visitor center at Jacob Lake	65 spaces	144,800	27,700	172,500
Add CC Hill parking lot	397 spaces = 377 car, 16 RV, 4 bus; 3.75 acres	927,000	177,000	1,104,000
Construct CC Hill parking lot access road	0.25 mile	245,700	46,900	292,600

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Construct CC Hill transit center/ staging area	1,000 sq ft lighted enclosed area; 1,200 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	182,400	34,800	217,200
Add North Rim bus system	11 buses (includes spares)	1,175,000	125,000	1,300,000
Add bus shelters	10 lighted shelters = 8 small, 1 medium, 1 large (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space) (large = 1,000 sq ft weatherproof space & 1,300 sq ft loading space)	1,926,200	367,600	2,293,800
*Add rim mule trails	3 miles	294,800	56,300	351,100
Add rim pedestrian trails	10 miles	943,200	180,000	1,123,200
Add bike paths	50 miles	8,253,000	1,575,000	9,828,000
Remove and revegetate North Kaibab trailhead parking lot	40 spaces 0.3 acre	101,600	19,400	121,000
Management Support				
*Build joint concessioner/NPS transit maintenance facility	6,000 sq ft enclosed 10,800 sq ft paved lot	1,240,000	236,800	1,476,800
Expand wastewater treatment plant	115,000-120,000 gpd 2-3 acres	2,796,900	533,800	3,330,700
Clear and relocate helipad	225 sq ft	55,800	10,700	66,500
*Replace mule staging area	4,000 sq ft	262,000	50,000	312,000
Construct NPS maintenance building	6,500 sq ft	1,226,900	234,200	1,461,100
Convert gas station to bike rental facility	1,213 sq ft	95,400	18,200	113,600
Rehabilitate existing structures	18,000 sq ft	2,718,000	518,700	3,236,700
Housing				
*Add new and replacement concessioner housing units	201 units, 12.6 acres	13,007,000	2,482,300	15,489,300
Add NPS new and replacement housing units	46 units, 3.3 acres	3,327,400	635,000	3,962,400
CORRIDOR TRAILS				
*Cobble sections of N. and S. Kaibab and Bright Angel Trails (25% NPS, 75% concessioner)	7.8 miles	1,226,300	234,000	1,460,300
Convert Indian Garden storage building to residence	599 sq ft	102,000	19,500	121,500
Convert Indian Garden storage building to contact station	672 sq ft	114,500	21,900	136,400
Add Indian Garden amphitheater	30 seats/rustic	78,600	15,000	93,600

ALTERNATIVE 2: PROPOSED ACTION (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
TUWEEP				
Add regional information signs	3 signs	33,400	6,400	39,800
Remove rim campsites and replace	2 campsites	13,100	2,500	15,600
Add radio communication to Pipe Spring NM		32,800	6,300	39,100
Remove and replace parking lot/ revegetate existing lot	22 spaces; 4,400 sq ft (new lot) 10 spaces; 1,800 sq ft (old lot)	99,200	19,000	118,200
Add loop trail from new parking lot to connect Saddle Horse Canyon Trail and Toroweap overlook	1.5 miles	137,600	26,300	163,900
NPS TOTAL		159,574,800	24,658,100	184,232,900
CONCESSIONER TOTAL		108,138,900	20,638,000	128,776,900
TOTAL		**267,713,700**	**45,296,100**	**313,009,800**

* Either partial or full concession costs.

ALTERNATIVE 3

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
SOUTH RIM				
Visitor Experience/Information/Orientation				
*Construct joint gateway orientation/information center in Tusayan (includes all South Rim orientation/information plus backcountry and interpretive offices)	25,000 sq ft total 18,750 sq ft for NPS	7,074,000	1,350,000	8,424,000
*Construct joint gateway orientation/information center at Desert View	10,000 sq ft total 7,500 sq ft for NPS	2,829,600	540,000	3,369,600
Adaptively reuse powerhouse (same as alt. 2)	17,632 sq ft	5,543,500	1,058,000	6,601,500
*Adaptively reuse historic laundry (same as alt. 2)	6,375 sq ft	2,296,600	438,300	2,734,900
*Adaptively reuse GCNPL maintenance building (same as alt. 2)	3,870 sq ft	1,166,100	222,600	1,388,700
Adaptively reuse historic community building (same as alt. 2)	5,738 sq ft	1,728,900	330,000	2,058,900
Adaptively reuse horse barn (same as alt. 2)	6,500 sq ft	1,490,200	284,400	1,774,600
*Adaptively reuse magistrate building (same as alt. 2)	2,101 sq ft	578,000	110,300	688,300
Landscape powerhouse area (same as alt. 2)	28.6 acres	3,746,600	715,000	4,461,600
*Replace historic Babbitt's store (same as alt. 2)	10,354 sq ft	2,577,200	491,900	3,069,100
*Remodel Hermits Rest, Watchtower, Lookout Studio (same as alt. 2)	6,305 sq ft	1,734,500	331,100	2,065,600
Restore Orphan Mine headframe and clean up area so safe	3 acres (upper mine) 1 acre (lower mine)	524,000	100,000	624,000
*Convert Bright Angel gift shop/ ice cream shop to restaurant (same as alt. 2)	2,580 sq ft	676,000	129,000	805,000
Remove bank and post office at business center and revegetate	6,743 sq ft	176,700	33,800	210,500
*Remove Kachina and Thunderbird Lodges (same as alt. 2)	104 rooms	136,300	26,000	162,300
*Convert Kachina/Thunderbird space to outdoor picnic, program, dining (same as alt. 2)	2.2 acres	432,300	82,500	514,800
*Remove plywood cabins at Maswik (same as alt. 2)	10 cabins	78,600	15,000	93,600
*Convert Maswik cabins to lodging (same as alt. 2)	27 cabins	530,600	101,300	631,900
*Remove and revegetate Desert View GCNPL gift shop/deli and Babbitts store	9,819 sq ft	139,400	26,600	166,000

ALTERNATIVE 3 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Transportation				
Construct Tusayan area gateway parking lot	3,512 spaces = 3,186 car, 203 RV, 123 bus; 34.5 acres	6,675,700	1,274,000	7,949,700
Construct Desert View gateway parking lot	879 spaces = 797 car, 51 RV, 31 bus; 8.6 acres	1,641,500	313,300	1,954,800
Construct Tusayan Area gateway transit center	5,000 sq ft enclosed area 25,000 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	1,901,200	362,900	2,264,100
Construct Desert View gateway transit center	2,000 sq ft enclosed area 5,000 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	512,500	97,800	610,300
Add buses	104 buses (includes spares)	43,250,000	400,000	43,650,000
Add bus shelters	35 lighted shelters = 27 small, 4 medium, 4 large (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space) (large = 1,000 sq ft weatherproof space & 1,300 sq ft loading space)	5,712,600	1,090,200	6,802,800
Remove or reduce scale of all village rim parking lots, business center lot, Desert View lot, Tusayan museum lot, and all East and West Rim lots	650-750 parking spaces (roughly 3.5 acres of striped parking, rest is side of road parking)	245,700	46,900	292,600
Add attached bike lanes as needed (both sides of visitor use roads and major neighborhood roads)	50 miles	8,253,000	1,575,000	9,828,000
Construct pedestrian trails where social trails occurring	1 mile	131,000	25,000	156,000
Management Support				
Construct many management support facilities in Tusayan area:	246,800 sq ft total (not all enclosed)	36,375,900	6,942,000	43,317,900
- Backcountry offices, some interp. offices at gateway center	5,000 sq ft			
- NPS administrative headquarters	9,000 sq ft			
- NPS maintenance/purchasing facility	60,000 sq ft			
- *Concession transit maintenance facility	15,600 sq ft enclosed 21,600 sq ft paved lot			
- NPS transit maintenance facility	46,500 sq ft enclosed 89,100 sq ft paved lot			
Build NPS transit maintenance facility at Desert View	5,500 sq ft enclosed 9,900 sq ft paved lot	1,293,600	246,400	1,540,000

ALTERNATIVE 3 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Adaptively reuse following facilities:	80,000 sq ft total	8,845,200	1,688,100	10,533,300
Remove and revegetate back-country office, visitor center/ administration complex	25,366 sq ft	1,395,700	266,400	1,662,100
Construct NPS ranger operations building at Desert View (same as alt. 2)	2,116 sq ft	374,300	71,500	445,800
Construct NPS maintenance building at Desert View (same as alt. 2)	7,329 sq ft	1,200,200	229,100	1,429,300
Expand Desert View sewage lagoons	2 acres	393,000	75,000	468,000
Build wastewater treatment facility at Desert View staging center	1–3 acres	1,965,000	375,000	2,340,000
Community Services				
Adaptively reuse historic NPS maintenance buildings for exercise, meeting, recreational, work space:	10,548 sq ft	1,934,500	369,200	2,303,700
- GCNPL fire station	2,200 sq ft			
- Boat shop	1,160 sq ft			
- Main warehouse	2,592 sq ft			
- Lumber warehouse	1,500 sq ft			
- Paint shop	816 sq ft			
- Storage behind warehouse	1,400 sq ft			
- Jail	250 sq ft			
- Coal shed	630 sq ft			
Construct outdoor park at historic NPS maintenance area (basketball, volleyball, playground)	0.6 acre	131,000	25,000	156,000
Rehabilitate existing ranger operations building for library and meeting rooms	2,600 sq ft	425,800	81,300	507,100
Housing				
Add NPS housing units in Tusayan	99 units, 6.6 acres	7,417,300	1,415,500	8,832,800
*Add concessioner housing units in Tusayan	549 units, 36.9 acres	36,794,000	7,021,800	43,815,800
Add NPS housing units at Desert View	21 units, 1.5 acres	1,630,300	311,200	1,941,500
*Add concessioner housing units at Desert View	17 units, 1.1 acres	1,547,800	295,400	1,843,200
Add NPS housing units outside park at Desert View	5 units, 0.3 acre	507,700	96,900	604,600
*Add concessioner housing units outside park at Desert View	17 units, 1.1 acres	1,105,000	210,900	1,315,900

ALTERNATIVE 3 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
NORTH RIM				
Visitor Services/Information/Orientation				
Add building space to Kaibab Plateau visitor center (same as alt. 2)	4,000 sq ft	1,509,200	288,000	1,797,200
Establish day use reservation system (same as alt. 2)		52,400	10,000	62,400
*Convert lodge units to visitor lodging	16 cabins	419,200	80,000	499,200
*Convert historic frame cabins to visitor lodging	27 cabins	707,400	135,000	842,400
Redesign the campground (same as alt. 2)	83 campsites before 78 campsites after	204,400	39,000	243,400
Transportation				
Add North Rim bus system	7 buses (includes spares)	550,000	125,000	675,000
Add bus shelters	9 lighted shelters = 6 small, 3 medium (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space)	1,251,400	238,800	1,490,200
Add bike lanes as needed on all paved roads	36 miles	5,942,200	1,134,000	7,076,200
Management Support				
Remove and revegetate mule staging and convert mule barn to storage/management support (no/minor changes to barn)	12,000 sq ft corrals 4,320 sq ft barns	465,900	88,900	554,800
Rehabilitate existing structures (same as alt. 2)	18,000 sq ft	2,718,000	518,700	3,236,700
Construct NPS maintenance building (same as alt. 2)	6,500 sq ft	1,226,900	234,200	1,461,100
*Construct joint concessioner/ NPS transit maintenance facility	3,500 sq ft enclosed 6,300 sq ft paved lot	733,600	140,000	873,600
Expand wastewater treatment plant	30,000 gpd; 3 acres	373,400	71,300	444,700
Housing				
Add NPS housing units	46 units, 3.3 acres	3,670,700	700,500	4,371,200
*Add concessioner housing units	185 units, 11.7 acres	12,553,800	2,395,800	14,949,600
CORRIDOR TRAILS				
Visitor Services/Information/ Orientation				
*Cobble sections of S. Kaibab Trail	1 mile	157,200	30,000	187,200

ALTERNATIVE 3 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
TUWEEP				
Add regional information signs (same as alt. 2)	3 signs	33,400	6,400	39,800
Establish day use reservation system		52,400	10,000	62,400
Remove rim campsites and revegetate	2 campsites	13,100	2,500	15,600
Add radio communication to Pipe Spring NM (same as alt. 2)		32,800	6,300	39,100
Relocate parking lot/ revegetate existing site	10 spaces (existing lot) 1,800 acres	45,100	8,600	53,700
NPS TOTAL		163,563,900	23,381,100	186,945,000
CONCESSIONER TOTAL		74,267,200	14,173,500	88,440,700
TOTAL		**237,831,100**	**37,554,600**	**275,385,700**

* Either partial or full concession costs.

ALTERNATIVE 4

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
SOUTH RIM				
Visitor Services/Information/ Orientation				
Create telecommunication systems (same as alt. 1)	14 units	91,700	17,500	109,200
Provide multilingual information brochures (same as alt. 2)	2 million year	78,600	15,000	93,600
*Jointly construct Tusayan gateway information center	8,000 sq ft total 2,000 sq ft for NPS	2,513,200	479,700	2,992,900
Construct Mather Point orientation center	25,000 sq ft	7,860,000	1,500,000	9,360,000
Adaptively reuse powerhouse (same as alt. 2)	17,632 sq ft	5,543,500	1,058,000	6,601,500
*Adaptively reuse historic laundry (same as alt. 2)	6,375 sq ft	2,296,600	438,300	2,734,900
*Adaptively reuse GCNPL maintenance building (same as alt. 2)	3,870 sq ft	1,166,100	222,600	1,388,700
Adaptively reuse historic community building (same as alt. 2)	5,738 sq ft	1,728,900	330,000	2,058,900
Adaptively reuse horse barn (same as alt. 2)	6,500 sq ft	1,490,200	284,400	1,774,600
*Adaptively reuse blacksmith shop (same as alt. 2)	2,267 sq ft	519,800	99,200	619,000
*Adaptively reuse magistrate building (same as alt. 2)	2,101 sq ft	578,000	110,30	688,300
*Adaptively reuse mule barn (interpretive or visitor services)	10,000 sq ft	2,358,000	450,000	2,808,000
Landscape powerhouse area (same as alt. 2)	28.6 acres	3,746,600	715,000	4,461,600
*Replace historic Babbitt's store (same as alt. 2)	10,354 sq ft	2,577,200	491,900	3,069,100
*Convert Bright Angel gift shop/ ice cream shop and employee dining into restaurant	4,526 sq ft	676,000	129,000	805,000
Construct Desert View orientation center	11,000 sq ft	3,458,400	660,000	4,118,400
*Remove one-story Yavapai West units (same as alt. 2)	160 rooms	209,600	40,000	249,600
*Construct two-story Yavapai West units (double what were one-story units)	320 rooms	9,222,400	1,760,000	10,982,400
*Provide new facades for Kachina and Thunderbird Lodges	47,776 sq ft	5,007,000	955,600	5,962,600

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
*Rehabilitate Maswik cabins (same as alt. 2)	27 cabins	530,600	101,300	631,900
*Convert Victor, Victor Annex, Colter, Brandt, and Rouzer dorms to visitor lodging (same as alt. 2)	194 rooms	4,472,900	853,600	5,326,500
Clean up Orphan Mine, remove headframe (same as alt. 2)	3 acres (upper mine) 1 acre (lower mine)	524,000	100,000	624,000
*Construct laundry/showers/ restrooms at business center	4,672 sq ft	1,285,300	245,300	1,530,600
Increase size of RV campground	from 78 RV campsites to 160	163,500	31,200	194,700
Add campsites at Desert View (same as alt. 2)	50 sites 392 sq ft restrooms, no shower	256,300	48,900	305,200
*Remove Desert View gift shop/ deli and replace; remove restrooms (replaced in orientation center)	3,819 sq ft	1,100,700	210,100	1,310,800
Add entry station at Desert View; remove existing station and revegetate (same as alt. 2)	800 sq ft (new station) 100 sq ft (old station)	923,600	176,300	1,099,900
Construct entry station at Grandview	300 sq ft	346,400	66,100	412,500
Construct additional museum at Tusayan museum	3,000 sq ft	864,600	165,000	1,029,600
Provide exhibits to interpret archeological dig at Tusayan museum	3 kiosks	117,900	22,500	140,400
Transportation				
Construct gateway parking lot	100 parking spaces 0.95 acre	338,900	64,700	403,600
Construct Mather Point transit center (same as alt. 2)	3,000 sq ft lighted enclosed area; 15,000 sq ft lighted outdoor waiting/loading area (roughly 75% of outdoor should be shaded)	1,084,800	207,000	1,291,800
Construct Mather Point parking lot	3,262 spaces = 2936 car, 203 RV, 123 bus; 32.25 acres	8,571,600	1,635,800	10,207,400
Construct access road to link RV campground and south entrance road (same as alt. 2)	1.5 miles	1,437,800	274,400	1,712,200
Construct Mather Point parking lot access road (same as alt. 2)	0.4 mile	393,000	75,000	468,000
Construct new road (same as alt. 2)	1.4 miles	1,375,600	262,500	1,638,100
Construct community road to business center (same as alt. 2)	0.4 mile	393,000	75,000	468,000
Reduce scale of business center parking and add pedestrian amenities (same as alt. 2)	150 car spaces 2.5 acres	797,800	152,300	950,100

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Add employee parking (Mather Point orientation center and Maswik)	20 spaces Mather 50 spaces Maswik	229,300	43,800	273,100
Add road from Abyss to Rowe Well Road	2.5 miles	2,456,300	468,800	2,925,100
Add parking along East Rim Drive	144 spaces	471,600	90,000	561,600
Construct Desert View bypass; realign road (same as alt. 2)	0.5 mile	491,300	93,800	585,100
Add Desert View parking lot	359 spaces = 330 car, 18 RV, 11 bus; 3.5 acres	902,400	172,200	1,074,600
Build Desert View transit center	300 sq ft lighted enclosed area 460 sq ft lighted outdoor waiting/ loading area (small bus shelter)	118,600	22,700	141,300
Remove/revegetate existing Desert View parking lot (same as alt. 2)	144 spaces = 139 car, 5 bus 1 acre	144,100	27,500	171,600
Add buses	62 buses (includes spares)	23,075,000	400,000	23,475,000
Add bus shelters	25 lighted shelters = 20 small, 2 medium, 3 large (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space) (large = 1,000 sq ft weatherproof space & 1,300 sq ft loading space)	4,048,100	772,600	4,820,700
Construct bike trails (same as alt. 2)	50 miles	8,253,000	1,575,000	9,828,000
Construct pedestrian rim and community pedestrian trails (same as alt. 2)	20 miles	2,620,000	500,000	3,120,000
*Add East Rim mule trail (Yaki Pt. to Shoshone Pt.)	2 miles (one way)	330,200	63,000	393,200
Remove most parking lots; revegetate in village (same as alt. 2)	650–750 parking spaces (roughly 3.5 acres of striped parking, rest is side of road parking)	245,700	46,900	292,600
Pave Grandview entry road link to East Rim Drive	0.5 mile	227,400	43,400	270,800
Pave USFS 302/307 and add link from 302 to park	28 miles USFS 302/307 1 mile for link	7,522,700	1,435,700	8,958,400
Management Support				
Expand public transit maintenance facility	13,000 sq ft enclosed 18,000 sq ft paved lot	2,601,200	496,400	3,097,600
Remove backcountry office/ camper services and revegetate	6,112 sq ft	336,300	64,200	400,500
*Build concessioner mule barn blacksmith shop near S. Kaibab trailhead	45,867 sq ft	1,802,600	344,000	2,146,600
Clear land and build helicopter base	10 acres	1,899,600	362,600	2,262,200
Construct NPS maintenance/ purchasing headquarters (same as alt. 2)	60,000 sq ft	11,790,000	2,250,000	14,040,000

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
*Construct concession transportation maintenance facilities	30,000 sq ft enclosed 54,000 sq ft paved lot	3,121,500	595,700	3,717,200
*Build joint fire/safety building (same as alt. 2)	6,000 sq ft total 4,500 sq ft for NPS	2,063,200	393,900	2,457,100
*Rehabilitate existing NPS maintenance/warehouse for GCNPL (same as alt. 2)	32,400 sq ft	3,395,600	648,000	4,043,600
*Rehabilitate historic schoolhouse for GCNPL (same as alt. 2)	3,094 sq ft	608,000	116,100	724,100
*Rehabilitate basement of El Tovar for GCNPL	6,436 sq ft	843,200	161,000	1,004,200
Remodel general office building for ranger operations	25,998 sq ft	851,500	162,500	1,014,000
Rehabilitate existing visitor center for NPS administration (same as alt. 2)	22,066 sq ft	722,700	138,000	860,700
Expand or build new boat shop at Lees Ferry (same as alt. 2)	3,300 sq ft	432,300	82,500	514,800
Add water storage tanks	4 million gallons storage	2,908,200	555,000	3,463,200
Expand sewage treatment at Desert View (same as alt. 2)	1–3 acres	373,400	71,300	444,700
Add restrooms at Yavapai observation station (same as alt. 2)	634 sq ft	184,000	35,100	219,100
*Remove Bright Angel salon and convert to women's restrooms (same as alt. 2)	140 sq ft	41,300	7,900	49,200
Construct Desert View ranger operations building (same as alt. 2)	2,116 sq ft	374,300	71,500	445,800
Construct NPS maintenance building at Desert View (same as alt. 2)	7,329 sq ft	1,200,200	229,100	1,429,300
Build NPS mule/horse barns and blacksmith shop at Southgate (same as alt. 2)	9,000 sq ft	353,700	67,500	421,200
Move dry dump to Southgate (same as alt. 2)		13,100	2,500	15,600
*Construct GCNPL maintenance building at Desert View (same as alt. 2)	3,500 sq ft	573,200	109,400	682,600
Housing				
Add NPS housing units in village	84 units, 2.9 acres	3,886,000	741,600	4,627,600
Add NPS housing units at Desert View	28 units, 2.2 acres	2,859,800	545,800	3,405,600
Add NPS housing units outside park	54 units, 6.6 acres	6,318,400	1,205,800	7,524,200
*Add concession housing units in village	594 units, 22.2 acres	19,060,200	3,637,600	22,697,800

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
*Add concession housing units at Desert View	46 units, 3.5 acres	4,194,000	800,400	4,994,400
*Add concession housing units outside park	255 units, 31.1 acres	30,011,500	5,727,400	35,738,900
Community Services				
Adaptively reuse historic NPS maintenance building for exercise, meeting, recreational, work space:	13,678 sq ft	2,508,400	478,700	2,987,100
GCNPL fire station	2,200 sq ft			
boat shop	1,160 sq ft			
main warehouse	2,592 sq ft			
lumber warehouse	1,500 sq ft			
horse barn	960 sq ft			
mule barn	1,500 sq ft			
paint shop	816 sq ft			
blacksmith shop	670 sq ft			
storage behind warehouse	1,400 sq ft			
jail	250 sq ft			
coal shed	630 sq ft			
Construct outdoor park at historic NPS maintenance area (basketball, volleyball, playground)	0.9 acre	196,500	37,500	234,000
Rehabilitate existing ranger operations building for library and meeting rooms	2,600 sq ft	425,800	81,300	507,100
NORTH RIM				
Visitor Services/Information/ Orientation				
Add building space to Kaibab Plateau visitor center (smaller than alt. 2, no reservation office/distribution)	2,000 sq ft	754,600	144,000	898,600
Add CC Hill orientation center (same as alt. 2)	6,000 sq ft	1,886,400	360,000	2,246,400
Add picnic areas (same as alt. 2)	5 acres (25 tables)	327,500	62,500	390,000
Construct Point Imperial museum	1,000 sq ft	377,300	72,000	449,300
*Convert cabins to visitor lodging	23 cabins (16 lodge cabins, 7 historic frame cabins)	602,600	115,000	717,600
*Build new lodging units	100 rooms	4,585,000	875,000	5,460,000
*Add restaurant	156 seats (108 seats at camper store, 48 seats at lodge)	455,400	86,900	542,300
Add campsites	50 campsites	117,900	22,500	140,400
*Add portable winter huts (same as alt. 2)	3 huts	39,300	7,500	46,800

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
Transportation				
Add parking spaces at Kaibab Plateau visitor center (same as alt. 2)	65 spaces	144,800	27,700	172,500
Remove and revegetate the N. Kaibab trailhead parking lot (same as alt. 2)	40 spaces 0.3 acre	101,600	19,400	121,000
Add CC Hill parking lot	67 spaces = 40 car, 21 RV, 6 bus; 1 acre	371,800	71,000	442,800
Construct CC Hill parking lot access road (same as alt. 2)	0.25 mile	245,700	46,900	292,600
Add ballfield area parking lot	183 car spaces 1.6 acres	311,700	59,500	371,200
Widen portions of paved roads on Walhalla	14.6 miles	7,650,400	1,460,000	9,110,400
Add North Rim bus system	5 buses (includes spares)	425,000	125,000	550,000
Add bus shelters	4 lighted shelters = 3 small, 1 medium (small = 300 sq ft weatherproof space & 460 sq ft loading space) (medium = 600 sq ft weatherproof space & 820 sq ft loading space)	625,700	119,400	745,100
Add bike paths (same as alt. 2)	50 miles	8,253,000	1,575,000	9,828,000
Add rim pedestrian trails (same as alt. 2)	10 miles	943,200	180,000	1,123,200
*Upgrade old Bright Angel trail for mule use	3 miles	471,600	90,000	561,600
Management Support				
*Build joint concessioner/NPS transit maintenance facility	2,500 sq ft enclosed 4,500 sq ft paved lot	754,600	144,000	898,600
Expand wastewater treatment plant	40,000 gpd; 3 acres	373,400	71,300	444,700
Clear and relocate helipad (same as alt. 2)	225 sq ft	55,800	10,700	66,500
*Remove mule staging/replace at Six Rock Meadow	4,000 sq ft	419,200	80,000	499,200
Add NPS maintenance building	8,000 sq ft	1,310,000	250,000	1,560,000
Housing				
*Add concessioner new and replacement housing units	208 units, 13 acres	12,683,500	2,420,500	15,104,000
Add NPS new and replacement housing units	55 units, 3.9 acres	4,275,200	815,900	5,091,100

ALTERNATIVE 4 (cont.)

ITEM	QUANTITY	GROSS CONSTRUCTION COST	CONSTRUCTION PLANNING COST	TOTAL
CORRIDOR TRAILS				
*Cobble sections of N. and S. Kaibab and Bright Angel Trails (same as alt. 2)	7.8 miles	1,226,300	234,000	1,460,300
Convert Indian Garden storage building to residence (same as alt. 2)	599 sq ft	102,000	19,500	121,500
Convert Indian Garden storage building to contact station (same as alt. 2)	672 sq ft	114,500	21,900	136,400
Add Indian Garden amphitheater (same as alt. 2)	30 seats/rustic	78,600	15,000	93,600
Add Battleship pedestrian trail	2 miles	183,400	35,000	218,400
Add pedestrian trail off S. Kaibab Trail	4.5 miles	707,400	135,000	842,400
TUWEEP				
Add regional information signs (same as alt. 2)	3 signs	33,400	6,400	39,800
Remove rim campsites and replace; plus add four campsites	6 campsites	39,300	7,500	46,800
Add radio communication to Pipe Spring NM (same as alt. 2)		32,800	6,300	39,100
Add loop trail connecting east side of overlook to Saddle Horse Canyon Trail (same as alt. 2)	1.5 miles	137,600	26,300	163,900
Add 15 parking spaces to existing parking lot	15 car spaces 3,000 sq ft	35,400	6,800	42,200
NPS TOTAL		162,643,000	27,080,400	189,723,400
CONCESSIONER TOTAL		121,795,400	23,244,200	145,039,600
TOTAL		**284,438,400**	**50,324,600**	**334,763,000**

* Either partial or full concession costs.

PHASING FOR THE PROPOSED ACTION

This plan uses many existing disturbed areas and proposes substantial adaptive reuse of existing structures. It therefore requires a sequenced phasing plan. Before existing facilities can be reused for new purposes, existing functions must be relocated. In some cases a relocation must be preceded by three or four other moves to be done most efficiently and to keep from disturbing new lands. Two phases are proposed:

Phase 1 — 1995–2002: Primarily includes actions related to improving transportation, or is the first move in a series of adaptive uses.

Phase 2 — 2003–2010: Actions that are lower priority or must wait for phase 1 items to be completed before they can be started.

Additional information is also provided with each action item.

- Sequence — refers to whether this action can be done immediately, meaning it could be done first, or whether another action must be taken beforehand, which would mean it could be done second, third, or fourth.
- Year Estimated — the year this action could be expected to be completed. This phasing plan anticipates all major actions being completed by 2010.
- Cost — a rough estimate of capital cost to complete the action and an estimate of operating costs that would be required to operate and maintain the facility. Operating costs are only given for facilities operated or maintained by the National Park Service.
- Funding — an early indication of where the funding might come from to complete the action.
- Compliance — an indication of additional compliance required for the specific actions listed. Compliance with both the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) is considered.

PHASE 1 — SOUTH RIM

Transportation

□ Expand the shuttle bus fleet, season, and area of coverage to provide improved service as soon as possible. This item includes replacing existing rolling stock to improve service (but not to 2010 standards) and expand the maintenance facilities and bus shelters.

Sequence: First
Year Estimated: 1998
Cost: $16,000,000 capital, $2,000,000 annual operations
Funding: Congress
Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

□ Construct the orientation/transit center and a portion of the associated parking lot near Mather Point. This includes all utilities, roads, structures, and trails to make this center operational.

Sequence: First
Year Estimated: 1999
Cost: $11,243,200 capital, $300,000 annual operations
Funding: Congress for roads, Congress/private for center
Compliance: Environmental assessment and 106 consultation

- ☐ Construct the gateway information center in Tusayan and a portion of the associated parking lot. This includes all utilities, road changes, structures, and trails to make this facility operational. This facility would be served by a concession-operated shuttle system, privately funded.

  Sequence: First
  Year Estimated: 1999
  Cost: $10,707,800
  Funding: Private w/portion from Congress
  Compliance: Environmental assessment (with U.S. Forest Service) and sec. 106 consultation or none (if privately constructed on private land)

- ☐ Construct bike and pedestrian trails.

  Sequence: First
  Year Estimated: 2000
  Cost: $12,948,000 capital, $300,000 annual operations
  Funding: Congress/private/concessioner
  Compliance: Environmental assessment and sec. 106 consultation

- ☐ Construct Desert View bypass road, new entrance station, and a portion of the orientation center parking lot.

  Sequence: Second, after relocation of concessioner housing
  Year Estimated: 2000
  Cost: $2,926,100
  Funding: Congress
  Compliance: Environmental assessment and sec. 106 consultation

When these actions were taken, several parking lots in Grand Canyon Village could be removed, including the gravel lot in the railroad yard, the Bright Angel lot, roadside parking along the rim, and the El Tovar/Verkamp's lot. However, the new road segments required to close the main roads to all automobiles would not yet have been built, so some auto traffic (overnight guests) would still be competing with transit vehicles on main roads. Also at this time the overlooks on East Rim Drive would need to be closed during high use season and served by buses. The Desert View parking lot could be removed.

Information/Education

- ☐ Improve dissemination of park information by various media. This includes networking with regional visitor centers, getting information in airports, on Internet, and in the mail to potential visitors, and using video and telecommunications as well. It also includes providing better information services to existing information providers such as training, staff in some cases, publications, hardware, etc.

  Sequence: First
  Year Estimated: 1997
  Cost: $109,200 capital, $100,000 annual
  Funding: Congress/concessioner
  Compliance: None

Visitor Services

- ☐ Convert community building to an education center. This includes creating Grand Canyon Field Institute space and space for interpretive programs and group education. Existing uses would be removed.
  - Sequence: First
  - Year Estimated: 1996
  - Cost: $2,058,900 capital, $50,000 annual operations
  - Funding: Private
  - Compliance: Sec. 106 consultation

- ☐ Clean up the Orphan Mine site and reopen to visitors.
  - Sequence: First
  - Year Estimated: 1997
  - Cost: $624,000
  - Funding: Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

- ☐ Relocate the mule barn and corral to a new facility on the west edge of the village.
  - Sequence: First
  - Year Estimated: 2000
  - Cost: $1,802,600
  - Funding: Concessioner
  - Compliance: Environmental assessment and sec. 106 consultation

- ☐ Construct a new store where the original Babbitt's store once stood and convert part of the original post office (now the magistrate's building) to community/visitor uses.
  - Sequence: First for the store and second for the magistrate's building after relocating the fee collection function to the gateway information center in Tusayan
  - Year Estimated: 2000
  - Cost: $2,577,200
  - Funding: Concessioner
  - Compliance: Categorical exclusion and sec. 106 consultation

- ☐ Rehabilitate mule barn for an American Indian cultural center.
  - Sequence: Second, after relocating mule operation
  - Year Estimated: 2002
  - Cost: $2,808,000 capital, $100,000 annual operations
  - Funding: Undetermined
  - Compliance: Sec. 106 consultation

The above actions, together with the construction of the orientation center at Mather Point, would allow improved interpretation, removal of the backcountry reservations office (function to be relocated to the orientation center), and the existing visitor center to perform as a museum until the powerhouse was rehabilitated in a later phase.

Housing

- ☐ Relocate Pinyon Park trailers.
  - Sequence: First
  - Year Estimated: 1998
  - Cost: $500,000
  - Funding: Concessioner/private/Congress
  - Compliance: Environmental assessment and sec. 106 consultation if new location was on federal land; none if not on federal land.

- ☐ Construct new housing; relocate existing trailers from Desert View concessioner housing area to shared housing area.
  - Sequence: First
  - Year Estimated: 1999
  - Cost: $2,480,000 capital, $35,000 annual operations
  - Funding: Concessioner/Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

- ☐ Construct or encourage construction of housing in the Tusayan area for NPS and concessioner use.
  - Sequence: First
  - Year Estimated: 1999
  - Cost: $7,524,200 capital, $80,000 annual operations
  - Funding: Congress/private/concessioner
  - Compliance: None if privately built on private lands; otherwise, environmental assessment and sec. 106 consultation

- ☐ Construct first phase of apartment and dormitory housing at Pinyon Park.
  - Sequence: Second, after relocating Pinion Park trailers
  - Year Estimated: 2000
  - Cost: $10,163,400 capital, $160,000 annual operations
  - Funding: Concessioner/Congress
  - Compliance: Environmental assessment and sec. 106 consultation

Along with the above actions, as many jobs as possible would be moved to Flagstaff or Williams.

Management Support

- ☐ Relocate dry storage to the former Southgate parking area.
  - Sequence: First
  - Year Estimated: 1996
  - Cost: $15,600
  - Funding: Congress
  - Compliance: None

- ☐ Construct joint fire response facility; vacate Fred Harvey fire/safety building, equipment bays in the NPS maintenance shop, YACC camp, and some offices in ranger operations building.
  - Sequence: First
  - Year Estimated: 1997
  - Cost: $2,457,100 capital, $40,000 annual operations
  - Funding: NPS concession fund
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

- ☐ Construct NPS maintenance/warehouse facility and construct concessioner transportation facility at the existing dry dump. This includes extending utilities.
  - Sequence: First
  - Year Estimated: 2000
  - Cost: $17,757,200
  - Funding: Concessioner/Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

The above actions would make the existing dry storage area available for expanded shuttle maintenance, relocation of concessioner bus operations, and construction of NPS maintenance facilities.

PHASE 2 — SOUTH RIM

Transportation

- ☐ Construct road segments to remove automobiles from the rim area and main village roads. This includes an entrance off the south entrance road for the Mather campground/RV campground, a road connection from the employee housing area to the business center, and a new road from Center Road to the Maswik area.
  - Sequence: First
  - Year Estimated: 2003
  - Cost: $2,574,100 capital, $30,000 annual operations
  - Funding: Congress
  - Compliance: Environmental assessment and sec. 106 consultation

- ☐ Further expand the shuttle bus fleet and the area of coverage, including further expansion of maintenance facility.
  - Sequence: Second, after first expansion of fleet
  - Year Estimated: 2004
  - Cost: $11,993,100 capital, $1,500,000 annual operations
  - Funding: Congress
  - Compliance: Covered by phase 1 compliance

- ☐ Finish parking lot at Mather Point.
  - Sequence: Second, after first phase of parking pot
  - Year Estimated: 2005
  - Cost: $2,251,000
  - Funding: Congress
  - Compliance: Covered by phase 1 compliance

The above actions would result in full implementation of the proposed transportation system. Additional parking at the gateway information center in Tusayan could happen as needed and would be privately funded. Additional buses would need to be added to the shuttle fleet as visitation increased.

Information/Education

- ☐ Construct Desert View orientation/transit center.
  - Sequence: Second, after relocation of parking
  - Year Estimated: 2003
  - Cost: $4,266,300 capital, $100,000 annual operations
  - Funding: Congress/private
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

- ☐ Convert the horse barn to interpretive uses.
  - Sequence: Third, same as powerhouse above
  - Year Estimated: 2004
  - Cost: $1,774,600 capital, $75,000 annual operations
  - Funding: Congress/private
  - Compliance: Sec. 106 consultation

- ☐ Convert powerhouse to education center.
  - Sequence: Third, after relocating NPS maintenance and concessioner maintenance/ commissary
  - Year Estimated: 2005
  - Cost: $6,601,500 capital, $250,000 annual operations
  - Funding: Congress/private
  - Compliance: Sec. 106 consultation

The above actions would complete the facility-related components of the information/ education proposals. It would also allow the existing visitor center to be used exclusively as park headquarters.

Visitor Services

- ☐ Convert historic laundry to food service, convert maintenance shop to bike rental shop.
  - Sequence: Third, same as powerhouse
  - Year Estimated: 2001 for bike rental, 2004 for the rest
  - Cost: $3,982,500
  - Funding: Concessioner
  - Compliance: Sec. 106 consultation

- ☐ Construct new trading post and food service at Desert View. Remove the existing trading post.
  - Sequence: Second, after relocation of parking
  - Year Estimated: 2003
  - Cost: $1,310,800
  - Funding: Concessioner
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

- ☐ Add 50 campsites at Desert View.
  - Sequence: First
  - Year Estimated: 2003
  - Cost: $305,200
  - Funding: Congress
  - Compliance: Environmental assessment, sec. 106 consultation

- ☐ Redesign the RV campground at trailer village.
  - Sequence: Fourth, after relocating Pinyon Park trailers and constructing two phases of new housing at Pinyon Park
  - Year Estimated: 2005
  - Cost: $1,080,000
  - Funding: Concessioner
  - Compliance: Categorical exclusion and sec. 106 consultation

- ☐ Convert five dormitories to visitor use.
  - Sequence: Fourth, after relocating Pinyon Park trailers and constructing two phases of housing at Pinyon Park.
  - Year Estimated: 2008
  - Cost: $4,693,100
  - Funding: Concessioner
  - Compliance: Sec. 106 consultation

- Replace Yavapai West units with new, two-story units. This includes removal of the existing motel units as well as removal of the Thunderbird and Kachina Lodges.
  - Sequence: First
  - Year Estimated: 2010
  - Cost: $9,506,700
  - Funding: Concessioner
  - Compliance: Environmental assessment and sec. 106 consultation

The above items, in addition to some rearranging of spaces at the Bright Angel Lodge, Hermits Rest, Lookout Studio, and Desert View Watchtower, would complete the visitor services portion of this alternative.

Housing

- Construct second phase of apartment/dormitory housing at Pinyon Park.
  - Sequence: Third, after relocating trailers and first phase of housing
  - Year Estimated: 2003
  - Cost: $13,968,600 capital, $160,000 annual operations
  - Funding: Congress/concessioner
  - Compliance: Covered by phase 1 compliance
- Construct second phase of housing in Tusayan.
  - Sequence: Second, after first phase
  - Year Estimated: 2005
  - Cost: $7,200,000
  - Funding: Congress/private/concessioner
  - Compliance: Covered by phase 1 compliance
- Complete housing at Desert View.
  - Sequence: Second, after first phase of housing
  - Year Estimated: 2006
  - Cost: $5,307,800 capital, $80,000 annual operations
  - Funding: Congress/concessioner
  - Compliance: Covered by phase 1 compliance

The above actions would satisfy the need for housing as depicted in this alternative through 2010.

Management Support

- Rehabilitate NPS maintenance and warehouse for concessioner maintenance and commissary.
  - Sequence: Second, after relocation of NPS maintenance and warehouse
  - Year Estimated: 2003
  - Cost: $3,395,600
  - Funding: Concessioner
  - Compliance: None
- Remove the public garage function from the general offices building and rehabilitate for additional offices.
  - Sequence: Second, after relocating concessioner transportation maintenance
  - Year Estimated: 2003
  - Cost: $851,500
  - Funding: Concessioner
  - Compliance: Sec. 106 consultation

- Construct new NPS maintenance, NPS administration, and concessioner maintenance facilities at Desert View.
  - Sequence: First
  - Year Estimated: 2007
  - Cost: $2,557,700
  - Funding: Congress/concessioner
  - Compliance: Environmental assessment and sec. 106 consultation

The above actions would allow the removal of the concessioner's personnel building and several third-in-sequence actions described above in the information/education section and visitor services section.

The actions described above are the most important in alternative 2, either because they are on the critical path or because the action itself is important to achieving the vision of the alternative. Many other actions are not listed here, either because they could happen at almost anytime or because they are less important to the success of implementing this alternative.

NORTH RIM — PHASE 1

Transportation

- Construct parking area at CC Hill, access road to it, and transit shelter.
  - Sequence: First
  - Year Estimated: 2001
  - Cost: $1,613,800
  - Funding: Congress
  - Compliance: Environmental assessment, sec. 106 compliance

- Establish a shuttle fleet on the North Rim, with bus shelters and a maintenance facility at Lindbergh Hill.
  - Sequence: First
  - Year Estimated: 2001
  - Cost: $5,070,600 capital, $1,110,900 annual operations
  - Funding: Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

The above actions, in conjunction with expanding the concessioner's bus service to Walhalla Plateau, would complete the transit portion of the proposed transportation system.

Information/Education

- Expand the Kaibab Plateau visitor center at Jacob Lake.
  - Sequence: First
  - Year Estimated: 1998
  - Cost: $1,969,700 capital, $160,000 annual operations
  - Funding: Congress
  - Compliance: Environmental assessment (with U.S. Forest Service) and sec. 106 consultation

- Construct the CC Hill orientation center.
  - Sequence: First, but concurrent with the roads and parking
  - Year Estimated: 2001
  - Cost: $2,246,400 capital, $60,000 annual operations
  - Funding: Congress/private
  - Compliance: Covered by compliance for roads and parking

The above actions would put the National Park Service in a position to begin better distribution of visitors and consider day reservations when warranted.

Visitor Services

- Redesign campground and construct new shower/laundry facility.
  - Sequence: First
  - Year Estimated: 1998
  - Cost: $531,600
  - Funding: Concessioner/Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation
- Convert cabins from employee housing to visitor lodging.
  - Sequence: Second, after constructing new employee housing
  - Year Estimated: 1999
  - Cost: $1,198,100
  - Funding: Concessioner
  - Compliance: Sec. 106 consultation
- Convert the gas station to a bike rental facility.
  - Sequence: Second, after establishing day parking lot and closing the gas station
  - Year Estimated: 2002
  - Cost: $113,600
  - Funding: Concessioner
  - Compliance: None

Housing

- Construct employee housing for both concessioner employees and NPS employees (first phase only).
  - Sequence: First
  - Year Estimated: 1998
  - Cost: $9,100,000 capital, $35,000 annual operations
  - Funding: Congress/concessioner
  - Compliance: Environmental assessment, sec. 106 consultation

Management Support

- Construct new NPS maintenance facility. Rehabilitate historic maintenance buildings for additional office space.
  - Sequence: First
  - Year Estimated: 1999
  - Cost: $4,697,800
  - Funding: Congress
  - Compliance: Environmental assessment or categorical exclusion, sec. 106 consultation

NORTH RIM — PHASE 2

Transportation

□ Construct bike trails on Bright Angel Point and on the Walhalla Plateau.

Sequence:	First
Year Estimated:	2003
Cost:	$9,828,000
Funding:	Congress/concessioner
Compliance:	Environmental assessment and sec. 106 consultation

Information/Education

None

Visitor Services

None

Housing

□ Construct remaining housing.

Sequence:	Second, after first housing phase
Year Estimated:	2007
Cost:	$10,351,700
Funding:	Congress/concessioner
Compliance:	Covered by phase 1 compliance for housing

Management Support

None

APPENDIX D: FLOODPLAINS STATEMENT OF FINDINGS

FLOODPLAINS STATEMENT OF FINDINGS
GRAND CANYON NATIONAL PARK
GENERAL MANAGEMENT PLAN

I. INTRODUCTION

A. Brief Description of the Proposed Action

A Draft General Management Plan and Environmental Impact Statement (GMP/EIS) has been prepared for Grand Canyon National Park, Arizona, and was made available for public review as specified in a Notice of Availability published in the *Federal Register* on March 13, 1995. The alternatives in the Draft GMP/EIS focus on the developed areas of the park (South Rim, North Rim, Tuweep, and the Corridor Trails), although the GMP/EIS also provides guidance for management of the undeveloped areas of the park.

The proposed action in the Draft GMP/EIS does not propose building any new facilities within regulatory floodplains. It does propose maintaining existing facilities located within floodplains in the Corridor Trails area, most of which are historic, and also proposes the following:

1. At Indian Garden, one house now used for storage would be converted back to housing. This house is located on the edge of the 100 year floodplain.

2. At Phantom Ranch, a development concept plan (DCP) would be prepared subsequent to the GMP/EIS which could add employee housing, but which would not increase overnight visitor capacity at the lodging or campground. The DCP could also change the functions of some existing buildings, or remove, replace and/or relocate non-historic buildings, or add a small number of new buildings. All of these facilities are expected to be within the probable maximum floodplain.

B. Brief Site Description

Flood hazard mapping is not needed for the South Rim, North Rim, and Tuweep developed areas which are located at the top of watersheds with no perennial streams and which have more vegetation, deeper soils, and lower gradients than inner canyon areas. The only area where flooding may be a problem on the rims is at the General Offices/Public Garage building in Grand Canyon Village on the South Rim. This historic structure sits in a small drainage with a watershed of about one square mile. A poorly designed culvert intended to carry water around the building routinely plugs during very heavy thunderstorms, causing water to flow through the building. However, this is recognized as a drainage rather than a floodplain problem, and would be corrected through proper culverting.

In the inner canyon, many existing facilities in the Corridor Trail area occur within floodplains. For compliance with the *National Park Service Floodplain Management Guideline* (July 1, 1993) the following Corridor Trail facilities fall within the "regulatory floodplain" and within a "high hazard area" subject to "flash flooding":

* Phantom Ranch, including visitor lodging facilities and campground, visitor day use facilities, employee residences, and livestock facilities. The existing sewage treatment plant is outside the 500-year floodplain required for Class II facilities.

* Indian Garden, including day use facilities and livestock facilities. Employee residences, visitor campground, wastewater treatment facilities, and pumphouse facilities are all outside the regulatory floodplain. However, as mentioned above, a historic building on the edge of the 100-year floodplain may be converted back to employee housing (see Section IV below).

* Cottonwood Camp, including parts of the visitor campground, employee residence, and livestock facilities.

* Roaring Springs, including visitor day use facilities, and water diversion and pumphouse facilities. Although floodplains have not been mapped for this area, these facilities are probably only within the probable maximum floodplain. Employee residences are outside the regulatory floodplain.

* Portions of the trails and water pipelines in the Corridor.

Some popular sites used for remote camping by backcountry hikers and river runners also occur within "high hazard areas" subject to flash flooding in other inner canyon areas outside the Corridor.

C. **Exempted Sites**

The following trails and pipelines meet exemptions in the *NPS Floodplain Management Guidelines*. Portions of the Transcanyon Water Pipeline, the North Rim Water Pipeline, the North Kaibab Trail, and the Bright Angel Trail occur within floodplains and were damaged by flash flooding and/or water-induced landslides during March 1995. Portions of the Old Bright Angel Trail and the Tonto Trail between Indian Garden and the South Kaibab Trail are also within or are crossed by floodplains, but were not significantly damaged during March 1995. The River Trail and the South Kaibab Trail are also within the Corridor Trails area, but are not within floodplains and are usually not subject to any flooding. These facilities meet exemption #2 in the guideline.

The Draft GMP/EIS provides only general guidance for the undeveloped areas which include over 90 percent of the park. Most of this area is managed as wilderness. Most backcountry campsites in the undeveloped areas are within floodplains because hikers seek them out for a source of water and shade. Also, virtually all river running activities and campsites along the Colorado River are within its floodplain. These areas also meet exemption #2.

Most of the structures and facilities within floodplains at Phantom Ranch, Indian Garden, Cottonwood Camp, and Roaring Springs are included in the Cross-canyon Corridor Historic District which is listed on the National Register of Historic Places. Historic structures and sites meet exemption #4 in the NPS guideline. Only the few non-historic structures in those locations, including a few employee residences, do not automatically meet one or more of the exemptions to the guideline.

D. The Nature of Flooding in the Area

Floods are a regular occurrence in tributaries of the Colorado River in the Grand Canyon. Steep slopes, sparse vegetation, shallow soils and occasional large storms provide the conditions necessary to produce large and dangerous flash floods. Developments as well as backcountry campsites have been historically located near water courses in the inner canyon to take advantage of the water supply and riparian vegetation providing shade. This has resulted in a record of floods and damage at the Corridor Trail developments (i.e., Phantom Ranch, Indian Garden, Cottonwood Camp, and the trails as described earlier). Floodplains have been mapped for Phantom Ranch and Indian Garden. They have also been mapped for part of the Cottonwood Camp area, but this is an aggrading system so such delineations are reliable only in the very short term.

Recent and historic floods have caused extensive damage to the North Kaibab Trail (especially just north of Phantom Ranch) and Bright Angel Trail. Although flood damage sometimes results, recent and past floods have provided sufficient time for visitors and employees in the Corridor developed areas to become aware of floods and safely evacuate. However, some injuries have occurred as individuals have apparently tried to cross flooding areas. Most of the existing historic structures located within the floodplains along the Corridor Trails have survived floods with little or, in most cases, no damage. However, historically a few structures have been lost to flooding at Phantom Ranch and Indian Garden and rebuilt at safer locations.

An important factor in understanding Grand Canyon flood hazards is the occurrence of debris flows, which are slurries of sediment and water the consistency of wet concrete that have been found to occur in Grand Canyon tributaries about every 20-50 years (Webb et al. 1989). The significance of debris flows is that traditional floodplain delineations, which assume stable channel geometry and water flows, must be viewed with caution. Debris flows can cause major changes in stream channel geometry and, since they contain more than 60% sediment, can increase the actual volume of material moving by over 2.5 times the normal calculated runoff. Their destructive power is enormous, as they can move 6 foot diameter boulders at about 10 miles per hour, while dropping some portion of the debris in the channel and forcing the rest to take another path. Most debris flows in Grand Canyon are initiated as rockfalls or slope failures which can change a flood contained within the channel into a very dangerous situation in a matter of minutes! In preparing a response to flooding, it is important to recognize that while it is possible to approach within a few feet of Bright Angel Creek when it is flooding at 3500-4000 cubic feet per second (cfs), it could become a debris flow with little warning that would require rapid evacuation of the entire floodplain. Bright Angel Creek has not experienced a debris flow since the construction of the facilities around the turn of the century.

II. JUSTIFICATION FOR USE OF THE FLOODPLAIN

A. Why the Proposed Action Must be Located in the Floodplain, and Investigation of Alternative Sites

Due to the nature of the canyon, there are no feasible alternative locations for the facilities in the Corridor Trail floodplains described above. Developed area and trail locations in the Corridor Trails area were established prior to 1930, and most of the structures and facilities are on the List of Classified Structures and are contributing elements to the National Register historic

district described above. Due to their historic nature, they cannot be moved outside the floodplain.

Even the few non-historic structures and residences cannot be moved because there are no feasible alternatives, and they are needed within the established developed areas for support purposes as well as to minimize environmental impacts. Proposed wilderness boundaries adjoining the edge of the Corridor developed areas confine the facilities to their existing locations. Potential alternate sites are also either steep cliffs, or exposed desert sites unsuitable for visitor and employee facilities.

III. DESCRIPTION OF THE SITE-SPECIFIC FLOOD RISK

Floodplains were delineated at Phantom Ranch and Indian Garden as a result of 1979 floodplain studies conducted by the Army Corps of Engineers and the National Park Service, according to the park's 1984 *Water Resources Management Plan.* Flood control structures have been built at both locations, and are now being updated at Phantom Ranch in response to March 1995 flooding. The campground at Indian Garden was moved out of the floodplain in the mid-1980's, and the former campground area converted to day use only.

On August 19, 1936, a flood occurred on Bright Angel Creek with a peak discharge of 4,400 cubic feet per second (cfs) as measured at the gaging station at Phantom Ranch. On December 6, 1966, another flood occurred which measured 4,000 cfs peak discharge. The 1966 flood destroyed the newly constructed trans-canyon water pipeline, much of the North Kaibab Trail north of Phantom Ranch, and much of the campground, however the tourist facilities at Phantom Ranch were largely unaffected. After this flood, the campground was reconstructed and relocated, and Bright Angel Creek was channelized with rip-rap gabions from north of Phantom Ranch to the southernmost extent of the campground for flood control. On March 5, 1995, a flood of an estimated 3,000 cfs occurred which again caused extensive damage to the trans-canyon water pipeline and trail north of Phantom Ranch, but remained in the channel in the Phantom Ranch area and caused only minor damage to the flood control structures.

On September 15, 1992, a flood on Bright Angel Creek removed about half of the campground at Cottonwood Camp. New campsites have been reconstructed above the extreme floodplain in accordance with a Floodplains Statement of Findings dated October 25, 1993.

Roaring Springs facilities are primarily at risk from water-induced landslides or slope failure near the spring openings, or a debris flow initiated further up Roaring Springs Canyon. A colluvial deposit resting in the channel of this canyon is expected to be the source for a debris flow affecting the Roaring Springs area and Bright Angel Creek during a future large storm event.

Flood evacuation procedures are part of the standard operating procedures for employees stationed at the developed sites in the Cross Canyon Corridor. A ranger is on duty at all times at Phantom Ranch and Indian Garden, and seasonally at Cottonwood Camp. A pump operator is on duty seasonally at Roaring Springs pumphouse.

IV. DESCRIPTION OF ACTIONS TO MINIMIZE HARM TO FLOODPLAIN VALUES, AND RISK TO LIFE AND PROPERTY

A Flood Warning and Evacuation Plan for the Corridor Trail area will be developed and implemented. Items to be considered in this plan to minimize flood hazards and exposure would include, but not be limited to: posting permanent flood education signs which direct people to higher ground during a flood and point the way; education materials readily available to all Corridor Trail visitors and employees; warning and evacuation procedures; employee training; flood control structures; and an automated warning system. Fossil fuels, paint, and similar items used for operations and maintenance would be stored above the floodplain. Education materials about flooding and flood safety would also be provided to backcountry and river users.

Structures would not be used for employee or visitor housing in the Cross Canyon Corridor unless flood hazards could be adequately mitigated.

Any construction activities in the floodplains would seek to minimize effects on the creek ecosystems. The primary impact of maintaining existing historic trails, structures, and facilities within floodplains is that flooding could eventually cause pieces of the trails, structures or facilities to be introduced into the creek ecosystem. It is likely that not all pieces of flood-transported material would be removed from the creekbeds. Also, construction materials, including cements and oils, could be introduced into the creeks during reconstruction activities following a flood. Flood control structures also often have far-reaching impacts on creek ecosystems.

Measures to mitigate flood hazards which have already been employed include: moving the campground and associated facilities at Indian Garden out of the floodplain and converting the former campground area to day-use only; floodplain mapping; hardening the channel at Phantom Ranch; flood control structures at Indian Garden and Cottonwood; warning visitors through signs and educational materials and programs; and relocating several campsites at Cottonwood.

V. SUMMARY AND CONCLUSIONS

The National Park Service has determined that the facilities described are essential to the operation of the Cross Canyon Corridor area of Grand Canyon National Park, and that retaining and maintaining the facilities in their current and traditional locations within the floodplains is the only reasonable alternative. Based upon the above considerations, the National Park Service knowingly assumes a risk in maintaining existing facilities within floodplains in this area. We have taken measures to determine what the risk is and, within reason, have reduced it to an acceptable level. Mitigation measures will be further improved as discussed in Section IV. Changes to some of the existing facilities may be considered in future site-specific planning and design, such as for the Phantom Ranch DCP and culverting in Grand Canyon Village discussed above. Site-specific environmental compliance documentation would be prepared for such projects and would meet the requirements of the NPS Floodplain Management Guideline.

As mitigated, the proposed action in the GMP/EIS will provide acceptable risk to human safety and property, and will minimize potential effects of the facilities on floodplain ecosystems.

Reference: Webb, Robert H., Patrick T. Pringle, and Glenn R. Rink, 1989. *Debris Flows from Tributaries of the Colorado River, Grand Canyon National Park, Arizona.* US Geological Survey Professional Paper 1492. 39 p.

Recommended: _____ 6-14-95
Chief, Water Resource Division — Date

Recommended: _____ 6/19/95
Regional Safety Officer, Western Region — Date

Recommended: _____ 6-19-95
Regional Compliance Officer, Western Region — Date

Approved: _____ 6/20/95
Regional Director, Western Region — Date

SELECTED REFERENCES

Add the following references:

Grand Canyon Improvement Association

1994 "The Tusayan Community Development Plan." Report on file at Denver Service Center.

National Park Service, U. S. Department of the Interior

1965 *NPS-48: Concessions Policy Guideline.* Washington, DC.

1984 *Water Resources Management Plan, Grand Canyon National Park.* Grand Canyon National Park, Arizona.

1985b *Environmental Assessment, Development Concept Plan, Lees Ferry.* Glen Canyon National Recreation Area, Arizona.

1994a *Grand Canyon National Park, Architectural Character Guidelines.* Denver Service Center.

1994e *Report to Congress, Report on Effects of Aircraft Overflights on the National Park System.* Washington, DC.

PLANNING TEAM AND CONSULTANTS

Planning Team

Page 317, column 1 — Add the following individuals:

Denver Service Center
Randy Fong, Architect

Washington Office
Dave Sharrow, Water Resources

Consultants. Page 317, column 2 — Make the following changes:

Washington Office — Add the following names:
Jacob Hoogland, Chief, Environmental Quality Division
Paul Christensen, Water Resources

Grand Canyon National Park — The correct spelling is Maureen Oltrogge.

Kaibab National Forest — Change to read as follows:
Raymond Brown, District Ranger, North Kaibab Ranger District
George Gibbons, District Ranger, Tusayan Ranger District

Others — Add the following individual (socioeconomic analysis and impacts):
Jim Boyer, Boyer Consulting, Helena, MT

Workgroups. Page 317, column 3 — Make the following changes:

South Rim Community Workgroup — Add Mayflower/Laidlaw Contract Services.

North Rim Workgroup, page 318, column 1 — Change Southern Utah Association of Governments to Five County Association of Governments

☆U.S. GOVERNMENT PRINTING OFFICE 1995—841-802

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NPS D-298A July 1995