



# 2008 Uplake Development Concept Plan / Environmental Assessment

October 2008



**U.S. Department of the Interior  
National Park Service**

**2008 Uplake Development Concept Plan /  
Environmental Assessment**

**Glen Canyon National Recreation Area  
Garfield, Kane and San Juan Counties, Utah**

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**Abstract**

Glen Canyon National Recreation Area (NRA) encompasses more than 1.2 million acres of land and water in northern Arizona and southeastern Utah. The principal feature of the area is Lake Powell, which was formed by construction of Glen Canyon Dam on the Colorado River in 1963. To implement development within Glen Canyon NRA, the National Park Service uses development concept plans (DCPs) to define the facilities and activities necessary to meet the general goals and objectives set forth in the General Management Plan (GMP). This DCP provides guidance for development for approximately 15 to 20 years. The project area covered in this planning effort includes three marinas (Bullfrog, Halls Crossing and Hite) within Glen Canyon NRA, spanning three counties in Utah. Collectively, these areas are referred to as the uplake area.

The previous Uplake DCP, which was completed in 2006, needed updating to address issues related to the addition and management of floating facilities at Bullfrog and Halls Crossing and the possibility of a primitive type launch ramp at Farley Canyon. The 2006 DCP included the No Action Alternative as well as two action alternatives: B and C. The Finding of No Significant Impact (FONSI) for the implementation of Alternative B was signed on January 24, 2007.

The 2008 Uplake DCP includes the No-Action Alternative (Alternative A) and the Action Alternative (Alternative B from the 2006 DCP). No other alternatives were considered.

Alternative B is the National Park Service proposed action and the environmentally preferred alternative. The majority of predicted adverse impacts under Alternative B would result from construction of new and expanded facilities. All short-term adverse impacts are predicted to be negligible to minor and adverse.

Long-term adverse impacts would be negligible to minor for geology and soils, water resources (waters of the United States, including wetlands and floodplains), wildlife, threatened and endangered species and species of concern / designated critical habitat, visual resources, archeological resources and ethnographic resources. Long-term minor to moderate adverse impacts would occur to air quality. Long-term adverse impacts to soundscapes would vary seasonally with levels of human-caused sound and would range from negligible to moderate. Long-term adverse impacts to vegetation would be moderate.

Construction of new facilities or improvements to existing facilities would also result in short- and long-term beneficial impacts. Short-term beneficial impacts to socioeconomics would be minor. Long-term beneficial impacts would generally range from negligible to minor to vegetation, visual resources, park operations, public health and safety and transportation. Long-term beneficial impacts may reach moderate levels for visitor use and experience and socioeconomics.

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## ACRONYMS AND ABBREVIATIONS

amsl	Above Mean Sea Level
ARAMARK	ARAMARK Sports and Entertainment Services, Inc.
BLM	Bureau of Land Management
BMP	Best Management Practice
BAOT	Boats At One Time
BP	Before Present
CCLR	Carrying Capacity Launch Rates
CFR	Code of Federal Regulations
dB	Decibel
dBA	A-Weighted Decibel
DCP	Development Concept Plan
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
GMP	Glen Canyon National Recreation Area General Management Plan and Environmental Impact Statement, 1979
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act of 1969
NPS	National Park Service
NRA	National Recreation Area
NRHP	National Register of Historic Places
PL	Public Law
ROS	Recreational Opportunity Spectrum
RRU	Recreation and Resource Utilization
RV	Recreational Vehicle
SH	State Highway
SHPO	State Historic Preservation Office
Typ.	Typical
UDOT	Utah Department of Transportation
Uplake	Uplake Districts of Lake Powell
Uplake DCP	Uplake Districts of Lake Powell included in the Development Concept Plan
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

## Purpose and Need

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## PURPOSE AND NEED

### INTRODUCTION

Glen Canyon National Recreation Area (NRA) encompasses more than 1.2 million acres of land and water in northern Arizona and southeastern Utah. The southern boundary is contiguous with Navajo Nation lands. Other boundaries adjoin Grand Canyon National Park, Capitol Reef National Park, Canyonlands National Park and Rainbow Bridge National Monument, all managed by the National Park Service (NPS). The recreation area also adjoins areas administered by the Bureau of Land Management (BLM), including Grand Staircase–Escalante National Monument and Vermilion Cliffs National Monument (which includes the Paria Canyon Wilderness).

The principal feature of the area is Lake Powell, which was formed by the Glen Canyon Dam on the Colorado River. At full pool, approximately 3,700 feet above mean sea level (amsl), the lake occupies approximately 163,000 surface acres, with about 1,960 miles of shoreline. The reservoir stores approximately 27 million acre-feet of water.

Glen Canyon NRA provides boating, fishing, hiking and camping opportunities to approximately 2 million people per year. As shown in figure 1, recreational activities and supporting facilities are concentrated at six developed areas: Antelope Point, Bullfrog, Dangling Rope, Halls Crossing, Hite and Wahweap. This development concept plan (DCP) includes proposed management actions for three of these areas: Hite, Halls Crossing and Bullfrog (2008 Uplake DCP).

### PURPOSE AND SIGNIFICANCE OF GLEN CANYON NATIONAL RECREATION AREA

National park system units are established by Congress to fulfill specific purposes based on the unit's unique resources. A unit's purpose, as established by Congress, is the foundation on which later management decisions are based to conserve resources while providing for the enjoyment of future generations. The purpose and significance of Glen Canyon NRA and its broad mission goals are derived from its enabling legislation and are summarized in the *Glen Canyon National Recreation Area General Management Plan and Environmental Impact Statement* (GMP) (NPS 1979) and strategic plan (NPS 2005f).

Glen Canyon NRA was established by enactment of Public Law (PL) 92-593 on October 27, 1972. The legislation defines the purposes of the recreation area: “. . .to provide for public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto. . . and to preserve scenic, scientific and historic features contributing to public enjoyment of the area” (NPS 1979).

The primary objective of the NRA, as established in the GMP, is “. . . to manage the recreation area so that it provides maximal recreational enjoyment to the American public and their guests” (NPS 1979).

The enabling legislation for Glen Canyon NRA states that “The Secretary shall administer, protect and develop the recreation area in accordance with the provision of the [Organic Act]. . . and with any other statutory authority available to him for the conservation and management of natural resources” (16 *United States Code* [USC] 459f-5(a)).



Glen Canyon National Recreation Area

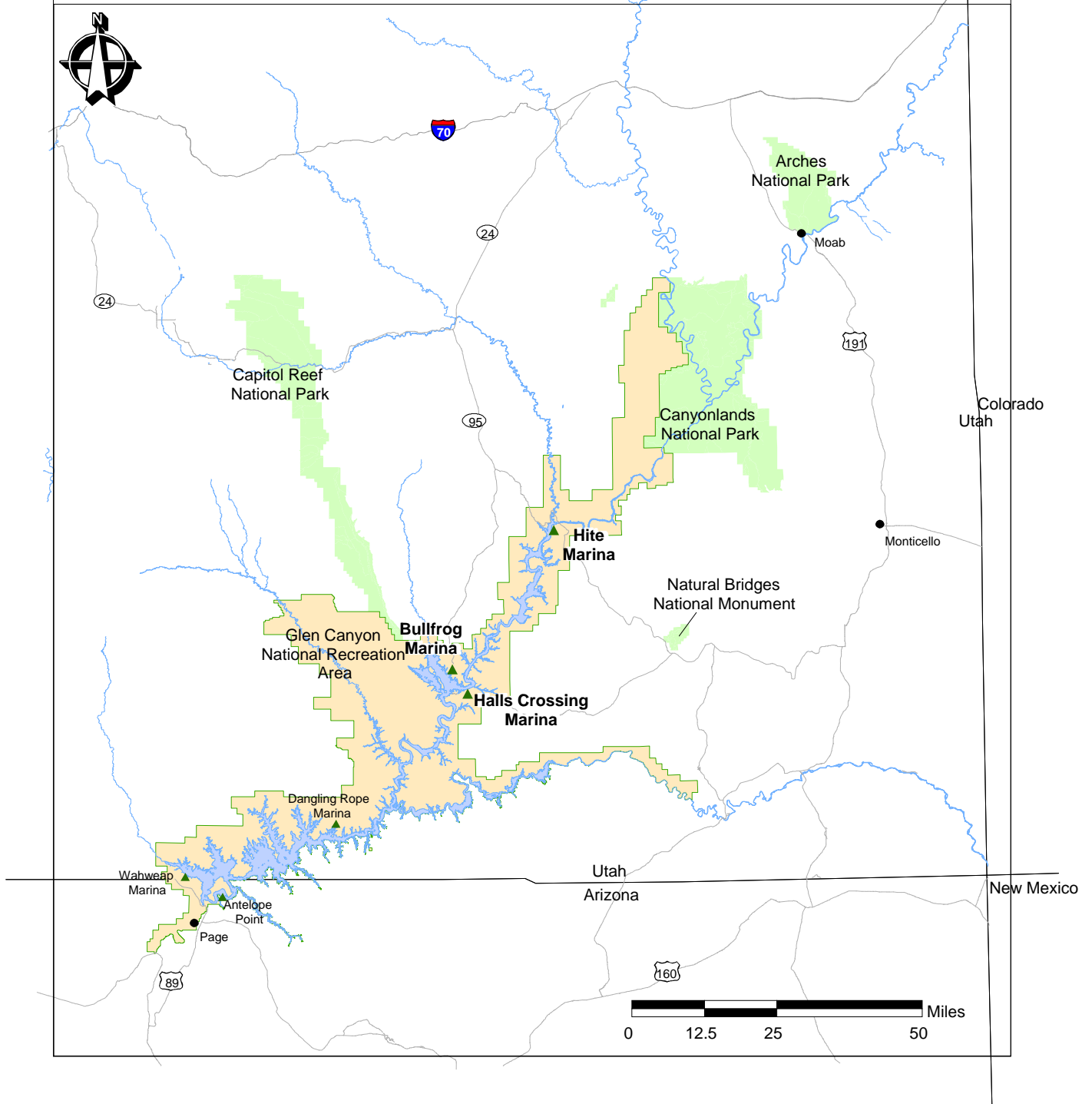


FIGURE 1. GLEN CANYON NATIONAL RECREATION AREA

This act also specifies that “nothing. . . shall affect or interfere with the authority of the Secretary. . . to operate Glen Canyon dam and reservoir” for the purposes of the Colorado River Storage Project Act, the achievement of which is the responsibility of the Bureau of Reclamation.

As stated in the GMP (NPS 1979) and strategic plan (NPS 2005f), Glen Canyon NRA is important because of the following:

- Glen Canyon NRA offers a tremendous diversity of both water- and land-based recreational opportunities.
- Glen Canyon NRA contains Lake Powell, the second-largest man-made lake in North America, which provides both a unique opportunity to recreate in a natural environment and a transportation corridor to remote backcountry areas of Glen Canyon NRA.
- Glen Canyon NRA is in the heart of the Colorado Plateau region, which offers a unique combination of water and desert environments. It offers a natural diversity of rugged water- and wind-carved canyons, buttes, mesas and other outstanding physiographic features.
- The climate and physical features of Glen Canyon NRA have created local environments favorable to the preservation of scientifically valuable objects, sites, populations, habitats, or communities that are important in and of themselves and also provided opportunities to add to our understanding of past or ongoing events.
- Evidence of 11,000 years of human occupation and use of resources within Glen Canyon NRA provides a continuing story of prehistoric, historic and present-day affiliation of humans and their environment.
- Glen Canyon NRA constitutes a substantial part of the outstanding public lands of the Colorado Plateau.

## **PURPOSE AND NEED FOR ACTION**

To implement development within Glen Canyon NRA, the National Park Service uses DCPs that build on the general goals and objectives set forth in the GMP. The DCPs provide guidance for development for an approximate 15- to 20-year period. This planning effort will guide future development of the three marina areas: Bullfrog, Halls Crossing and Hite (figure 2). Collectively, the area containing these three marinas is referred to as the uplake area.

The previous Uplake DCP, which was completed in 2006, needed updating to address issues related to the addition and management of floating facilities at Bullfrog and Halls Crossing and the possibility of a primitive type launch ramp at Farley Canyon. The 2006 DCP included the No-Action Alternative as well as two action alternatives: B and C. The Finding of No Significant Impact (FONSI) for the implementation of Alternative B was signed on January 24, 2007. Because this DCP (2008 Uplake DCP) will be used the basis for future management decisions for uplake area facilities and future concessions contracts for the uplake area, the NPS has decided to include in its entirety Alternative B from the 2006 Uplake DCP with a more accurate accounting of slips and buoys as well as changes in the management of the private rental slips and buoys (wet moorage) and include the possibility of a primitive style launch ramp at Farley Canyon. DCPs are planning level documents; therefore detailed planning has not yet taken place for the projects included in this document. When the projects are designed, additional NEPA evaluation will be done to ensure that all new or unforeseen impacts are analyzed

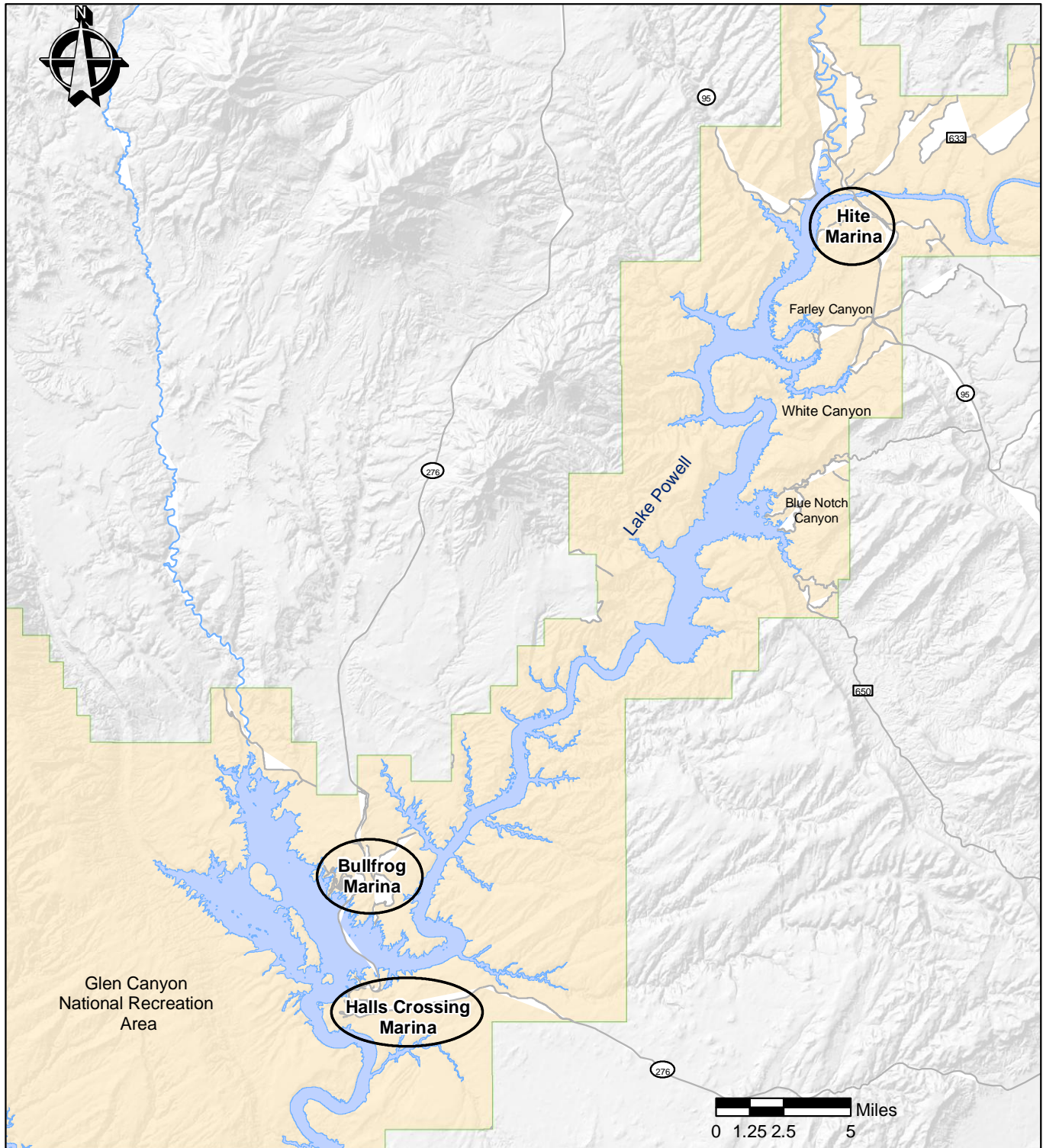


FIGURE 2. UPLAKE DEVELOPED AREAS

During the development of the 2006 and 2008 DCP, the uplake area experienced periods of increased visitation, drought and unprecedented low lake levels. Changes in visitation and user demands and low lake levels that affect water-based facilities, require evaluation of future service needs and anticipated physical limitations.

The Uplake DCP is needed to:

- Determine how to provide future visitor access to the uplake developed areas and tributaries at varying lake levels.
- Determine the need for and scope of additional visitor services in the uplake developed areas in order to address changes in visitation numbers and visitor expectations.
- Consider the impacts of fluctuating lake levels on visitor access and the provision of services.
- Evaluate the impacts of existing developments on the resources within the uplake developed areas.

The overall purpose of the Uplake DCP is to evaluate a range of alternatives for the future management of the uplake marinas and associated developed areas at Bullfrog, Halls Crossing and Hite to ensure the protection of NRA resources and values while offering recreation opportunities as provided for in the NRA's enabling legislation, purpose, mission and goals.

To address uplake needs and meet the overall purpose of the Uplake DCP, the following objectives were developed through the planning process:

- Continue to provide visitor access to the uplake areas and tributaries.
- Provide opportunities for a variety of visitor experiences at the uplake areas.
- Provide necessary and appropriate visitor services at the uplake areas, consistent with current and anticipated visitation.
- Accentuate different types of services at each developed area.
- Design facilities and services within uplake developed areas to accommodate fluctuating lake levels.
- Guide efficient and effective organization of services within uplake developed areas.

This DCP/Environmental Assessment (EA) is being prepared to analyze the proposed action and alternatives and their impact on the environment. The EA is incorporated into the DCP, as appropriate. The EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the National Historic Preservation Act of 1966 and regulations of the Council on Environmental Quality (40 *Code of Federal Regulations* [CFR] 1508.9).

## **Relationship to Other Plans and Policies**

Current plans and policy that pertain to this proposal include the 1979 Glen Canyon National Recreation Area General Management Plan (NPS 1979) and the 2006 National Park Service Management Policies (NPS 2006). Outlined below is more information pertaining to how this proposal meets the goals and objectives of these plans and policies:

- This project is consistent with the 1979 General Management Plan which proposes the development of three marina areas in the uplake portion of the park. The General Management Plan identifies the

actions, impacts and mitigating measures necessary to resolve the issues facing the park. Many of these issues are related to the management of recreational opportunities at the park.

- The proposal is consistent with the goals and objectives of the *2006 National Park Service Management Policies* (NPS 2006) which states that major park facilities within park boundaries should be located so as to minimize impacts to park resources. The proposed new and expanded facilities are located in the existing developed areas to minimize harm to park resources.

## **IMPAIRMENT**

*National Park Service's Management Policies(2006)* requires analysis of potential effects to determine whether or not actions would impair park resources (NPS 2006b). The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

1. necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
2. key to the natural or cultural integrity of the park; or
3. identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors and others operating in the park. A determination on impairment is made in the conclusion section for each of the resource topics carried forward in this chapter.

## **UNACCEPTABLE IMPACTS**

The impact threshold at which impairment occurs is not always readily apparent. Therefore, the National Park Service will apply a standard that offers greater assurance that impairment will not occur. The Service will do this by avoiding impacts that it determines to be unacceptable. These are impacts that fall short of impairment, but are still not acceptable within a particular park's environment. Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or



proposed uses and determine whether the associated impacts on park resources and values are acceptable.

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. Therefore, for the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would:

- be inconsistent with a park's purposes or values, or
- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- unreasonably interfere with
  - park programs or activities, or
  - an appropriate use, or
  - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.
  - NPS concessioner or contractor operations or services.

In accordance with Management Policies, park managers must not allow uses that would cause unacceptable impacts to park resources. To determine if unacceptable impact could occur to the resources and values of Glen Canyon NRA, the impacts of proposed actions in this EA were evaluated based on the above criteria. A determination on unacceptable impacts is made in the *Conclusion* section for each of the resource topics carried forward in this chapter.

## APPROPRIATE USE

Section 1.5 of Management Policies (2006), *Appropriate Use of the Parks*, directs that the National Park Service must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on, park resources and values. A new form of park use may be allowed within a park only after a determination has been made in the professional judgment of the park manager that it will not result in unacceptable impacts.

Section 8.1.2 of Management Policies (2006), *Process for Determining Appropriate Uses*, provides evaluation factors for determining appropriate uses. All proposals for park uses are evaluated for

- ☐ consistency with applicable laws, executive orders, regulations and policies;
- ☐ consistency with existing plans for public use and resource management;
- ☐ actual and potential effects on park resources and values;
- ☐ total costs to the Service; and
- ☐ whether the public interest will be served.

Park managers must continually monitor all park uses to prevent unanticipated and unacceptable impacts. If unanticipated and unacceptable impacts emerge, the park manager must engage in a thoughtful, deliberate process to further manage or constrain the use, or discontinue it.

The proposed facilities related to the improvement of the developed areas are common and vital structures in most park units. Proper location and sizing, as well as construction materials and methods would ensure that unacceptable impacts to park resources and values would not occur. The proposed upgrades, improvements and new facilities are consistent with the park's GMP and other related park plans. With this in mind, the NPS finds that actions identified in this 2008 Uplake DCP are acceptable uses at Glen Canyon NRA.

## Public Scoping

Scoping is a process to identify the resources that may be affected by a project proposal and to explore possible alternative ways to achieve the goals and objectives of the proposal while minimizing adverse impacts. Glen Canyon NRA staff conducted both internal and external scoping with the public and interested and affected groups and agencies. The NPS identified members of an internal interdisciplinary team that met multiple times in 2008 to discuss project objectives, issues, impact topics, possible alternatives and the results of public scoping. The team consisted of park division managers from Glen Canyon NRA and specialists in cultural resources, natural resources, maintenance, visitor protection and Native American relations. Public Scoping notices were released to the public through letters, press releases and on the NPS Park Planning Website (<http://parkplanning.nps.gov/glca>). All comments received were considered during the development of the alternatives.

Concurrently, consultations with the U.S. Fish and Wildlife Service (USFWS), the Arizona State Historic Preservation Officer (SHPO) and Native American tribes were initiated. Based on the responses received and subsequent team communications, the impact topics and action alternatives were refined and finalized prior to analysis.

Additional details concerning public scoping and consultation documented for this project are provided in the *Consultation and Coordination* chapter of this EA and in Appendix A.

As a result of the internal and public scoping process, the following issues were identified:

- Issues related to joint management of floating facilities at Bullfrog and Halls Crossing
- Possibility of a primitive type of launch ramp at Farley Canyon.

## ISSUES AND IMPACT TOPICS

Specific impact topics were developed for discussion focus and to provide comparison of the environmental consequences of each alternative. A brief rationale for the selection of each impact topic, as well as the rationale for dismissing specific topics from further consideration follows.

### Impact Topics Selected for Detailed Analysis

#### Land Use

Bullfrog, Halls Crossing and Hite developed areas are located in southern Utah, the uplake district of Glen Canyon NRA. These areas have been designated as developed areas under the GMP (NPS 1979). The alternatives considered in this document may affect present or future land use in the developed areas and surrounding lands. Therefore, land use will be addressed as an impact topic.

## Soils and Geology

Glen Canyon NRA and the associated uplake developed areas are in the Colorado River watershed of southeastern Utah, which is part of the larger Colorado Plateau system. Low-lying areas in the park were inundated by Lake Powell, leaving upland areas that generally consist of rock outcrops and thin soils. Because the proposed action would involve ground-disturbing activities, soils and geology will be addressed as an impact topic.

## Paleontology

Little is known about the paleontological resources of Glen Canyon NRA. Examination of the analysis area by NRA staff determined that there is a potential for paleontological resources within each of the uplake developed areas that could be impacted by development activities (Gillette 2004). Therefore, paleontology will be addressed as an impact topic.

## Air Quality

Section 118 of the 1963 Clean Air Act (42 USC 7401 *et seq.*) requires a park to meet all federal, state and local air pollution standards. Glen Canyon NRA is designated a class II air quality area under the Clean Air Act, as amended. The Clean Air Act states that the federal land manager has an affirmative responsibility to protect recreation area air quality-related values (including visibility, plants, animals, soils, water quality, cultural resources and visitor health) from adverse pollution impacts. Because air quality could be impacted by decisions made as part of the DCP, air quality will be addressed as an impact topic.

## Water Resources

Lake Powell's importance as a water-based resource requires that water quality be continually monitored. The Clean Water Act and supporting criteria and standards promulgated by the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality apply to all surface waters in Glen Canyon NRA. Runoff from developed areas and other discharges are prohibited in Lake Powell to preserve lake water quality. However, changes proposed under the various alternatives could result in the potential for additional water settling areas and, if not properly implemented, could impact water quality. Therefore, water resources will be addressed as an impact topic.

## Waters of the United States, including Wetlands

The U.S. Army Corps of Engineers (USACE) has jurisdiction for the protection of waters of the United States (including wetlands) under section 404 of the Clean Water Act. Waters of the United States are defined as waters that are navigable for interstate commerce and their tributaries. The Colorado River has been identified as a navigable waterway. Additionally, wetlands are defined as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3[b]). Proposed actions that have the potential to adversely impact wetlands would be addressed in a wetlands statement of findings. The developed areas at the uplake marinas include potential wetlands areas. Therefore, waters of the United States and wetlands will be addressed as an impact topic.

## Floodplains

Executive Order 11988 (*Floodplain Management*) requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Certain construction within a 100-year floodplain requires preparation of a floodplain statement of findings. The 100-year floodplain has been established at the 3,700-foot (amsl) level by the Federal Emergency Management Agency. The developed areas have temporary or portable facilities within the 100-year floodplain. Therefore, floodplains will be addressed as an impact topic.

## Vegetation

NEPA requires an examination of impacts on all components of affected ecosystems. NPS policy is to maintain all components and processes of naturally evolving recreation area ecosystems, including the natural abundance, diversity and ecological integrity of plants and animals (NPS 2006a). Vegetation has the potential to be impacted as a result of the alternatives under consideration. Therefore, vegetation will be addressed as an impact topic.

## Wildlife

NEPA requires an examination of the impacts on all components of affected ecosystems. NPS policy is to maintain all components and processes of naturally evolving recreation area ecosystems, including the natural abundance, diversity and ecological integrity of plants and animals (NPS 2006a). Wildlife has the potential to be impacted as a result of the alternatives under consideration. Therefore, wildlife will be addressed as an impact topic.

## Threatened and Endangered Species and Species of Concern / Designated Critical Habitat

The Endangered Species Act of 1973 requires examination of impacts on all federally listed threatened or endangered species. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining and sensitive species. There is habitat for threatened and endangered species within and adjacent to the uplake developed areas. In addition, there is designated critical habitat in the uplake areas. For these reasons, threatened and endangered species and species of concern/designated critical habitat will be addressed as an impact topic.

## Visual Resources

The NPS strives to preserve and protect visual resources to ensure a quality visitor experience. Visual resource classes and policies have been outlined by the NPS in the GMP (NPS 1979) and NPS *Management Policies 2006*. Alternatives could influence the visual quality and lightscapes of the immediate Bullfrog, Halls Crossing and Hite developed areas. Therefore, visual resources will be addressed as an impact topic.

## Soundscapes

NPS *Management Policies 2006* (section 4.9) require the agency to preserve, to the greatest extent possible, the natural soundscapes of park units. Directors Order – 47: *Soundscape Preservation and Noise Management* (NPS 2000a) defines appropriate and inappropriate sound. Although most sound-producing activities defined in the alternatives would be consistent with the enabling legislation, the proposed relocation and construction activities could cause impacts. Therefore, soundscapes will be addressed as an impact topic.

## Archeological Resources

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); NEPA; NPS Director's Order – 28: *Cultural Resource Management Guideline* (NPS 1998a); NPS *Management Policies 2006* (NPS 2006a) and Director's Order – 12: *Conservation Planning, Environmental Impact Analysis and Decision-making* (NPS 2001b) require the consideration of impacts on cultural resources either listed or eligible for listing on the National Register of Historic Places (NRHP).

There are archeological resources present within and in close proximity to the developed areas evaluated in this DCP/EA. Therefore, archeological resources will be addressed as an impact topic.

The actions described in this document are subject to Section 106 of the National Historic Preservation Act, under the terms of both the 1991 programmatic agreement between the National Park Service and the Advisory Council on Historic Preservation and the 1995 service-wide programmatic agreement (NPS 1995) between the National Park Service, the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers. This document would be submitted to the Utah state historic preservation office (SHPO) for review and comment.

## Ethnographic Resources

The National Park Service defines ethnographic resources as any

*. . . site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it* (Director's Order – 28: *Cultural Resource Management Guideline*, p.191).

Many Glen Canyon NRA resources are considered sacred by American Indians. An area in the vicinity of Halls Crossing has been designated as a traditional cultural property. Because ethnographic resources are known to exist at or in proximity to the analysis area, ethnographic resources will be addressed as an impact topic.

## Visitor Use and Experience

The Glen Canyon NRA receives approximately 2 million visitors per year, with peak visitation occurring during the months of June, July and August. Visitation and the visitor experience are affected by changing lake elevations and by changes in visitor facilities. Because facility expansion and upgrades included in the alternatives under consideration are intended to improve visitor use and experience at varying lake levels, the topic of visitor use and experience will be addressed as an impact topic.

## Socioeconomic Environment

Activities associated with the alternatives relating to visitor service improvements and operations could directly affect the socioeconomics of the developed areas and surrounding region, including the demand for services in the developed areas, the profitability of commercial services contracts within the recreation area, the demand for services and economic effects of tourism in adjacent communities. Thus, the socioeconomic environment will be addressed as an impact topic.

## Park Operations

Park operations would be influenced by future development and visitation as a result of implementation of any of the alternatives. Therefore, park operations will be addressed as an impact topic.

## Public Health and Safety

*NPS Management Policies 2006* state that the National Park Service is committed to providing appropriate, high-quality opportunities for visitors to enjoy park units. Further, the NPS will strive to protect human life and provide a safe visit (NPS 2001a). Based on the potential for health and safety impacts as a result of activities associated with the alternatives at Bullfrog, Halls Crossing and Hite developed areas, public health and safety will be addressed as an impact topic.

## Transportation

*NPS Management Policies 2006* (section 9.2) establishes guidelines for development, operation and maintenance of roadways and trails on NPS-managed lands. The alternatives under consideration could impact transportation and change visitor travel and distribution; therefore, transportation will be addressed as an impact topic.

## Impact Topics Dismissed from Further Analysis

### Historic Structures

The National Historic Preservation Act (16 USC 470 *et seq.*), NEPA, the NPS Organic Act, *NPS Management Policies 2006*, Director's Order – 12: *Conservation Planning, Environmental Impact Analysis and Decision-making* (2001) and Director's Order – 28: *Cultural Resources Management Guideline* require the consideration of impacts on cultural resources, including historic structures either listed or eligible to be listed on the NRHP. For the purposes of analysis in this DCP/EA, historic resources are those man-made sites, structures, features, or objects that date from the time of the arrival of European Americans in approximately 1850, up to the middle of the 20th century (i.e., at least 50 years of age). Historic sites, by definition, can be of American Indian association, but are most often associated with European American use and occupation.

Glen Canyon NRA's historic resources include historic structures, trails, cultural landscapes and archeological sites. The following NRHP-eligible historic properties and districts are located in the NRA: Wahweap Employee Trailer Village Cabins, Lonely Dell Ranch National Historic District, Defiance House Ruin, Hole-In-The-Rock and the Davis Pictograph Panel. Glen Canyon NRA contains

no national historic landscapes. There are no known historic structures within the areas potentially affected by the Uplake DCP. Therefore, historic structures were dismissed from detailed analysis.

## Cultural Landscapes

A cultural landscape is defined by the National Park Service as “. . .a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.” Cultural landscapes may be expressed in a variety of ways such as patterns of settlement or land use, buildings and structures, systems of circulation and transportation, or parks and open spaces, or any related combination thereof. There is a potential cultural landscape along Hole-in-the-Rock trail outside of the project areas, which may be evaluated in the future for cultural landscape significance. The uplake development areas covered under this DCP/EA do not contain any known cultural landscapes; therefore, this topic was dismissed from detailed analysis.

## Museum Collections

The actions described in this DCP / EA are subject to Director’s Order – 24: *NPS Museum Collections Management* (NPS 2000b). Museum collections are exhibited at the visitor centers at the developed areas; however, the visitor centers are not proposed for change under the DCP. Therefore, museum collections were dismissed from detailed analysis.

## Wild and Scenic Rivers, Other Unique Natural Areas

The areas of Glen Canyon NRA that would be affected by alternatives considered in this DCP/EA do not contain wild and scenic rivers or other unique natural areas as referenced in 40 CFR 1508.27. Therefore, this topic was dismissed from detailed analysis.

## Prime and Unique Farmlands

In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture, Natural Resource Conservation Service, as prime or unique. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other lands, except urban built-up land or water). Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. The soils in the analysis area have not been classified as prime or unique farmlands by the Natural Resource Conservation Service (see discussion under “Soils and Geology”). Thus, the topic of prime and unique farmlands was dismissed from detailed analysis.

## Environmental Justice

Presidential Executive Order 12898 (*General Actions to Address Environmental Justice in Minority Populations and Low-income Populations*) requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the EPA, environmental justice is the

*. . . fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies.*

The goal of “fair treatment” is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

The area surrounding Glen Canyon NRA contains both minority and low-income populations and communities. As a whole, these communities would not be disproportionately and/or adversely affected by the alternatives considered in this plan. Potential impacts to these communities do include socioeconomic opportunities generated by employment and potential business opportunities. These impacts are discussed in the “Socioeconomic Environment” impact section.

The alternatives do not result in any identifiable adverse human health effects or impact the natural environment that would disproportionately affect any minority or low-income population or community because all of the proposed actions fall within the boundary of the NRA. Therefore, environmental justice was dismissed from detailed analysis.

#### Indian Trust Resources

Indian trust resources are assets that the United States holds and administers for Indian tribes. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources and treaty rights and represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources within Glen Canyon NRA. Therefore; Indian trust resources was dismissed from detailed analysis.



## Alternatives

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# ALTERNATIVES

## INTRODUCTION

The “Alternatives” section describes both the action and no action development scenarios for the Bullfrog, Halls Crossing and Hite developed areas. These alternatives were developed to consider a range of management actions for the uplake areas that would address changes in visitation numbers, visitor expectations and evaluate facilities and operations as lake levels fluctuate due to drought.

Alternative A (the No-Action Alternative) describes a management action that would continue the present level of facilities and operations to maintain the status quo. The No-Action Alternative provides a basis for comparing changes in management actions and evaluating the consequences for each alternative. Should the No-Action Alternative Be selected, the National Park Service would continue to manage the facilities and operations as they currently exist, with the exception of construction projects that are actively in progress that were based on decisions approved in previous planning.

Alternative B considers a range of options and changes to the existing facilities and services at Bullfrog, Halls Crossing and Hite. Alternative B proposes changes to current facilities through upgrades and defined maximum expansion of specific facilities to address future needs.

Table 1 provides a snapshot of most of the components or actions in the alternatives. The river runner takeout and uplake airstrips are described in the No-Action Alternative narrative following the tables. All other components have expanded descriptions after the tables for further explanation of existing conditions and proposed changes.

Six project objectives are defined under the purpose and need for this project. Table 6 evaluates the project alternatives against these six objectives, providing a rationale for whether each meets, partially meets, or does not meet the objectives. Because Alternative B meets all six project objectives and is the environmentally preferred alternative, it has been identified as the NPS preferred alternative (and is the proposed action for Section 106 compliance). The preferred alternative defines the rationale for the action in terms of resource protection and management, visitor and operational use, costs and other applicable factors. All actions described in the preferred Alternative Are consistent with the approved 1979 GMP and related recreation area documents.

**Table 1 Comparison of Alternatives**

<b>Designation</b>	<b>Alternative A : No-Action Alternative</b>	<b>Alternative B: Preferred Alternative</b>
<b>Employee, Concessioner, Partner Housing</b>	<p>Maintain employee, concessioner and partner housing at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: 25 NPS units, 173 concessioner units, 8 partner units, 11 concessioner recreational vehicle (RV) sites</li> <li>- Halls Crossing: 8 NPS units, 42 concessioner units</li> <li>- Hite: 6 NPS units, 10 concessioner units, 3 employee RV sites</li> </ul>	<p>Upgrade employee, concessioner and partner housing at Bullfrog, Halls Crossing and Hite. Provide housing for temporary employees through RV spaces. Improve support facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Increase up to 4 NPS units (29 total), up to 6 partner units (14 total), up to 24 concessioner units (197 total), up to 13 RV sites (24 total)</li> <li>- Halls Crossing: Increase up to 2 NPS units (10 total), up to 4 concessioner units (46 total), up to 12 RV sites</li> <li>- Hite: No change in numbers</li> </ul>
<b>Visitor Overnight Accommodations</b>	<p>Maintain lodge at Bullfrog and family rental units at all uplake developed areas.</p> <ul style="list-style-type: none"> <li>- Bullfrog: 48-room lodge, 8 family rental units</li> <li>- Halls Crossing: 20 family rental units</li> <li>- Hite: 5 family rental units</li> </ul>	<p>Upgrade and increase inventory of lodge and family rental units.</p> <ul style="list-style-type: none"> <li>- Bullfrog: increase up to 94 visitor accommodation units (150 total)</li> <li>- Halls Crossing: Increase up to 40 family rental units (60 total)</li> <li>- Hite: Increase up to 15 family rental units (20 total)</li> </ul>
<b>Visitor Camping</b>	<p>Maintain existing visitor camping at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: 24 RV sites, 78 developed campsites, approximately 88 sites at overflow campground, primitive camping at North and South Bullfrog and Stanton Creek</li> <li>- Halls Crossing: 64 developed campsites, 32 RV sites</li> <li>- Hite: Approximately 25 sites at primitive campground loop, primitive camping along shoreline of the Colorado and Dirty Devil rivers and Farley Canyon on the lake</li> </ul>	<p>Increase number of sites and upgrade developed campgrounds. Improve support facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Increase up to 128 sites (total of 230), consolidate RV and campground in campground location, add support facilities</li> <li>- Halls Crossing: Increase up to 8 RV sites (40 total)</li> <li>- Hite: Convert 25 primitive sites to developed sites, primitive camping along shoreline of the Colorado and Dirty Devil rivers and Farley Canyon on the lake</li> </ul>
<b>Shower and Laundry Facilities</b>	<p>Maintain existing shower and laundry facilities at Bullfrog and Halls Crossing.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Combined visitor and employee facility available</li> <li>- Halls Crossing: Combined visitor and employee facility available, shower facilities for visitor use, laundromat for employees</li> <li>- Hite: No facilities</li> </ul>	<p>Upgrade shower and laundry facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Relocate shower and laundry facilities</li> <li>- Halls Crossing: Relocate all visitor shower and laundry facilities to Village Center</li> <li>- Hite: Add combined visitor and employee shower and laundry facility</li> </ul>
<b>Land-Based Stores</b>	<p>Maintain existing land-based stores at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Village Center store with snack food, sundries, fuel and automotive repair</li> <li>- Halls Crossing: Village Center store with snack food, sundries, fuel</li> <li>- Hite: Store with snack food, sundries, fuel and RV waste</li> </ul>	<p>Upgrade store facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Upgrade Village Center store, add campground store</li> <li>- Halls Crossing: Upgrade Village Center store</li> <li>- Hite: Upgrade store</li> </ul>

**Table 1 Comparison of Alternatives**

<b>Designation</b>	<b>Alternative A : No-Action Alternative</b>	<b>Alternative B: Preferred Alternative</b>
	disposal station	
<b>Land-Based Food Service</b>	<p>Maintain existing land-based food service at Bullfrog.</p> <ul style="list-style-type: none"> <li>- Bullfrog: 180-seat restaurant</li> <li>- Halls Crossing: No land-based food service</li> <li>- Hite: No land-based food service</li> </ul>	<p>Expand and upgrade land-based food service.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Increase seating up to 70 (250 total), add second land-based food service facility</li> <li>- Halls Crossing: Add land-based food service</li> <li>- Hite: Add land-based food service at store</li> </ul>
<b>Day-Use Facilities (picnic areas, restrooms and shade shelters not designed for overnight camping)</b>	<p>Maintain existing day-use facilities at Bullfrog and Halls Crossing.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Day-use facilities located at boat ready area</li> <li>- Halls Crossing: Day-use facilities adjacent to marina, parking area with picnic facilities near ferry access road</li> <li>- Hite: No day-use facilities</li> </ul>	<p>Add additional day-use facilities at Halls Crossing and add new facilities to Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Same as Alternative A</li> <li>- Halls Crossing: Add second day-use area</li> <li>- Hite: Add day-use facility, develop partnership with Utah Department of Transportation (UDOT) for upgrades to State Highway (SH) 95 overlook</li> </ul>
<b>Ranger Station / Visitor Contact Station and Emergency Facilities</b>	<p>Maintain existing ranger / visitor contact station and emergency facilities at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Visitor contact / ranger station / medical clinic, emergency support equipment and fire station</li> <li>- Halls Crossing: Floating visitor contact / ranger station and first-aid station, temporary helipad, emergency support equipment</li> <li>- Hite: Visitor contact / ranger station, first-aid station, emergency support equipment</li> </ul>	<p>Maintain existing facilities with minimal upgrades.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Same as Alternative A</li> <li>- Halls Crossing: Same as Alternative A with upgrade to existing helipad</li> <li>- Hite: Same as Alternative A</li> </ul>
<b>Concessioner Boat Maintenance and Repair and Property Maintenance Facilities</b>	<p>Maintain existing boat maintenance / repair and property maintenance facilities at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Boat maintenance and repair, warehouse, indoor and outdoor storage, boat wash down, concessioner administration</li> <li>- Halls Crossing: Automotive repair, boat maintenance and repair, warehouse, indoor and outdoor storage, floating boat repair facility</li> <li>- Hite: Boat maintenance and repair, warehouse, indoor and outdoor storage</li> </ul>	<p>Relocate and upgrade boat maintenance / repair and property maintenance facilities at Bullfrog and Halls Crossing.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Relocate boat maintenance and repair and concessioner property maintenance facilities</li> <li>- Halls Crossing: Relocate boat maintenance and repair and concessioner property maintenance facilities</li> <li>- Hite: Same as Alternative A</li> </ul>
<b>Park Service Maintenance Facilities</b>	<p>Maintain existing NPS maintenance facilities at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Warehouse building, indoor and outdoor storage</li> <li>- Halls Crossing: Warehouse building, indoor and outdoor</li> </ul>	<p>Same as Alternative A</p>

**Table 1 Comparison of Alternatives**

Designation	Alternative A : No-Action Alternative	Alternative B: Preferred Alternative
	<p>storage</p> <ul style="list-style-type: none"> <li>- Hite: Warehouse building, indoor and outdoor storage</li> </ul>	
<b>Secured Storage</b>	<p>Maintain existing secured storage location and size at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: up to 750 outdoor spaces</li> <li>- Halls Crossing: up to 230 outdoor spaces</li> <li>- Hite: up to 107 outdoor spaces</li> </ul>	<p>Upgrade secured storage at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Expand up to 250 spaces (total of 1000), add enclosed facility</li> <li>- Halls Crossing: Relocate secured storage and expand up to 170 spaces (total of 500), add enclosed facility</li> <li>- Hite: Expand up to 53 spaces (total of 160)</li> </ul>
<b>Utility Systems</b>	<p>Maintain existing utility systems at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: 3 diesel electrical generators and distribution system, 3 water wells and 2 storage tanks with distribution system, water collection and treatment system, propane storage tanks with distribution tanks</li> <li>- Halls Crossing: 3 diesel electric generators with distribution system, 2 water wells and storage tank with distribution system, water treatment and collection system, propane storage tank with distribution system</li> <li>- Hite: 1 diesel generator with distribution system, 1 water well and lake intake system with distribution, water treatment and collection system, propane storage tank with distribution system</li> </ul>	<p>Expand utility systems as needed to meet code and demands of new development, supplement power systems with solar, fuel-cell, or alternative power technology, as appropriate.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Expand as needed</li> <li>- Halls Crossing: Expand as needed</li> <li>- Hite: Expand as needed, replace aboveground water storage tank with below-ground water storage tank</li> </ul>
<b>Roads and Parking</b>	<p>Maintain existing access and parking areas at Bullfrog, Halls Crossing and Hite.</p>	<p>Improve/add roads and parking areas at Bullfrog, Halls Crossing and Hite as needed to accommodate added or relocated facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Same as Alternative A</li> <li>- Halls Crossing: Improved road to relocated secured storage / property maintenance area</li> <li>- Hite: Unimproved road to primitive shoreline camping</li> </ul>
<b>Fee Collection</b>	<p>Maintain existing fee collection at Bullfrog, Halls Crossing and Hite.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Fee collection booths, automated fee collection station</li> <li>- Halls Crossing: Fee collection booth, automated fee collection station</li> <li>- Hite: Automated fee collection station</li> </ul>	<ul style="list-style-type: none"> <li>- Bullfrog: Upgrade fee collection booths for accessibility and administrative services</li> <li>- Halls Crossing: Same as Alternative A</li> <li>- Hite: Same as Alternative A</li> </ul>

**Table 1 Comparison of Alternatives**

<b>Designation</b>	<b>Alternative A : No-Action Alternative</b>	<b>Alternative B: Preferred Alternative</b>
<b>School</b>	Maintain existing school at Bullfrog.	Upgrade school at Bullfrog to include library building.
<b>Boat Wash-Down Area</b>	Maintain existing boat wash-down areas. <ul style="list-style-type: none"> <li>- Bullfrog: Concessioner boat wash-down area, no public access</li> <li>- Halls Crossing: Concessioner boat wash-down area, no public access</li> <li>- Hite: No boat wash-down area</li> </ul>	Upgrade and expand boat wash-down areas. <ul style="list-style-type: none"> <li>- Bullfrog: Add public boat wash-down area</li> <li>- Halls Crossing: Add public boat wash-down area</li> <li>- Hite: Add public boat wash-down area</li> </ul>
<b>Marina Facilities</b>	Maintain existing marina facilities at Bullfrog, Halls Crossing and Hite. Total combined uplake wet moorage up to 1,090 spaces. Total existing rental fleet of 173 boats (runabout/houseboat/personal watercraft). <ul style="list-style-type: none"> <li>- Bullfrog: Wet moorage (slips and buoys) of 672 spaces for rental operations, overnight and courtesy slips and executive services, slips for concessioner operations, 134 rental boats</li> <li>- Halls Crossing: Wet moorage (slips and buoys) of 418 for rental operations, overnight and courtesy slips and slips for concessioner operations, 3 rental boats</li> <li>- Hite: Above lake elevation 3,620, courtesy docks, below 3,620, no water-based facilities available at Hite</li> </ul>	Expand existing marina facilities at Bullfrog and Halls Crossing. Increase combined uplake wet moorage for long-term private rental spaces to 1,094. Transient overnight slips would remain at 72. Interagency slips would remain at 16, Executive Services slips would remain at 36, Fuel dock slips would remain at 2 and moorage for rental fleet (houseboats, speed boats and PWC) would be increased to accommodate 660 water craft. <p>Distribution of wet moorage/fleet to be managed between Bullfrog and Halls Crossing as needed for management flexibility and lake level changes.</p> <p>Halls Crossing: Add a fishing dock Halls Crossing and Bullfrog replace existing fuel dock and sewage pumpouts docks with larger more environmentally efficient facilities Hite: Same as Alternative A</p>
<b>Water-Based Food Service</b>	Maintain existing water-based food service. <ul style="list-style-type: none"> <li>- Bullfrog: No water-based food service available</li> <li>- Halls Crossing: Snack bar</li> <li>- Hite: No water-based food service available</li> </ul>	Upgrade/expand water-based food services at Bullfrog and Halls Crossing. <ul style="list-style-type: none"> <li>- Bullfrog: Add water-based food service facility</li> <li>- Halls Crossing: Add water-based food service facility</li> <li>- Hite: No water-based food service</li> </ul>
<b>Launch Ramps</b>	Maintain existing launch ramp facilities. (elevations in feet amsl, typ.) <ul style="list-style-type: none"> <li>- Bullfrog: Main ramp: (paved) 150-foot-wide ramp from 3,700 to 3,605, 80-foot-wide ramp from 3,605 to 3,580 and 50-foot-wide old road surface from 3,580</li> <li>- North ramp: (paved) 50-foot-wide section from 3,580 to 3,557</li> <li>- Halls Crossing: (paved) 110-foot-wide section from 3,700 to 3,550</li> <li>- Hite: (paved) 110-foot-wide section from 3,700 to 3,640 and (unpaved) 30-foot-wide section from 3,640 to 3,620; below 3,620 unimproved gravel/dirt route to Colorado River shoreline.</li> </ul>	Extend launch ramps to access lower lake levels at Bullfrog and Halls Crossing. <ul style="list-style-type: none"> <li>- Bullfrog: Extend 80-foot width at main ramp to access lower lake levels as needed until topography limits are exceeded</li> <li>- Halls Crossing: same as Alternative A: allow unimproved ramp launching "at own risk" until topography limits are exceeded</li> <li>- Bullfrog/Halls Crossing: Add launch ramps and access road when main ramps no longer function, potential expansion areas along shoreline toward main channel (where shown on alternatives maps)</li> <li>- Hite: Same as Alternative A</li> <li>- In conjunction with the State of Utah, Division of Natural Resources, develop primitive launch ramp at Farley Canyon.</li> </ul>

**Table 1 Comparison of Alternatives**

<b>Designation</b>	<b>Alternative A : No-Action Alternative</b>	<b>Alternative B: Preferred Alternative</b>
<b>Launch Ramp Support</b>	<p>Maintain existing launch ramp support facilities.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Parking, boat ready area, restrooms, fish cleaning station, staging lane, trash disposal, waste disposal station, shade shelters, weather station and information kiosk</li> <li>- Halls Crossing: Parking, restrooms, fish cleaning station</li> <li>- Hite: Parking, restrooms, fish cleaning station, porta-potty waste disposal, shade shelter</li> </ul>	Same as Alternative A
<b>Ferry Service</b>	<p>Maintain existing ferry service/ramps at Bullfrog and Halls Crossing as long as ferry operates (elevations in feet amsl, typ.).</p> <ul style="list-style-type: none"> <li>- Bullfrog: Main ferry service/ramp from 3,700 to 3,600, temporary ramp area service below 3,600</li> <li>- Halls Crossing: Main ferry service/ramp from 3,700 to 3,580, use main launch ramp from 3,580 to 3,550</li> </ul>	<p>Extend or add ferry service/ramps to access lower lake levels at Bullfrog and Halls Crossing.</p> <ul style="list-style-type: none"> <li>- Bullfrog: Same as Alternative A, adjust docking wedge to accommodate lower lake levels</li> <li>- Halls Crossing: Add ferry service/ramp and access when main ramps no longer function below 3,550, combine with main ramp development along shoreline toward main channel (where shown)</li> </ul>

## DISTURBED AREA CALCULATIONS

Table 2 outlines the estimated acreage for new development by alternative. Acreage of existing development was calculated using aerial photos. In cases where new development is anticipated (such as an increase in the number of housing units) the acreage of the existing facilities were used to calculate an approximate size for expansion. Site-specific design will guide actual sizes as the final plan is implemented.

In some cases, facilities that may be moved or eliminated from an existing site will show a portion of the land as restored (reclaimed and revegetated). The total development acreage reflects that reduction in disturbed area. In a few plan components development is to be relocated and new structures are proposed in that previously disturbed area. This condition is shown as zero additional disturbances.

Restored acreage in most cases would be reclaimed with native landscaping or revegetated with native seed mixtures from the approved plant materials specific to this park unit.

<b>Table 2. Summary of Disturbed Areas</b>					
<b>Area or Facility</b>	<b>Alternative A (No-Action) Disturbance (in acres)</b>	<b>Alternative B Disturbance</b>			<b>Comments / Explanation</b>
		<b>Proposed Area (acres)</b>	<b>Additional Disturbed Area (acres)</b>	<b>Restored Area (acres)</b>	
Bullfrog School	12.8	12.8	0.0	0.0	The proposed library would be added within the existing disturbed area.
Bullfrog NPS Maintenance Area	2.6	2.6	0.0	2.6	Under alternative C, the NPS maintenance area would be moved to the relocated concessioner housing area.
Bullfrog Concessioner Maintenance Area	2.7	3.2	2.2	.7	A portion of the area used for Alternative A, concessioner maintenance would be reclaimed. The remaining area would be redeveloped for expansion of the boat wash-down facility and expansion of the Village Center.
Bullfrog Village Center	2.0	3.0	0.0	0.0	Expansion area created from previous concessioner maintenance area.
Bullfrog Concessioner Housing and RV Park	10.6	0.0	0.0	1.4	A portion of the area used for Alternative A concessioner housing / RV park would be redeveloped for family rental units and a portion reclaimed. Under alternative C, NPS maintenance area would be relocated in this area.
Bullfrog Family Rental Units	3.3	9.9	0.0	0.0	Expansion area from previous concessioner housing / RV park area.
Bullfrog Lodge and Parking Area	0.4	0.8	0.4	0.0	Expansion into new area adjacent to existing facilities
Bullfrog Campground	86.2	86.2	0.0	0.0	The existing campground includes developed and primitive loops. Alternative B and alternative C would upgrade within this existing area.
Bullfrog Employee Housing	2.7	30	27.3	0.0	Consolidation of employee housing would expand into new area adjacent to existing housing.
Bullfrog RV Park	3.8	4.2	0.4	0.0	Consolidation of campground services to include RV hookup sites would require



Table 2. Summary of Disturbed Areas					
Area or Facility	Alternative A (No-Action) Disturbance (in acres)	Alternative B Disturbance			Comments / Explanation
		Proposed Area (acres)	Additional Disturbed Area (acres)	Restored Area (acres)	
					expansion into new area adjacent to existing campground.
Bullfrog Seasonal Housing	9.7	12.2	2.5	0.0	Expansion into new area adjacent to existing seasonal housing facilities.
Bullfrog Secured Storage	16.4	22.4	6.0	0.0	Expansion into new area adjacent to existing secured storage facilities.
<b>Bullfrog Totals</b>	<b>153.2</b>	<b>187.3</b>	<b>38.8</b>	<b>4.7</b>	
Halls Crossing NPS Maintenance	2.3	2.3	0.0	0.0	No changes.
Halls Crossing Employee Housing Area	16.5	20	3.5	0.0	Expansion into new area adjacent to existing housing to consolidate facilities.
Halls Crossing Family Rental Units	2.9	8.7	5.8	0.0	Alternative B, expansion into new area adjacent to existing family rental units. Alternative C, a portion of expansion into new area and partial redevelopment of existing RV park.
Halls Crossing Village Center	1.4	1.8	0.4	0.0	Alternative B, expansion into new area adjacent to existing Village Center to consolidate facilities. Alternative C, expansion into new area adjacent to add visitor center and emergency services building.
Halls Crossing RV Park	3.1	3.9	0.8	0.0	Alternative B, expansion into new area adjacent to existing RV park. Alternative C, expansion within existing family rental unit site.
Halls Crossing Campground	6.9	6.9	0.0	0.0	Alternative B, no change. Alternative C, consolidation of campground services to include RV hookup sites would require expansion into new area adjacent to existing campground.
Halls Crossing Secured Storage / Concessioner Maintenance / Boat Wash-Down Facility	11.2	25.5	25	10.7	Alternatives B and C, expansion into new area adjacent to existing secured storage for concessioner maintenance relocation. Portion is previously disturbed area to be reclaimed/revegetated. Remaining area to be redeveloped into boat wash-down facility.
Halls Crossing Roads and Parking	0.0	2.1	2.1	0.0	Alternatives B and C, expansion to provide access to new access road to secured storage.
<b>Halls Crossing Totals</b>	<b>44.3</b>	<b>71.2</b>	<b>37.6</b>	<b>10.7</b>	
Hite Campground	0.7	0.7	0.0	0.0	Alternatives B and C, site improvements within the disturbed area.
Hite Employee Housing / Family Rental Unit Area	6.0	9.8	3.8	0.0	Alternatives B and C, expansion into new area adjacent to existing housing.
Hite Secured Storage	3.5	5.2	1.7	0.0	Alternatives B and C, expansion into new area adjacent to existing secured storage.

<b>Table 2. Summary of Disturbed Areas</b>					
<b>Area or Facility</b>	<b>Alternative A (No-Action) Disturbance (in acres)</b>	<b>Alternative B Disturbance</b>			<b>Comments / Explanation</b>
		<b>Proposed Area (acres)</b>	<b>Additional Disturbed Area (acres)</b>	<b>Restored Area (acres)</b>	
Hite Roads and Parking	0.0	2.0	2.0	0.0	Alternatives B and C, expansion to provide access to shoreline camping at low lake levels.
Hite Underground 100,000-gallon Potable Water Tank	0.1	0.1	0.0	0.0	Alternatives B and C, replacement of water tank with 100,000-gallon underground potable water tank. Existing tank mounted on a frame structure with minimal existing ground disturbance. Permanent disturbance with the new tank may result from manholes to access the tank; therefore, disturbance would be roughly the same.
<b>Hite Totals</b>	<b>10.3</b>	<b>17.8</b>	<b>7.5</b>	<b>0.0</b>	
Farley Canyon Primitive Launch Ramp	0.48	1.41	0.93	0.0	Road would be graded to elevation 3560 feet. Ramp would be where graded road intersects with water.

## ALTERNATIVE A (NO-ACTION)

The No-Action Alternative would allow the continuation of current uses. The No-Action Alternative describes the existing condition of developed areas at Bullfrog, Halls Crossing and Hite. Future actions that are currently funded or with a reasonable potential for future funding from the approved DCPs and amendments or other approved directives or construction activities could take place under the No-Action Alternative. However, the No-Action Alternative does not include these possible future developments as part of the existing condition. Alternative A does not include operational activities and construction needed to accommodate water levels below 3,550 feet in elevation. These activities would continue to be reviewed on an individual basis, including preparation of the appropriate environmental compliance documents. Elements of the No-Action Alternative Are included on figures 3, 4 and 5 for Bullfrog, Halls Crossing and Hite, respectively.

### Employee, Concessioner and Partner Housing

Employee housing is provided within Glen Canyon NRA at Bullfrog, Halls Crossing and Hite. There are a variety of types and locations for housing in each area to accommodate permanent and seasonal employees of the National Park Service, concessioners and “partner” agencies such as state of Utah local representatives (Division of Wildlife Resources, Utah Division of Parks and Recreation), medical clinic staff, tri-county sheriff and Kane County school employees. Providing housing is essential to uplake operations because of the remote nature of the location, utilization of seasonal employees and that little or no private housing is available for rent outside the recreation area. All available permanent housing is typically occupied and seasonal housing is fully occupied during the summer months.

Housing types at Bullfrog consist of individual and multiple or plex-style houses, trailer units (both single-family units and multiple-occupancy units) and dormitory units (figures 3 and 4). Housing is established in several locations as shown on figure 11. Single-family housing is located east of the visitor center (figure 8), concessioner trailer housing (figure 4) is located adjacent to the family rental units and shower and laundry facilities and seasonal dormitory housing is located between the visitor

RV park and the secured storage area. A concessioner employee RV park with 11 hookups for power is also available adjacent to the concessioner trailer housing. The existing Bullfrog housing inventory consists of 25 NPS units, 8 partner units, 77 concessioner units and 96 concessioner seasonal employee dormitory units.

Housing types at Halls Crossing consists of individual manufactured homes, multiple or plex-style houses and trailer units (both single-family units and multiple-occupancy units). Housing units are located southwest of the Village Center store and RV park. Existing housing inventory includes 8 NPS units and 42 concessioner units.



**FIGURE 3. CONCESSIONER HOUSING UNITS  
AT BULLFROG**



**FIGURE 4. CONCESSIONER TRAILER HOUSING UNITS AT  
BULLFROG**

Housing types at Hite consist of manufactured homes, multiple or plex-style houses and trailer units (both single-family units and multiple-occupancy units). Housing is located south of the main access road and east of the existing secured storage area. Three employee RV sites with hookups for power are also available and located within the employee housing area. Existing housing includes 6 NPS units and 10 concessioner units.

Under the No-Action Alternative, the current inventory of NPS and concessioner employee housing, along with existing partner housing at Bullfrog, Halls Crossing and Hite, would be maintained at the current number, location and type. These units would be maintained at the existing location with no major upgrades, although general maintenance would occur, as necessary, to permit continued use.

## **Overnight Accommodations**

Uplake overnight accommodations consist of Defiance House Lodge (figure 5) and family rental units (figure 6). Defiance House Lodge is located on a hilltop overlooking the launch ramp and marina facilities at Bullfrog (figure 5). The lodge contains 48 motel units. Under the No-Action Alternative, the lodge would be maintained at the existing location with no major upgrades, although general maintenance would occur, as necessary, to permit continued use.



**FIGURE 5. DEFIANCE HOUSE LODGE**

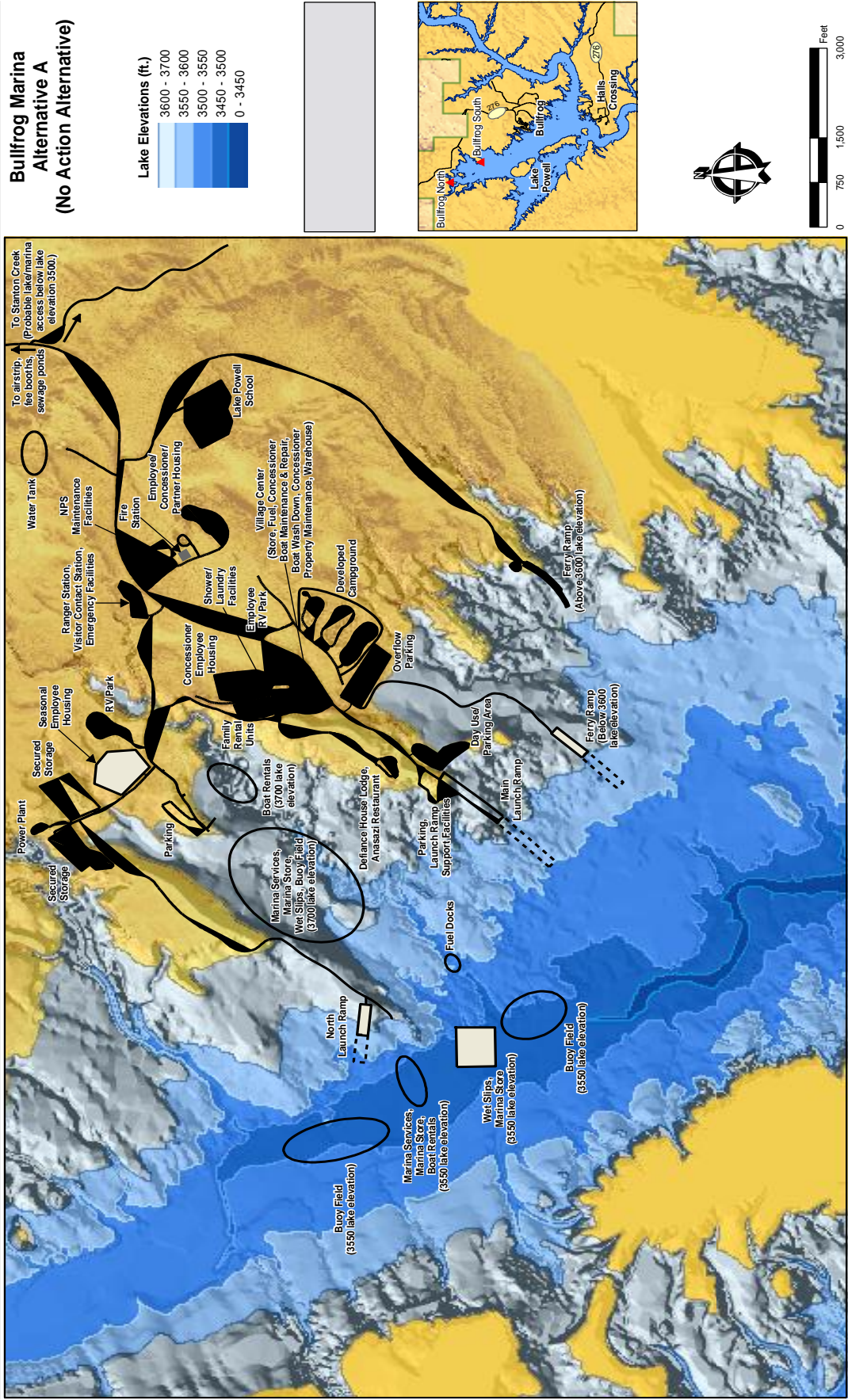


**FIGURE 6. TYPICAL FAMILY RENTAL UNITS**

Family rental units are available at Bullfrog, Halls Crossing and Hite. Each family rental unit contains a living area, kitchen, three bedrooms and two bathrooms. There are eight family rental units at Bullfrog located adjacent to the concessioner employee housing and shower and laundry facilities, 20 family rental units at Halls Crossing are located adjacent to the store and RV park and five family rental units at Hite located adjacent to the employee housing area (figure 6).

Under the No-Action Alternative, there would be no change to the location and variety of visitor overnight accommodations at Bullfrog, Halls Crossing and Hite. Existing accommodations would continue to receive routine maintenance; however, there would be no change to the general condition of the facilities.







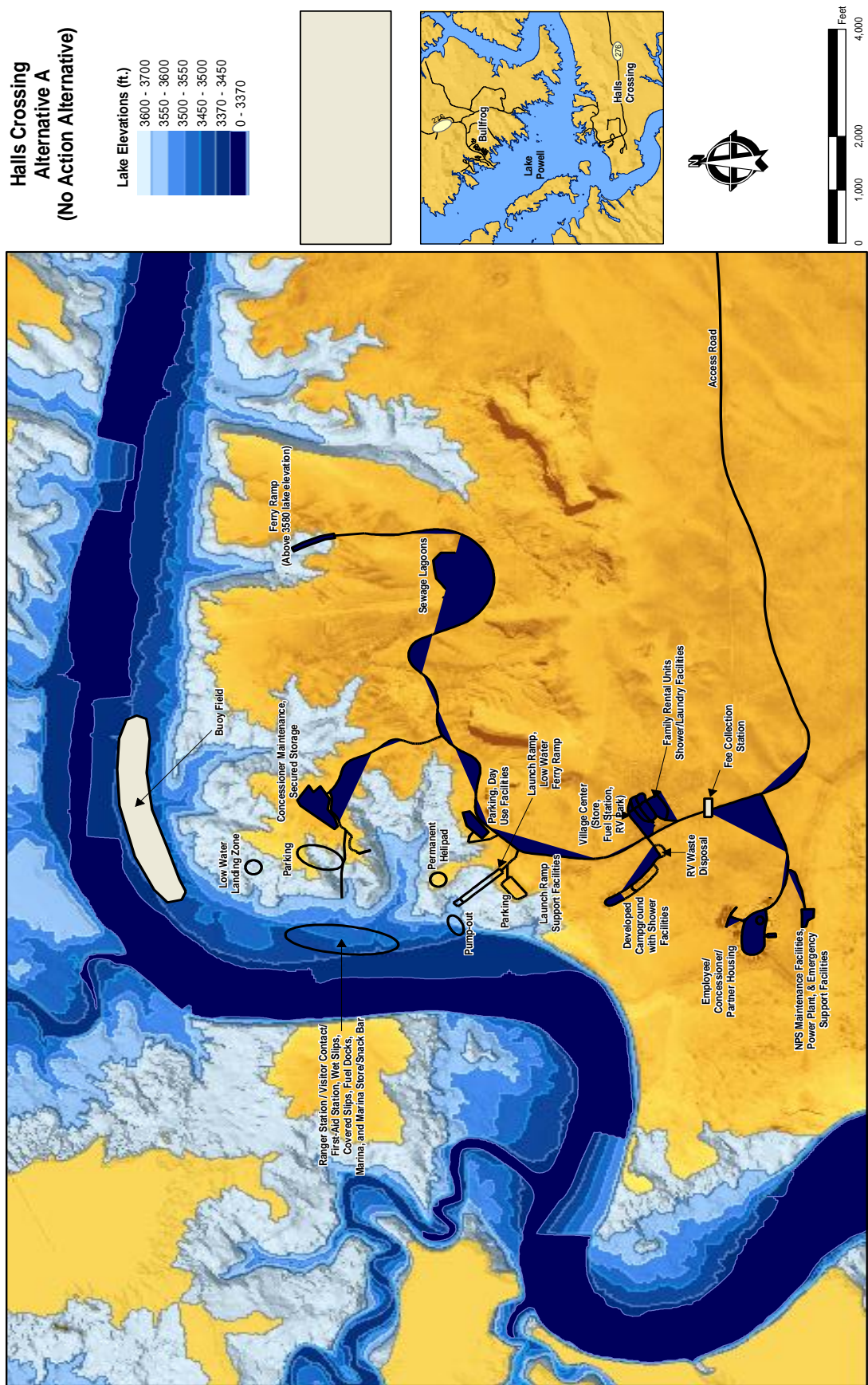


Figure 8. Halls Crossing Alternative A

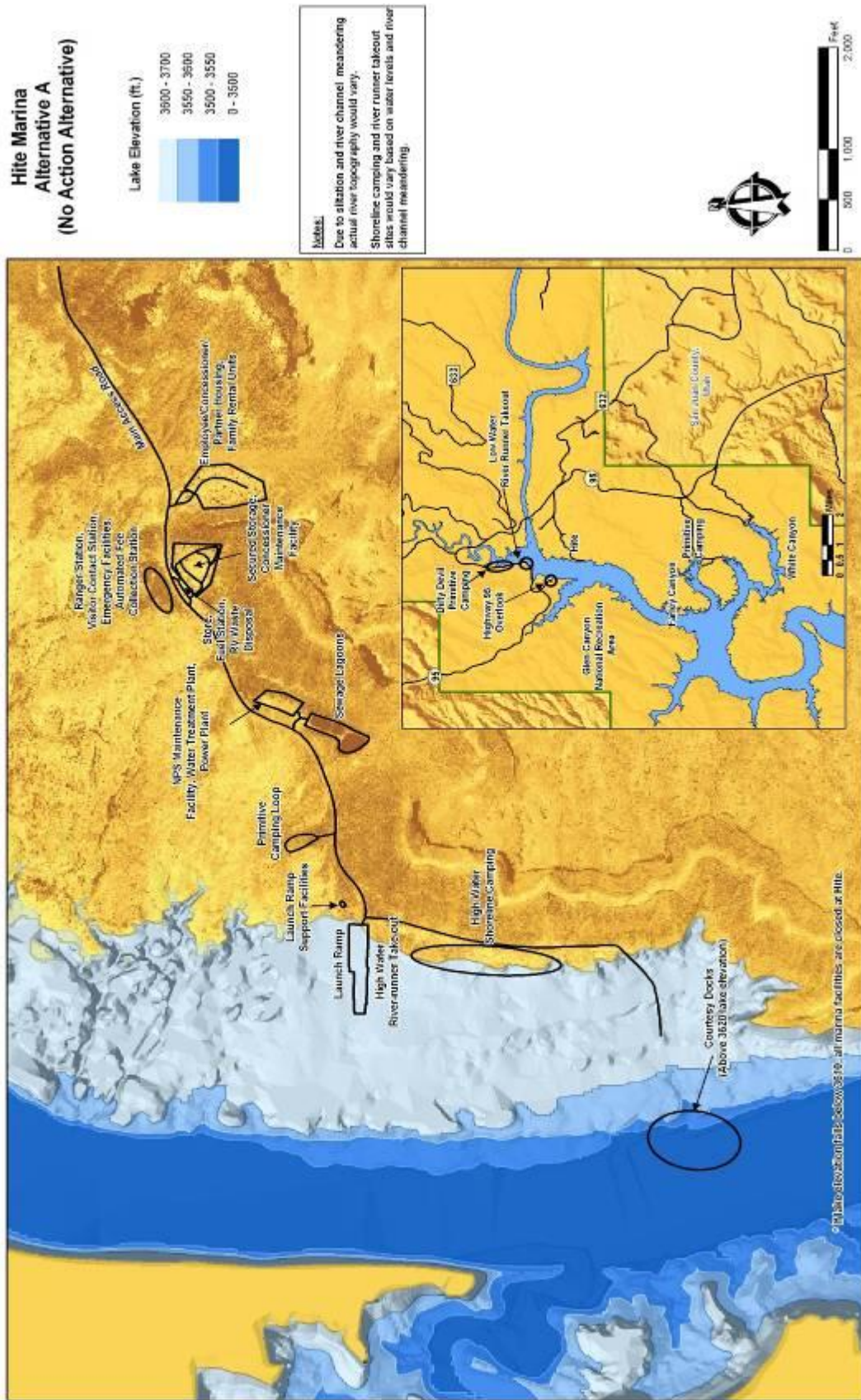


Figure 9. Hite Marina Alternative A



## Visitor Camping

The Bullfrog campground is located east of the Village Center and currently consists of 78 developed camp sites with paved parking areas, designated tent pads, fire rings, grills and picnic tables (see figure 9 and figure 10).



**FIGURE 10. BULLFROG CAMPGROUND**

There is a primitive loop for overflow camping to the north of the existing developed campground. The overflow loop contains approximately 88 sites with no amenities. The concession-operated Bullfrog RV park is located adjacent to the seasonal employee housing dormitories. The RV park consists of 24 sites: 20 pull-through and 4 back-in spaces that can accommodate RVs up to 50 feet in length (ARAMARK 2006). Sites include gravel turnouts, electrical hookup boxes offering 30-amp service, grills and picnic tables.

Bullfrog also has primitive camping at North and South Bullfrog and Stanton

Creek. The primitive camping does not include defined campsites or offer any amenities such as picnic tables or grills; however, restrooms are available at these locations on a seasonal basis. There is no designated group camping available in the uplake district (figure 10).

The Halls Crossing campground is located west of the store and RV park and currently consists of 64 developed camp sites with parking areas, picnic tables and grills (see figure 10). The campground includes restroom and shower facilities with a waste disposal station located on the access road to the campground.

In addition to the Halls Crossing campground, there is an existing RV park located adjacent to the store and family rental units (figure 11). The RV park consists of 32 sites and includes gravel turnouts, electrical hookup boxes offering 30-amp service, grills and picnic tables.

Camping at Hite is within the primitive camping area east of the public launch ramp (see figure 9). The Hite campground currently consists of an unpaved loop where camping is permitted, with space for approximately 25 undesignated sites. The camping is primitive, with limited site development and no water or restroom facilities. In addition to the campground loop, at high water there is shoreline camping adjacent to the public launch ramp. There are no facilities or designated camping areas associated with shoreline camping. Primitive car camping also occurs on the shoreline of the Dirty Devil River and Farley Canyon in the vicinity of Hite.

No changes or improvements would be made to camping facilities or locations at Bullfrog, Halls Crossing and Hite under the No-Action Alternative. Routine maintenance, as required, would occur.



## Shower and Laundry Facilities

Shower and laundry facilities are available at Bullfrog and Halls Crossing; there are no shower or laundry facilities at Hite. Shower and laundry facilities at Bullfrog are located adjacent to the family rental units and concessioner housing and are used by visitors and employees. Shower and laundry facilities at Halls Crossing are located at the east end of the RV park and family rental unit area (see figure 11) and are used by visitors and employees. Additional shower facilities are located in the campground area used primarily by visitors. An employee laundry facility is located in the employee housing area.



**FIGURE 11. HALLS CROSSING RV PARK**

Under the No-Action Alternative, the shower and laundry facilities at Bullfrog and Halls Crossing would be maintained at their current size and locations. No shower or laundry facilities would be constructed at Hite.

## Land-Based Stores

A land-based store is defined as a store that is located and designed to service vehicle and foot traffic and is not specifically located or designed to handle boat traffic. Land-based stores exist at all three uplake developed areas. The land-based store at Bullfrog is located at the Village Center, south of the concessioner housing area and family rental units (figure 11 and figure 14). The existing Village Center store complex includes a fuel station, small convenience store, automotive repair shop, gift shop and the concessioner administrative offices. The Village Center store complex is attached to the concessioner boat maintenance and repair facility.

The land-based store at Halls Crossing is located in the Village Center adjacent to the RV park and family rental units (figure 8). The land-based store includes a fuel station and small convenience store.

The land-based store at Hite is located on the main access road across from the ranger station and visitor contact station (figure 11). The land-based store includes a fuel station and small convenience store (figure 13). The RV waste disposal station is also located at the store.

Under the No-Action Alternative, the land-based stores at Bullfrog, Halls Crossing and Hite would be maintained as existing facilities with no new additions or changes. Routine maintenance would occur, as necessary.



**FIGURE 12. BULLFROG VILLAGE CENTER**



**FIGURE 13. HITE STORE**

## **Land-Based Food Service**

In the uplake district, land-based food service is available only at Bullfrog. The Anasazi Restaurant is a sit-down facility with 180-seat capacity located in the Defiance House Lodge (see figure 5). The restaurant is open for breakfast, lunch and dinner. Under the No-Action Alternative, the Anasazi Restaurant would continue as currently operated without expansion or relocation.

## **Day-Use Facilities**

Day-use facilities are designed for use by visitors for picnicking and relaxing. Day-use areas are distinct from camping or overnight-use areas. Facilities at day-use areas at Glen Canyon NRA typically include picnic tables, shade shelters and restrooms. There are two designated day-use facilities in the uplake district: one located at Bullfrog and the other at Halls Crossing. There are no day-use facilities at Hite. The existing Bullfrog day-use facility is located at the top of the main launch ramp and is known as the boat-ready area. The day-use area contains picnic tables, restroom facilities, a fish cleaning station, waste disposal facilities (both trash and dump stations) and parking. The day-use facility also provides overflow parking for vehicles and trailers after boat launching. The Halls Crossing day-use facility is located adjacent to Halls Crossing Marina and contains picnic facilities. Under the No-Action Alternative, the existing day-use facilities would be maintained as they now exist, with no new improvements.

## **Ranger Station / Visitor Contact Station and Emergency Facilities**

Ranger stations and visitor contact stations are available at all three uplake developed areas. The existing ranger station and visitor contact station at Bullfrog is located on the main access route to Bullfrog Village in the first building on the south side of the road after the entrance station. The facilities include a visitor center with exhibits and a small bookstore and ranger facilities with offices for rangers, maintenance, concessions, interpretive and other staff. The emergency facilities are within this building and include a small medical clinic (staffed in the summer season only), emergency helipad and emergency medical technicians and paramedic vehicles and facilities. Emergency facilities also include holding cells and a communication station. The fire station, located near the employee housing area, is also part of the emergency facilities. Search and rescue equipment is stored at the fire station.

The existing ranger station and visitor contact station at Halls Crossing is located on the water at the marina. The facilities include a small area for displays and brochures and ranger facilities, as well as a first-aid station. There are no designated emergency facilities at Halls Crossing. Emergency response equipment is housed in various locations. The fire engine is parked in the NPS maintenance building and the ambulance is parked outside in the NPS maintenance building yard. Equipment storage for search and rescue and fire fighting is located in a trailer in the NPS maintenance yard as well. A primitive emergency helipad area is designated within the Halls Crossing developed area, dependent on water levels.

The existing ranger station and visitor contact station at Hite is located on the main access road across from the store. The facilities include a small area for displays and brochures and ranger facilities. The emergency facilities at Hite are located at the ranger station and visitor contact station and include fire fighting and search and rescue equipment storage and a helipad.

The ranger station / visitor contact station and emergency facilities at Bullfrog, Halls Crossing and Hite would be maintained as they currently exist under the No-Action Alternative.

### **Concessioner Boat Maintenance and Repair and Property Maintenance Facilities**

The concessioner-run boat maintenance and repair facilities and the concessioner property maintenance offices at Bullfrog are located at the Village Center adjacent to the store. The boat maintenance and repair facility is fenced with a 6-foot chain-link fence and includes a boat repair facility, boat painting facility, concessioner warehouse and maintenance building and indoor and outdoor storage (figure 14). The concessioner offices are located above the Village Center gift store. A concessioner boat wash-down area is also located within this facility.

The concessioner-run boat maintenance and repair facilities and the concessioner property maintenance offices at Halls Crossing are located at the secured storage area, which is located northeast of the main launch ramp. The boat maintenance and repair facility is fenced with a 6-foot chain-link fence and facilities include a boat repair facility, a boat painting facility, concessioner warehouse and maintenance building and indoor and outdoor storage. A small area for automobile repair is also included in this facility. There is also a concessioner-run floating boat maintenance facility at the Halls Crossing Marina.



**FIGURE 14. BOAT MAINTENANCE AND REPAIR AND CONCESSIONER MAINTENANCE AREA AT BULLFROG**

At Hite, the concessioner runs a limited boat maintenance and repair shop at the secured storage area located off the main access road, southwest of the store. The boat maintenance and repair facility is fenced with a 6-foot chain-link fence and facilities include a small boat repair facility, concessioner warehouse and maintenance building and indoor and outdoor storage.

The concessioner boat maintenance and repair and property maintenance facilities at Bullfrog, Halls Crossing and Hite would be maintained as they exist under the No-Action Alternative.

## **National Park Service Maintenance Facilities**

The National Park Service has existing maintenance facilities at all three uplake developed areas. The existing maintenance area at Bullfrog is located east of the ranger station / visitor contact station / emergency facilities. The maintenance facility includes a maintenance building and storage yard surrounded by a 6-foot chain-link fence.

The Halls Crossing maintenance area is located south of the employee housing area. The maintenance facility includes a maintenance building and storage yard surrounded by a 6-foot chain-link fence. Fire fighting and search and rescue equipment is also stored in this area.

The Hite maintenance area is located at the water treatment plant facility, east of the ranger station / visitor contact station / emergency facilities. The maintenance facility includes a maintenance building, storage yard, the water treatment plant and generator building.

The NPS maintenance areas at Bullfrog, Halls Crossing and Hite would be maintained in their current location and general condition under the No-Action Alternative.

## **Secured Storage**

The secured storage at Bullfrog is located northwest of the seasonal employee housing area and currently provides 750 outdoor spaces for storage of boats, personal watercraft and RVs in a large fenced area (figure 15). The secured storage at Halls Crossing is located northeast of the main launch ramp and currently provides 230 outdoor spaces for storage of boats, personal watercraft and RVs in a large fenced area. The secured storage at Hite is located adjacent to the Hite store and currently provides 107 outdoor spaces for storage of boats, personal watercraft and RVs in a small fenced area.



**FIGURE 15. AERIAL VIEW OF HALLS CROSSING SECURED STORAGE AND CONSTRUCTION OF NEW ACCESS TO MARINA FACILITIES**

Under the No-Action Alternative, the existing secured storage areas at Bullfrog, Halls Crossing and Hite would be maintained in their current location and condition, with routine maintenance.

## Utility Systems

The existing utility systems at Bullfrog include a power supply and distribution system, a water supply and distribution system, a wastewater removal and treatment system and propane tanks. Three diesel generators located adjacent to the secured storage area supply power to Bullfrog. Power is distributed to various facilities by underground lines. The existing water supply consists of three wells and two 500,000-gallon storage tanks. The water is treated for drinking, primarily through the addition of chlorine and is piped through buried pipelines for use at various facilities. The existing tank farm located in the NPS maintenance area stores 17,800 gallons of propane for distribution to the housing area.

Wastewater is carried from buildings and restroom facilities as well as from the RV disposal station and floating waste disposal stations. A number of lift stations are required to carry the wastewater uphill to the wastewater treatment plant. The wastewater treatment system, which includes the sewage lagoons, is located to the east of the entrance station. The wastewater treatment system is currently in a multi-phased upgrade that would continue through to completion under the No-Action Alternative.



The existing utility systems at Halls Crossing include a power supply and distribution system, a water supply and distribution system, a wastewater removal and treatment system and propane tanks. The power at Halls Crossing is supplied by three diesel generators located adjacent to the NPS maintenance area. Power is distributed through underground lines to various facilities at Halls Crossing. The existing water supply consists of two wells and a 360,000-gallon storage tank. Water is treated with a chlorination system and is then piped, primarily through buried pipelines, for use at various facilities.

Wastewater is carried from buildings and restroom facilities, as well as from the RV disposal station and floating waste disposal stations. A number of lift stations are required to carry the wastewater uphill to the wastewater treatment ponds. The wastewater treatment ponds comprise 6.41 acres and are located to the east of the main ferry launch ramp. There is also a propane tank farm at Halls Crossing located behind the store and operated by the concessioner, with storage capacity for 10,000 gallons. Propane serves as the major heat source for the housing area.

At Bullfrog and Halls Crossing, as water levels recede, utility distribution lines below the full pool lake elevation of 3,700 feet are extended aboveground to the floating marina facilities. Under the No-Action Alternative, the power and water supply systems and wastewater removal systems would remain the same, as would the power lines and water distribution pipelines, except in areas where water-based facilities are being relocated. In these areas, utility distribution lines would continue to be laid on the ground surface, typically following access routes to the relocated facilities. The wastewater removal systems would continue to be extended as water levels recede and water-based facilities move farther out into the lake. Additional lift stations may also be required to carry the wastewater uphill from the relocated facilities.

The existing utility systems at Hite include a power supply and distribution system, a water supply and distribution system, a wastewater removal and treatment system with sewage lagoons and propane storage tanks. The power at Hite is supplied by a diesel generator located in the NPS maintenance area. Power is distributed through underground lines to various facilities at Hite. The water supply at Hite is obtained from a river intake pipe when the lake elevation is above 3,620 feet and from a water well when lake elevation drops below 3,620 feet. The water is piped to a water treatment plant and then into a 100,000-gallon aboveground tank. The existing propane tank farm, operated by the concessioner, has storage capacity of 17,500 gallons and is located in the housing area and at the store.

Under the No-Action Alternative, the existing utility systems at Bullfrog, Halls Crossing and Hite would not change, although maintenance and repairs would continue.

## **Roads and Parking**

Existing paved roads and parking areas in the Bullfrog developed area are shown on figure 9. Roads are continually being extended to reach floating and shoreline facilities as water levels recede. These road extensions have dirt or gravel surfaces below the full pool lake elevation of 3,700 feet. Unpaved parking areas are also being created as the marina facilities are relocated due to decreasing water levels. These roads and parking areas will be covered as water levels rise.

Existing paved roads and parking areas in the Halls Crossing developed area are shown on figure 10. A new gravel access road and parking area have been constructed to access the relocated Halls Crossing water-based facilities in the main channel. The new gravel access road and parking area are located to the west of the secured storage area and the road continues west to the relocated docks and marina facilities (figure 10). Additional new roads and parking areas would continue to be constructed to maintain lake access.

Existing paved roads and parking areas in the Hite developed area are shown on figure 9. No changes to the existing Hite paved road system would occur under the No-Action Alternative.

## **Fee Collection System**

The two existing staffed fee collection kiosks are located along the main access road into Bullfrog. An automated fee collection system is located at the fee collection kiosk for use when the fee collection booths are unmanned. There are both fee collection kiosks and an automated fee collection system at Halls Crossing, located on the main access road south of the store. There is an automated fee collection system at Hite located at the visitor contact station parking area. No changes to the fee collection systems or facilities would occur in the uplake developed areas under the No-Action Alternative.

## **School**

The Lake Powell School, located in the Bullfrog development, is administrated by Kane County and serves children in kindergarten through grade 12 from Bullfrog, Halls Crossing and surrounding communities. The school is located east of the combined employee housing area. Children are bussed in from surrounding communities. Under the No-Action Alternative, the Lake Powell School would be maintained, as necessary, with no upgraded amenities.

## **Airstrip**

An asphalt airstrip is maintained at Bullfrog with shuttle service from the airstrip to Bullfrog facilities. The airstrip is available for use both day and night, although night landings are for emergencies only. The airstrip is located north and west of the main entrance station for Bullfrog. There is no airstrip located within NRA boundaries at Halls Crossing. A private airstrip is maintained outside of the NRA. There is an existing packed gravel airstrip at Hite with a gravel parking area. There would be no change under the No-Action Alternative to the uplake district airstrips.

## **Boat Wash-Down Area**

The only existing boat wash-down facility uplake (to prevent the spread of aquatic nuisance species by washing boats prior to entry into Lake Powell) is at Bullfrog; there are no boat wash-down areas at Halls Crossing or Hite. The boat wash-down facility is located in the concessioner maintenance area in the Village Center and is not available for use by the general public. Under the No-Action Alternative, there would be no change to the Bullfrog boat wash-down area and no wash-down areas would be constructed in the other uplake developed areas.

## **Marina Facilities**

The existing Marina facilities at Bullfrog and Halls Crossing includes moorage (buoy fields and slips) for long-term rent for privately owned watercraft, concessioner rental fleet docks (houseboats, speedboats and PWCs), interagency slips (including those for NPS boats), fuel docks, sewage pumpout docks, courtesy docks, executive services slips (boat cleaning and preparation, chase & tow boats, cable & anchor work barges and materials handling barges, mooring space for buoy field shuttle boats), boat tour docks, retail shops, concessioner rental fleet office, executive services offices, boat repair shops, storage, utilities, combined ranger station/visitor center/ emergency medical facility and restrooms.

Moorage numbers (slips and buoys) for long-term private rental and watercraft numbers with associated docks for concessioner's rental fleet were derived from previous Uplake DCPs and the current concessions contract. Table 3 compares existing moorage with the moorage numbers previously approved. Figure 16 shows an aerial view of some of these facilities at Bullfrog Marina.

Figure 16. Bullfrog Marina



Figure 17. Halls Crossing Marina





Table 3. Wet Moorage Summary

Facility/Service	2008		2008		2008	
	Bullfrog Existing	Previous DCPS and Concessions Contract	Halls Crossing Existing	Previous DCPS and Concessions Contract	Hite Existing	Previous DCPS and Concessions Contract
Moorings:						
Slips - long-term private	260	400	165	240	0	40
Buoys - long-term private	219	210	231	150	0	54
Transient Overnight Slips	24	48	10	24	0	
Interagency Slips, includes NPS Slips	12	12	4	4	0	
Executive Services Slips	6	24		12	0	
Fuel Docks - Side Cleats are Used	1		1		0	
Concessioner Rental Fleet - Houseboats - End Ties Are Used	90	150	10	140	0	40
Concessioner Rental Fleet - Powerboats/PWC - End Ties and PWC Inserts Are Used	50	150	6	140	0	40
Sewage Pumpout - Slide Cleats are Used	1		1		0	
Totals	663	994	428	710	0	174

\*Hite buoys were permanently relocated to Bullfrog and Halls Crossing.

Under the No-Action Alternative, the existing marina facilities at Bullfrog and Halls Crossing would be maintained in their current location and at their current level of service. Due to the shallow topography of Bullfrog Bay, the location for the marina facilities at Bullfrog would vary based on water levels. Several potential locations for the Bullfrog Marina, based on lake elevation, are shown on figure 7.

In the past, water-based marina facilities at Hite included a small rental fleet and wet moorage consisting of 54 buoys and associated services, courtesy docks, fuel docks, a floating minor boat repair facility, boat pump-out docks and a floating store. Declining lake levels due to drought, between the years 1999 and 2004, resulted in the closure of water-based facilities at Hite (Figure 17) and permanent relocation of the infrastructure to Bullfrog and Halls Crossing. Under the No-Action Alternative, there are no water-based facilities at Hite.



**FIGURE 18. HITE LAUNCH RAMP AT LOW WATER**

## **Water-Based Stores**

There are currently two floating stores at Bullfrog: one store located at the rental docks (referred to as the Boat-N-Go) and the other located at the wet slips (referred to as the Dock and Stock). There is a floating store at the main marina at Halls Crossing. Under the No-Action Alternative, there would be no changes to the existing water-based stores at Bullfrog and Halls Crossing and no floating store at Hite.

## **Water-Based Food Service**

Under existing conditions at Bullfrog, there are no water-based food service facilities. The water-based store at Halls Crossing includes a water-based snack bar offering a limited menu. There is no water-based food service facility at Hite. Under the No-Action Alternative, there would be no changes to the existing water-based food service offered at Halls Crossing, nor would water-based food services be added to any of the uplake developed areas.

## **Public Boat Launch Capabilities**

There are two public boat launch ramps at Bullfrog. The main public launch ramp is located adjacent to the day-use area. A 150-foot-wide paved launch ramp is available to a lake elevation of 3,605 feet, with the ramp narrowing to an 80-foot-wide paved ramp between the lake elevations of 3,605 and 3,580 feet (figure 18). Below a 3,580-foot lake elevation, near the main launch ramp, there is an old access road surfaced with cold mix asphalt that is available for use as a launch ramp. A second launch ramp was constructed as shown in figure 9 and is called the north launch ramp. This ramp is a paved 50-foot-wide launch ramp operational between lake elevations of 3,583 and 3,557.

There is one public launch ramp at Halls Crossing. The main public launch ramp is located west of the marina facilities. The 110-foot-wide paved launch ramp is available to a lake elevation of 3,550.

Figure 19. Main Launch Ramp at Bullfrog Developed Area



The public launch ramp at Hite is paved to a 110-foot width down to a lake elevation of 3,640 feet. The ramp continues as a 30-foot-wide unpaved ramp between the lake elevations of 3,640 and 3,620. Below a lake elevation of 3,620, the ramp is gravel and dirt and is not maintained, but is available for launching at Hite at the boaters' own risk.

The supplemental calculations to the 1987 Carrying Capacity Study calculated the capacity of public launch facilities in the uplake district to launch boats on a 24-hour basis, assuming 12 hours each for launch and retrieval. The exact volume of existing launches is not known; however, NPS staff has determined that the maximum capacity of the launch ramp is not fully utilized based on field observations of typical launch days over a 24-hour period.

Farley Canyon was identified as a shoreline camping area in the 1988 Environmental Assessment and Management/Development Concept Plans for Lake Powell's Accessible Shorelines (Glen Canyon NRA 1988). The access road is graded when needed and there is currently no identified launch ramp. Campers are launching small watercraft from the edge of an illegal road that extends from elevation 3700 feet to the current water level. This road is not being maintained under this alternative.

Hardened launch ramps would be maintained in the existing condition under the No-Action Alternative, with maintenance as needed.

<b>Table 4. Launch Ramps</b>		
<b>Developed Area</b>	<b>Name</b>	<b>Status</b>
Hite	Public Launch Ramp	Paved at 110-foot width to 3,640 feet Unpaved at 30-foot width to 3,620 feet Unimproved gravel/dirt route to Colorado River shoreline
Bullfrog	Main Public Launch Ramp	Paved at 150-foot width to 3,605 feet Paved at 75-foot width to 3,580 feet Hardened surface at 50-foot width below 3,580 feet Bullfrog Bay becomes unusable near 3,500 feet and new ramp location would be required
	North Public Launch Ramp	Paved at 80-foot width to 3,557 feet
	Ferry Ramp	Usable to 3,600 feet Alternate ramp usable to 3,555 feet or lower
Halls Crossing	Main Public Launch Ramp	Paved at 110-foot width to 3,572 feet Paved at 80-foot width to 3,550 feet
	Ferry Ramp	Usable to 3,580 feet Alternate ramp (main public launch ramp) usable to 3,550 feet

## Launch Ramp Support Facilities

Existing launch ramp support facilities at Bullfrog and Halls Crossing are located at the top of the launch ramps and include parking for vehicles and boat trailers, restrooms, a fish cleaning station and the boat ready area that also functions as a day-use area. At Bullfrog, there is a small turnout at the top of the launch ramp to allow visitors to prepare boats for transportation and trash disposal. The launch ramp support facilities at Hite are also located at the top of the launch ramp and include restrooms, a fish cleaning station, porta-potty waste disposal station, parking area for vehicles and boat trailers and a shade shelter with wayside exhibit. There would be no change to the existing launch ramp support facilities at Bullfrog, Halls Crossing and Hite under the No-Action Alternative.

## Ferry Service Facilities

Ferry services operated by UDOT are currently available between Bullfrog and Halls Crossing. Ferry service is offered from several separate launch ramp locations in both Bullfrog and Halls Crossing areas, depending on water level. At Bullfrog, the main ferry ramp is operational at lake elevations above 3,600 feet. The Halls Crossing ferry service facilities include the main ferry ramp that is operational at lake elevations above 3,580 feet. As shown on figure 8, the ferry launch ramp at Halls Crossing is at the public launch ramp below a lake elevation of 3,580 feet. The National Park Service maintains the ferry ramps, but is not involved in ferry operations.

As shown in figure 7, below a lake elevation of 3,600 feet, the ferry launch ramp at Bullfrog is accessed by a gravel road located adjacent to the overflow parking area. No changes to the Bullfrog or Halls Crossing ferry service facilities would occur under the No-Action Alternative.

## **River Runner Takeout**

The Hite public launch ramp serves as the take-out point for rafters on the Colorado River at the inlet to Lake Powell. The launch ramp takeout is usable between 3,700 to 3,620 feet lake levels. Below that elevation, the river runner takeout is relocated to a temporary location upstream and across from the Hite launch ramp. The current river takeout location is shown on figure 7. Under the No-Action Alternative, Glen Canyon NRA would continue to maintain a takeout at Hite. Because the river channel is subject to meandering and movement, the low water takeout may not always function due to changes in topography, shoreline access and siltation patterns. If conditions occur that the low water takeout or the Hite ramp no longer function for this use, additional site investigation, compliance and U.S. Fish and Wildlife Service (USFWS) consultation would be required to relocate this facility to another place along the river channel.

## **ALTERNATIVE B (PREFERRED ALTERNATIVE)**

Alternative B is the preferred alternative. The preferred alternative is the NPS preferred alternative (and is the proposed action for Section 106 compliance) and defines the rationale for the action in terms of resource protection and management, visitor and operational use, costs and other applicable factors. All actions described in the preferred Alternative Are consistent with the approved 1979 GMP and related recreation area documents.

Alternative B represents changes to current facilities in the form of facility upgrades, expansion, or improvements generally keeping with approved plans and anticipated future needs including increases to employee, concessioner and visitor services and paving launch ramps. This Alternative Also reorganizes and relocates some marina services among the three marinas. The location of facilities under Alternative B for Bullfrog, Halls Crossing, Hite and Farley Canyon are shown in figures 20, 21 and 22, respectively. Table 1 contains a summary of the changes under Alternative B, as well as a comparison with Alternative A. Table 2 contains changes in disturbed area acreages as a result of alternatives A and B. Table 6 provides a comparison of the alternatives with the project objectives. Facilities that would not change from the existing condition as a result of Alternative B are not discussed in detail in the following sections. Those facilities that would remain unchanged from the existing condition, except for routine maintenance and repairs, would include the following:

- Bullfrog day-use facilities
- Bullfrog and Hite visitor contact/ranger station and emergency facilities
- concessioner boat maintenance and repair and property maintenance facility at Hite
- NPS maintenance facilities at Halls Crossing and Hite
- Halls Crossing and Hite fee collection systems
- airstrips at Bullfrog and Hite
- Hite Marina facilities
- water-based stores at Bullfrog, Halls Crossing and Hite
- Hite launch ramp

- launch ramp support at Bullfrog and Halls Crossing
- river runner takeout at Hite

## **Employee, Concessioner and Partner Housing**

At Bullfrog, under Alternative B, all long-term employee trailer housing would be consolidated into one area northeast of the Bullfrog campground. Trailer housing would be replaced with permanent housing comprised of single-family homes, duplex and multiplex units. Seasonal employee housing would be upgraded and expanded at the existing site southwest of secured storage (figure 21). The current concessioner trailer housing area would be reclaimed.

Increased visitation is anticipated in the future and additional staff would be needed to operate facilities and visitor services. Privately owned housing for rent or purchase outside the NRA is nonexistent. Up to 4 additional NPS housing units (for a total of up to 29 units), up to 24 additional concessioner housing units (for a total of up to 197) and up to 6 additional partner housing units (for a total of 14) would be added at Bullfrog to serve the school and provide staff for interagency law enforcement. The 24 additional concessioner housing units would consist of construction of an additional dormitory or efficiency unit building within the seasonal housing area shown on figure 21.

The existing public RV park at Bullfrog would be upgraded and converted to an employee RV park with the number of sites remaining at 24. A building with shower and laundry facilities would be added in the vicinity of the seasonal housing and employee RV park. Some seasonal and concession employees are retired and work seasonally, living out of their RVs. An employee RV park provides efficient and economical housing options for some seasonal employees. The existing concessioner RV park, adjacent to the existing concessioner housing area, would be removed and revegetated with native plants.

The existing employee trailer housing units at Halls Crossing and Hite would be replaced with new housing units. Up to 2 additional permanent NPS housing units (for a total of up to 10 units) and up to 4 additional concessioner units (for a total of up to 46 units) would be added at Halls Crossing. An employee RV park providing housing for temporary employees would be constructed at Halls Crossing for up to 12 RV sites.

No additional housing would be added at Hite; however, the existing housing would be replaced with new housing units.

## **Overnight Accommodations**

Under Alternative B, Defiance House Lodge and family rental units at Bullfrog would be expanded so that up to a total of 94 units would be added (for a total of up to 150 units). The allocation of lodge units versus family rental units would be determined by the National Park Service in conjunction with the concessioner. The Defiance House Lodge facilities would be upgraded. At Halls Crossing, up to an additional 40 family rental units (for a total of up to 60 units) would be constructed. The existing family rental unit trailers at Bullfrog and Halls Crossing would be replaced with new units (figure 21).

The number of family rental units available at Hite would be increased by up to 15 units (for a total of up to 20 units) and would be located in the same area as the existing units (in the same area as the employee and concessioner housing as shown on figure 22). The existing family rental trailer units would be replaced with new units.

## Visitor Camping

Under Alternative B, the developed campground at Bullfrog and the Bullfrog RV park would be consolidated in the existing campground location (figure 21). Anticipated increases in visitation in the future would result in increased demand for visitor camping. The combined campground and RV park would be expanded by up to 128 sites (for a total of up to 230 sites), with approximately two-thirds of the new sites offering hookups with 50-amp electrical service and non-hookup sites. The balance of the non-hookup sites would be divided between a designated group camping area and walk-in tent sites. The new group camping area is envisioned to consist of a “pod” of 6 sites, each of which could accommodate up to 8 tents and 15 people per site. A site analysis and design concept plan was developed for the Bullfrog campground (NPS 1998b). The proposed increases in numbers of campsites represent the maximum number of campsites that could be expected with full development of the area designated for camping. The proposed campsites would be developed to accommodate a variety of camping vehicle sizes, circulation patterns and visitor camping experiences.

A small store, shower and laundry facility and amphitheater would be added. The RV waste disposal station would be upgraded at the Bullfrog campground. Consolidation of these services at the campground location would improve the efficiency of operation of the Bullfrog development. No improvements would be made to primitive camping at North and South Bullfrog and Stanton Creek.

The Halls Crossing campground would be upgraded in the current location, including site upgrades and upgrades to the restroom facilities. The RV waste disposal station would also be upgraded in the current location. At the RV park, hookups would be upgraded to include 50-amp electrical service and up to 8 additional RV sites would be added (for a total of up to 40 sites). Increased demand for RV sites would be expected with upgrading of available service. The proposed increases in numbers of campsites represent the maximum number of campsites that could be expected with full development of the area designated for camping.

The existing primitive campground would be upgraded at Hite. Upgrades would include defining up to 25 non-hookup sites in the campground loop (figure 22) to include campsites, picnic tables, fire rings and grills. A centralized water source would be installed at the campground and restroom facilities would be added.

Under Alternative B, there would be no change to shoreline camping at Hite for lake elevations above approximately 3,620 feet. Primitive camping would be available along the shoreline, the Dirty Devil River and at Farley Canyon. Below a lake elevation of approximately 3,620 feet, shoreline camping would be permitted on the Colorado River at designated camping sites. This area would be upstream of the Hite launch ramp as shown in figure 22. Micro flush toilets would be installed if determined necessary based on campsite use.

## Shower and Laundry Facilities

Under Alternative B, the existing shower and laundry facilities at Bullfrog would be removed and new shower and laundry facilities would be constructed at the campground, primarily for visitor use. The existing shower facilities at the campground and at the RV park at Halls Crossing would be removed. The Village Center at Halls Crossing would be upgraded to include shower and laundry facilities for employees and visitors. The land-based store at Hite would be expanded to include visitor and employee shower and laundry facilities.

## **Land-Based Stores**

Under Alternative B, the store at the Village Center at Bullfrog would be expanded to provide a greater supply of items and food service. The warehouse and boat maintenance and repair facility would be moved, allowing the store to expand into this area. A campground store would be added at the Bullfrog campground to increase the variety of items offered and expand use of the facilities.

The Village Center store at Halls Crossing would be upgraded by replacing it with a larger building. The new building would provide adequate storage for supplies, land-based food service and shower and laundry facilities. The fuel station area would be regraded and the pavement replaced to eliminate uneven areas.

Under Alternative B, the land-based store at Hite would be upgraded and expanded to include shower and laundry facilities and to provide a potential food service facility. The building would undergo aesthetic improvements such as painting and the addition of a shade cover. The concrete pad around the fueling area would be replaced and extended. The concessioner secured storage and maintenance area adjacent to the store would be visually screened from the store. The RV waste disposal station would be upgraded with a new pump-out and containment pad.

## **Land-Based Food Service**

Under Alternative B, the Anasazi Restaurant at Bullfrog would be expanded by up to 70 seats (for a total of up to 250 seats). An additional food service facility would be added at the expanded Village Center store. At Halls Crossing, a food service facility would be added to the expanded Village Center store. The store at Hite would be expanded to provide a potential food service facility in the form of a small snack bar operated seasonally or as demand warrants.

## **Day-Use Facilities**

Under Alternative B, a second day-use facility would be constructed at Halls Crossing (as shown on figure 21) to include picnic tables, shade shelters and restroom facilities. A day-use facility would be constructed at Hite at the top of the launch ramp. A partnership with UDOT would be developed for the purpose of pursuing upgrades to the SH 95 overlook to include a defined day-use area with picnic tables, shade shelters and micro-flush toilets.

## **Ranger Station/Visitor Contact Station and Emergency Facilities**

Under Alternative B, the permanent helipad would remain at Halls Crossing. The helipad site would be upgraded to include a hardened, painted surface for landing and a wind sock. The low water landing location for helicopters at Halls Crossing would be the parking lot adjacent to the marina.

## **Concessioner Boat Maintenance and Repair and Property Maintenance Facilities**

The concessioner rental boat maintenance and repair facilities and property maintenance facilities at Bullfrog would be moved from the existing location adjacent the Village Center to the secured storage



area, northwest of the employee RV park. Visual screening would be enhanced at the new location to conceal the repair and storage areas from the general public. Space vacated at the Village Center would be used to expand the Village Center store and food service.

The secured storage area at Halls Crossing, including the boat maintenance and repair and property maintenance facilities, would be relocated to the old airstrip area, which is less visible from all points at Halls Crossing.

## **Secured Storage**

Under Alternative B, the secured storage area at Bullfrog would be expanded by up to 250 spaces (for a total of up to 1,000 spaces). An enclosed storage building with screening would be constructed and stacked storage would be used, if feasible. The facility screening would be improved to provide some mitigation for the visual impacts of the storage area.

The secured storage area at Halls Crossing would be relocated to a less visible location as shown in figure 21, which is an area already disturbed by an old airstrip. The new secured storage area would include an addition of up to 170 spaces (for a total of up to 500 spaces), an enclosed storage facility and visual screening, as well as being surrounded by a 6-foot chain-link fence and locking gate. Covered storage would be made available.



## Bullfrog Marina Alternative B

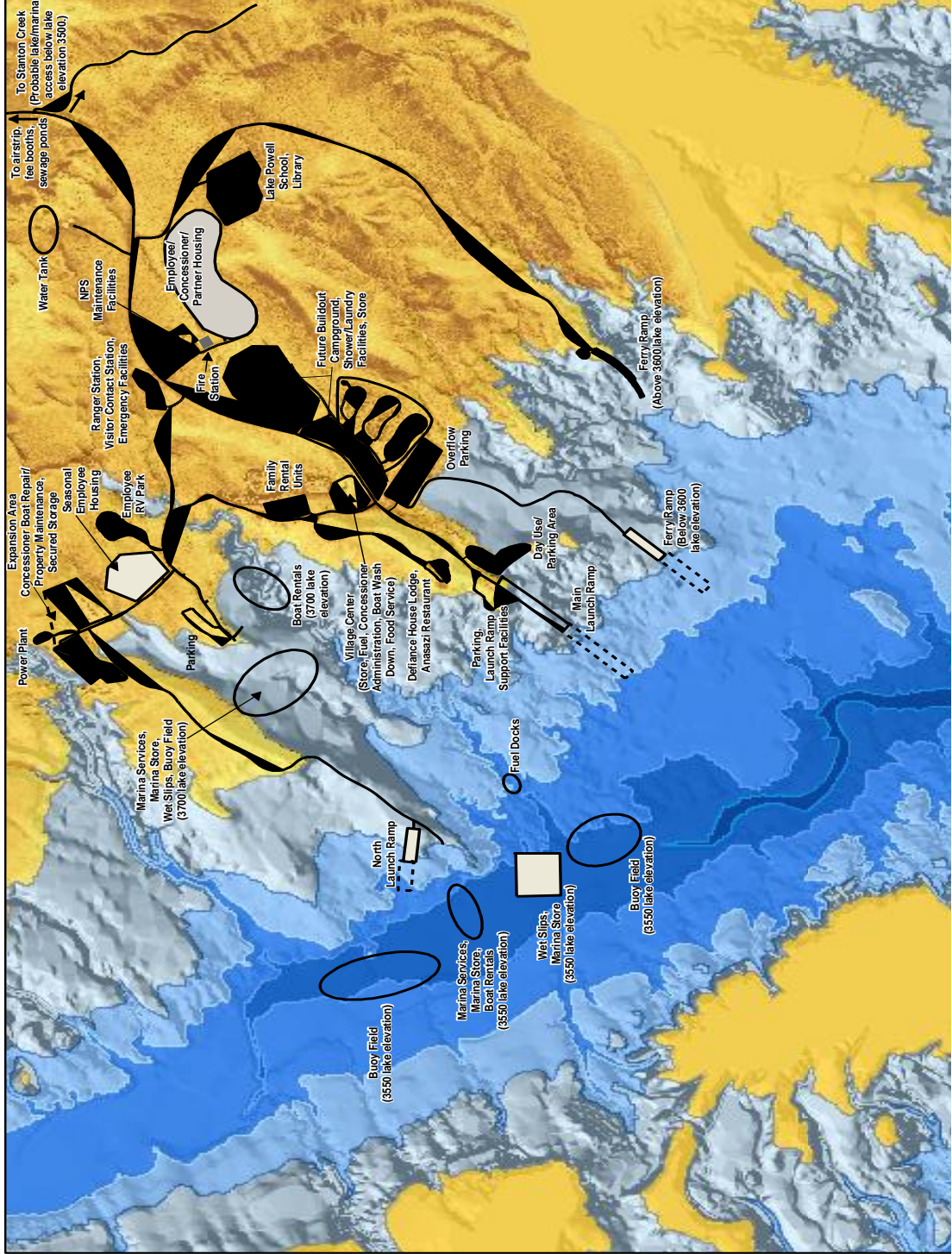
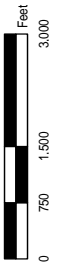
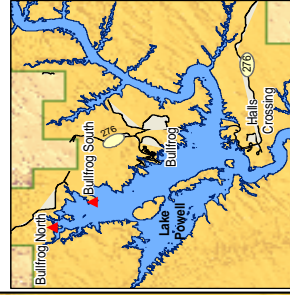
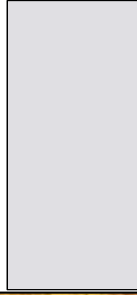
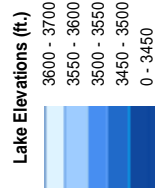
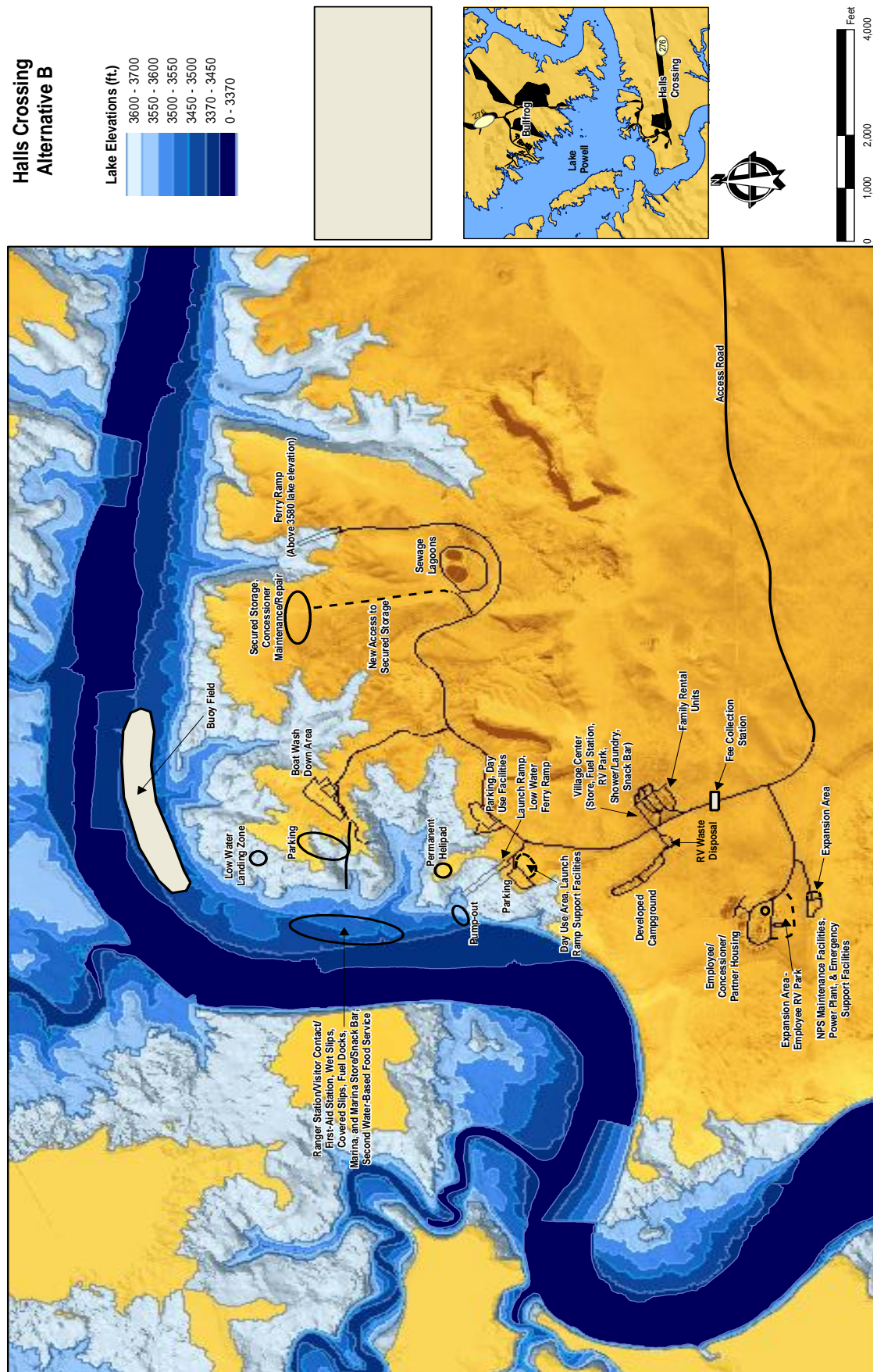






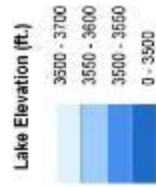
Figure 21. Halls Crossing Alternative B







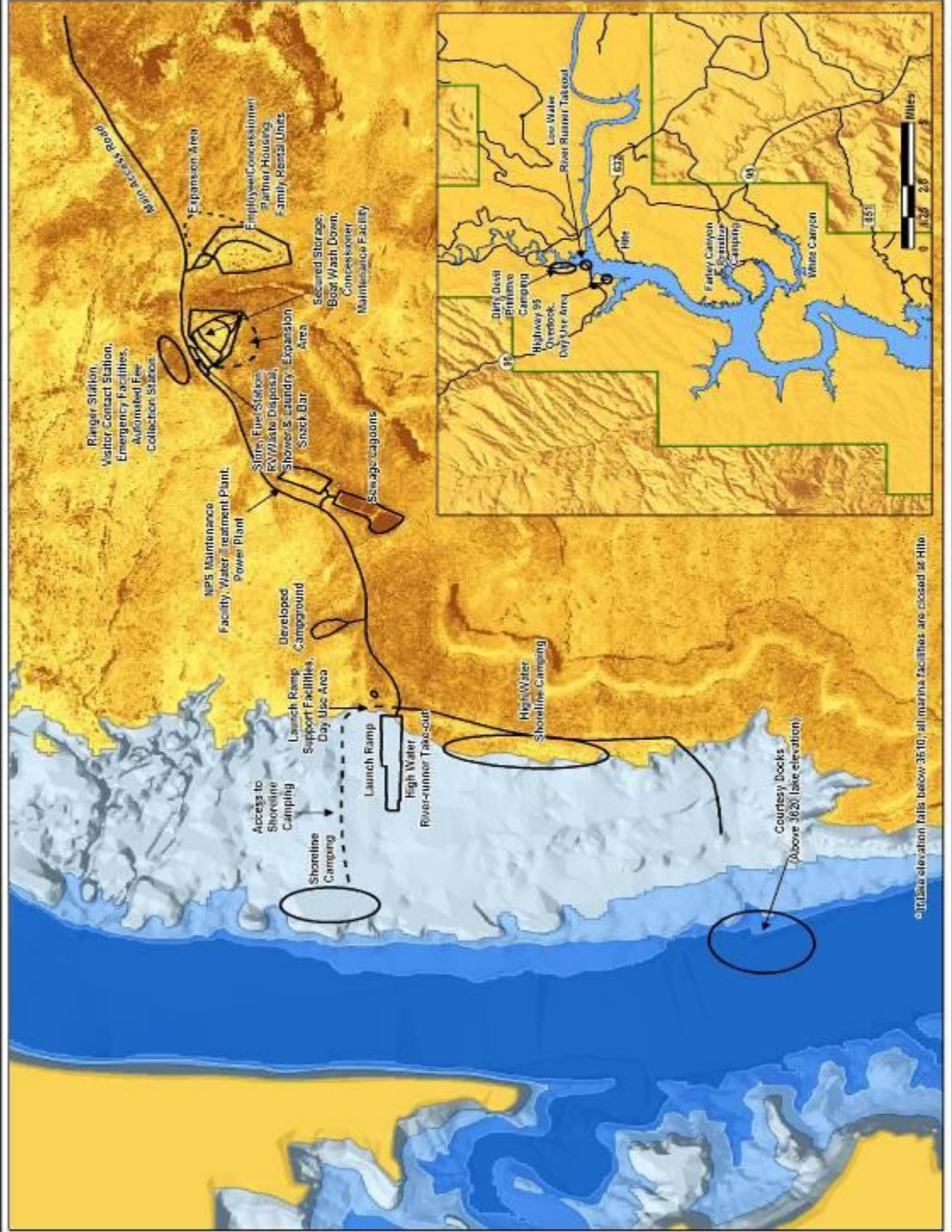
## Hite Marina Alternative B



### Notes:

Due to sitation and river channel meandering actual river topography would vary.

Shoreline camping and river runner takeout sites would vary based on water levels and river channel meandering.



o If lake elevation falls below 3510, all marina facilities are closed at Hite.

Courtesy Docks  
(Above 3620 lake elevation)