



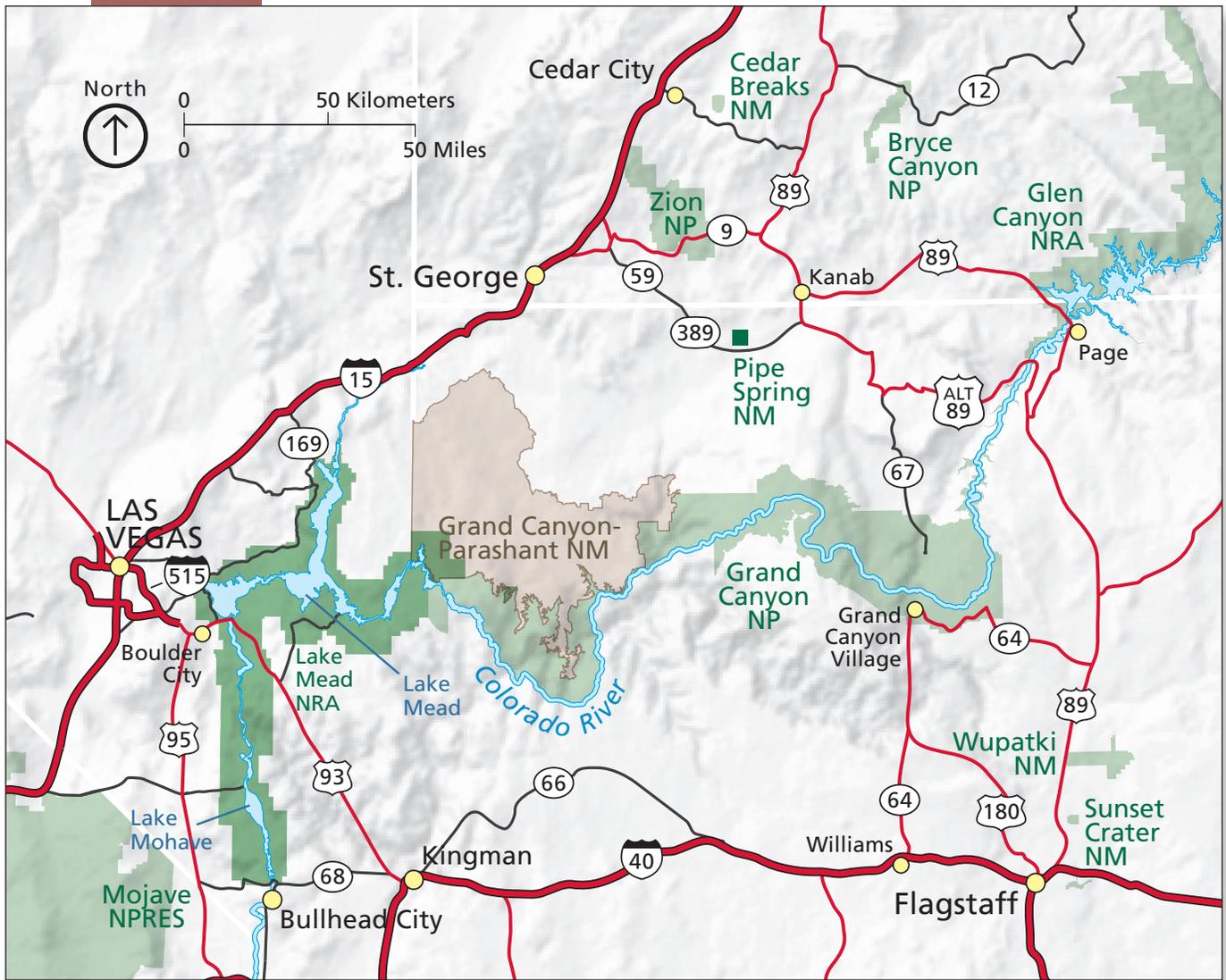
Foundation Document

Lake Mead National Recreation Area

Arizona and Nevada

September 2015





Contents

Mission of the National Park Service 1

Introduction. 2

Part 1: Core Components 3

 Brief Description of the Park. 3

 Park Purpose 5

 Park Significance 6

 Fundamental Resources and Values 7

 Other Important Resources and Values 10

 Related Resources 10

 Interpretive Themes 11

Part 2: Dynamic Components 12

 Special Mandates and Administrative Commitments 12

 Assessment of Planning and Data Needs 12

 Analysis of Fundamental Resources and Values 13

 Identification of Key Issues and Other Important or Related Issues 13

 Other Important or Related Issues 15

 Planning and Data Needs 16

Part 3: Contributors 23

 Lake Mead National Recreation Area 23

 NPS – Pacific West Region. 23

 NPS – Washington Support Office. 23

 NPS – Denver Service Center, Planning Division 23

Appendixes 24

 Appendix A: Enabling Legislation for
 Lake Mead National Recreation Area 24

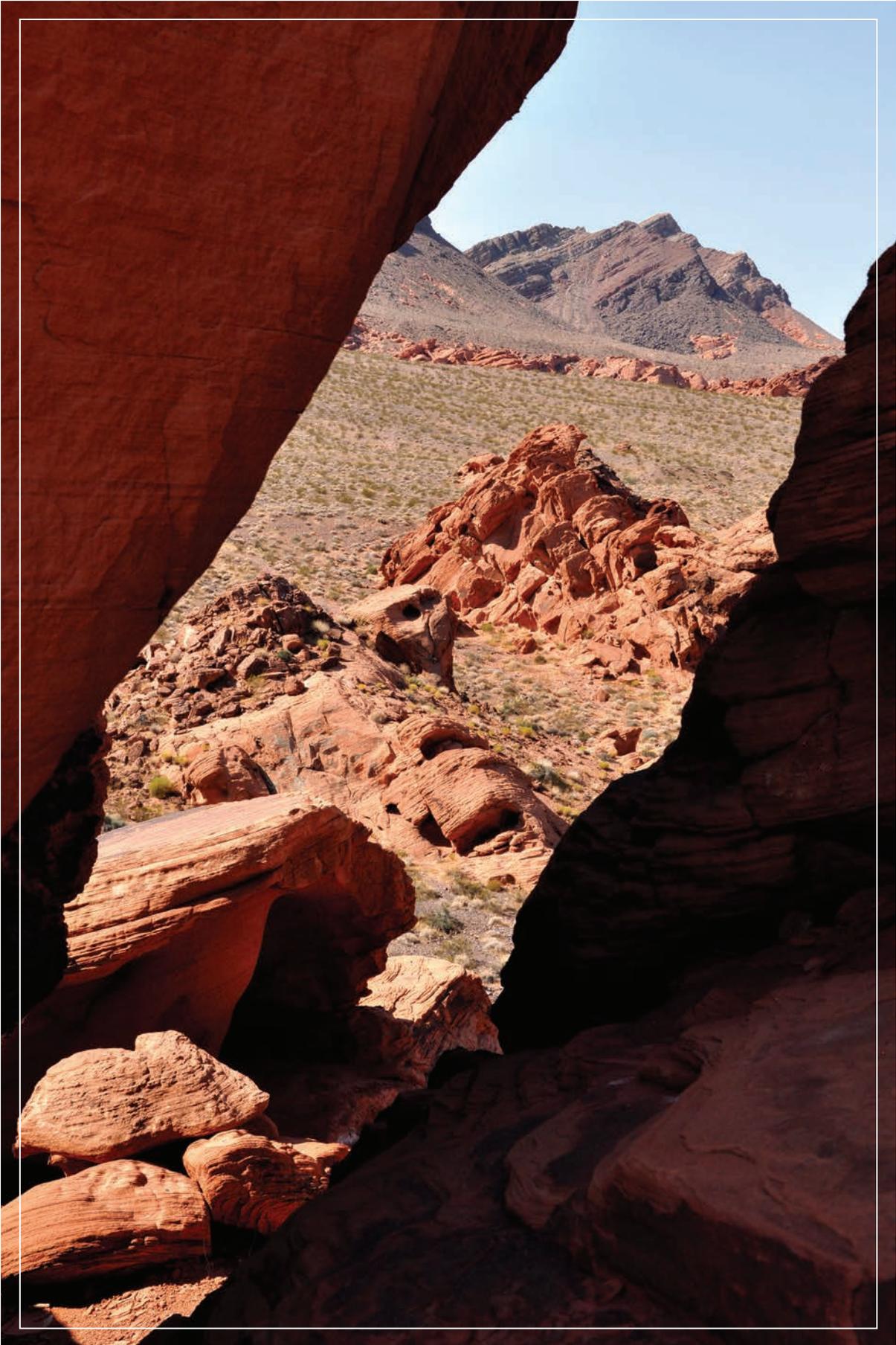
 Appendix B: Related Federal Legislation 27

 Appendix C: Inventory of Special Mandates,
 Administrative Commitments, and Existing Plans 36

 Appendix D: Analysis Tables for Fundamental Resources and Values
 and Other Important Resources and Values. 53

 Appendix E: Other Important or Related Issues 92





Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship:** We share a commitment to resource stewardship with the global preservation community.
- **Excellence:** We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity:** We deal honestly and fairly with the public and one another.
- **Tradition:** We are proud of it; we learn from it; we are not bound by it.
- **Respect:** We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises over 400 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.



The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological values.

Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park’s purpose, significance, fundamental resources and values, other important resources and values, and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine what the most important attributes of the park are. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a (hard copy) paper product and as geospatial data for use in a web mapping environment. The park atlas for Lake Mead National Recreation Area can be accessed online at: <http://insideparkatlas.nps.gov/>.



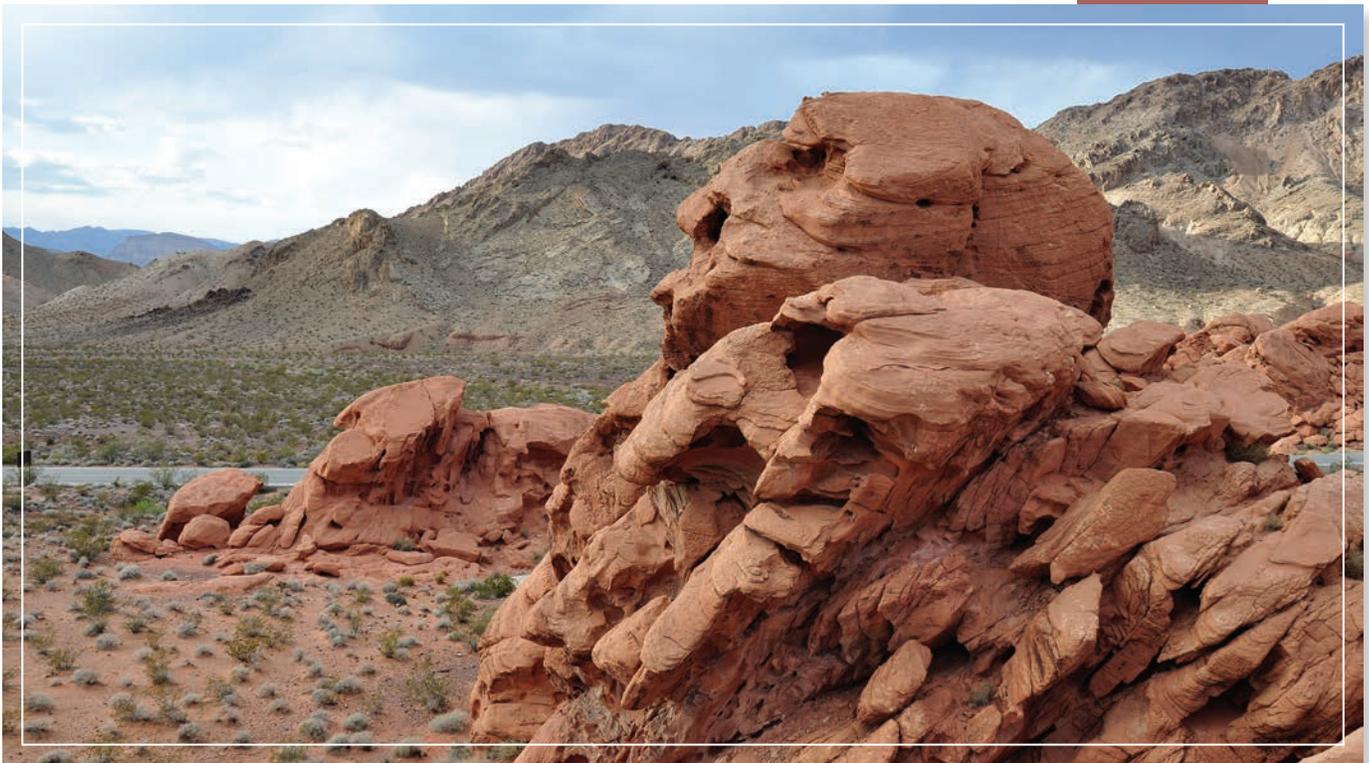
Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, other important resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

Brief Description of the Park

Lake Mead National Recreation Area (NRA) is a startling contrast of desert and water, mountains and canyons, primitive backcountry and human innovation. Two powerful forces created the backdrop for this park. First, natural processes occurring over millions of years along the interface of the Basin and Range geologic province and the Colorado Plateau geologic province built its foundation. This landscape consists of vast desert expanses, dramatic geologic features, and diverse ecological communities. Then, over the past 100 years, humans modified the landscape to better suit it to present day needs. The primary modifications include two massive reservoirs—Mead and Mohave—in one of earth’s hottest, driest regions. These lakes supply high-quality municipal water, power production, and agricultural irrigation water to tens of millions of people across Nevada, Arizona, California, and Mexico. Collectively, Lake Mead NRA encompasses this unique array of natural and modified landscape and waterscape.

With this combination of large water bodies amidst vast terrestrial expanses in Nevada and Arizona, Lake Mead NRA provides a very diverse recreational resource. As the nation’s first national recreation area, water- and land-based recreation attract approximately seven million visitors per year—not including the four million vehicles that travel 20 miles through the park on US Highway 93—which makes the park one of the most visited park units in the national park system and an integral component of the region’s economy. Larger than the state of Delaware at 1.5 million acres, Lake Mead NRA is the third largest unit in the national park system outside of Alaska. This figure includes more than 185,000 acres of designated wilderness and more than 373,000 additional acres of proposed, eligible, and potential wilderness.





The park represents elements of the Mojave, Sonoran, and Great Basin deserts. The geologic diversity and convergence of these desert ecosystems provide habitat for a rich diversity of plants and animals. Currently, 822 native plant species and 387 native animal species have been officially documented in the park, with 10 of these listed as threatened, endangered, or candidate species, and 140 considered rare species. Anecdotal evidence and informal documentation indicates that many more species of animals and plants inhabit the park. In addition, the park contains globally significant herds of desert bighorn sheep, with some of the highest population numbers in the world. Also included in the park's diverse natural resources are spectacular vistas including deep canyons, sheer cliffs, layers of sharp and colorful mountain ridges and rock formations, and sweeping bajadas.

Both terrestrial and submerged landscapes add to the park's rich human history and diversity. Evidence of 10,000 years of Native American civilization is found in the vicinity of the Lake Mead NRA. Fur trappers, Mormon settlers, prospectors, ranchers, and developers of riverboat and railroad supply networks arrived later in attempts to survive and prosper in the rugged desert environment. Architectural wonders such as the Hoover Dam, built in the 1930s, and the Mike O'Callaghan-Pat Tillman Memorial Bridge that opened in 2010, add to the rich human history. Today, Lake Mead NRA is an attraction to millions of people from large metropolitan communities in the region as well as visitors from all over the world.

In addition to overseeing the resources and values of Lake Mead NRA, the managers of Lake Mead NRA also assist in joint management with the Bureau of Land Management (BLM) of the adjacent Grand Canyon-Parashant National Monument to the northeast. Approximately 200,000 acres of the Grand Canyon-Parashant National Monument, which was established in 2000, are within the legislative boundaries of the Lake Mead National Recreation Area. Although these two park units are operationally distinct and separate, staff from Lake Mead NRA assist in resource management, visitor use management, and law enforcement to assure that the overall mandates of the area are fulfilled. The relationship between the two parks and the related management of the Grand Canyon-Parashant is evolving. It should be noted that this foundation document applies only to Lake Mead NRA, with the exception of any transboundary issues that are identified later in this document. A separate foundation document will be developed for Grand Canyon-Parashant National Monument.

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Lake Mead NRA was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The park was established when the enabling legislation adopted by Congress was signed into law on October 8, 1964 (see appendix A for enabling legislation and appendix B for other related legislation). The purpose statement lays the foundation for understanding what is most important about the park.

The purpose of LAKE MEAD NATIONAL RECREATION AREA is to provide diverse public recreation, benefit, and use on Lakes Mead and Mohave and surrounding lands in a manner that preserves the ecological, geological, cultural, historical, scenic, scientific, and wilderness resources of the park.



Park Significance

Significance statements express why a park's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Lake Mead National Recreation Area, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the park and why an area is important within a global, national, regional, and system-wide context. They focus on the most important resources and values that will assist in park planning and management.

The following significance statements have been identified for Lake Mead NRA. (Please note that the sequence of the statements do not reflect the level of significance.)

1. As the first and largest national recreation area in the national park system, Lake Mead National Recreation Area is an expression of the national value of expanding outdoor recreation opportunities. The National Park Service manages public access to the waters, shorelines, and surrounding lands of the park, including the largest reservoir in the United States.
2. Lake Mead National Recreation Area offers dramatic scenery and a diverse array of land- and water-based recreation opportunities in close proximity to several large urban centers of the southwestern United States. With approximately seven million visitors each year, the park supports some of the nation's highest levels of water recreation and backcountry use.
3. Situated in the northeastern Mojave Desert near the interface with both the Great Basin Desert to the north and the Sonoran Desert to the south, Lake Mead National Recreation Area preserves a great diversity of biological resources, intact habitat, and ecological connectivity in the region, including many endemic, threatened, and endangered species and rare natural communities.
4. Lake Mead National Recreation Area showcases a remarkable collection of geological and paleontological features spanning more than 1.4 billion years of the earth's history. These exposed features, which include bajadas, lava flows, granite plutons, boulder fields, volcanoes, fault lines, petrified wood, and other fossils, collectively provide insights into complex geologic processes and represent some of the oldest rocks in this geographic region.
5. The high diversity of cultural resources found at Lake Mead National Recreation Area—both on land and submerged—remain as evidence of a 10,000-year continuum of human history in the region. These resources represent many human themes and stories that relate to numerous Native American cultures and their adaptation to and migration through the landscape, as well as European settlement, mining, ranching, exploration, and the construction of Hoover Dam.
6. Lake Mead National Recreation Area contains vast backcountry and wilderness lands, including nine designated wilderness areas that cover more than 185,000 acres and several other proposed, eligible, or potential wilderness lands that encompass an additional 373,000 acres. These lands serve to preserve ecological resources and processes and provide exemplary opportunities for primitive recreation and desert solitude.
7. Lake Mead National Recreation Area contains water storage reservoirs and infrastructure managed by water and energy supply agencies that provide critical resources to Nevada, Arizona, and California. These resources also provide a focal point for scientific research and policy discussions of national importance, including: the implications of urbanization on water scarcity, the need for water use efficiency and sustainable land uses, the importance of maintaining high water quality, and the effects of climate change on the natural and human environment.

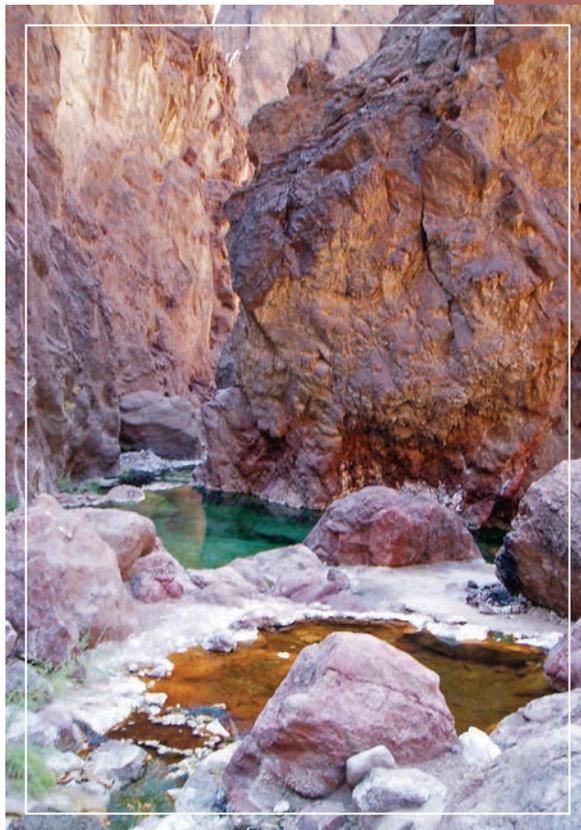
Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Fundamental resources and values are closely related to a park's legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Lake Mead NRA:

- Abundant Land and Water Recreation** – The park offers abundant opportunities for a wide range of land- and water-based recreational pursuits. Frontcountry settings offer swimming, beach lounging, boating, sailing, kayaking, fishing, hiking/walking, bicycling, picnicking, as well as car, tent, and recreational vehicle camping. Backcountry settings offer opportunities for self-reliant and self-directed adventures in boating, river rafting, boat tours, self-contained camping, hiking, backpacking, 4x4 travel on approved roads, climbing and canyoneering, swimming, SCUBA diving, fishing, wildlife watching, and hunting.
- Opportunities to Appreciate Spectacular Scenery** – The park offers opportunities to appreciate spectacular visual resources including: deep canyons, dry washes, sheer cliffs, near and distant mountain ranges, the variable reflection and motion of the lakes, colorful soils and rock formations, mosaics of visual texture provided by different vegetation, and appealing contrasts between rugged desert landscapes and vast water bodies.
- Riverine and Reservoir Ecosystems** – The park includes riverine and reservoir ecosystems of the Colorado River system, including open water, shoreline environments, and outstanding water quality at the heart of the park.





- **Groundwater** – The park contains groundwater resources of sufficient quality and quantity to support springs as well as the specialized aquatic and riparian habitats they provide.
- **Diverse Array of Geologic Features and Processes** – The park encompasses a diverse array of geologic features and dynamic geomorphic and hydrogeologic processes that give rise to iconic landforms, resilient ecosystems, rich mineral resources, and important paleontological finds.
- **Functional Desert Habitats** – The park preserves resilient and ecologically functional native plant and animal assemblages within diverse terrestrial desert habitats.
- **Species of Conservation Interest** – The park hosts populations and protected habitat for plant and animal species of conservation interest, including federally listed species and their critical habitats, species protected under conservation plans in lieu of listing, species that are new to science, and ecologically rare and endemic species.
- **Lands with Wilderness Character** – The park contains nine designated wilderness areas (185,080 acres) that possess the following qualities of wilderness character: untrammeled, undeveloped, natural, outstanding opportunities for solitude or primitive and unconfined recreation, and other features of value. The park also contains another 91,963 acres of proposed wilderness, 264,615 acres of eligible wilderness, and 16,816 acres of potential wilderness that may possess these same qualities of wilderness character. These wilderness lands provide both easily accessible and challenging wilderness experiences for park visitors in rugged desert terrain. The wilderness lands also protect large tracts of important habitat and critical water sources for range-wide benefits to many different plant and animal species. (See the FRV analysis table for “Lands with Wilderness Character” in appendix D for definitions of each wilderness category.)
- **Science and Research** – The park provides abundant opportunities for applied and empirical research, including the scholarly studies of social science, natural and cultural resources, and physical and biological processes, including climate change. These opportunities include the preservation, curation, and use of park archives and collections.

- **Cultural Landscapes and Historic Structures** – The park contains intact historic structures and cultural landscapes. The historic structures include buildings, roads, railroads, and a variety of other structures constructed to serve past human activities, such as agriculture, ranching, mining, and the construction of Hoover Dam. Cultural landscapes include both natural elements (such as land forms, soil, and vegetation) and cultural elements (such as archeological sites and historic structures and submerged resources) that reflect human adaptation and use of the natural environment. Identified potential cultural landscapes within the park relate to the Puebloan occupation, historic mining and settlement, and park development.
- **History and Cultural Anthropology** – The park helps preserve exemplary stories, places, and other resources associated with Native Americans and their traditional practices, early European and European American exploration, settlement, farming, religious activities, mining, ranching, and government activities that influenced the environment.
- **Archeology** – The park includes well-preserved archeological sites (including submerged sites) that contribute to our understanding of the human ecology throughout the Holocene. Prehistoric archeological sites range from prehistoric surface artifact scatters to deeply stratified multicomponent sites, pueblo ruins, and rock art sites. Historic archeological sites range from trash scatters and early mining and ranching sites to town sites and complex industrial sites associated with the construction of Hoover Dam.



Other Important Resources and Values

Lake Mead NRA contains other resources and values that are not fundamental to the purpose of the park and may be unrelated to its significance, but are important to consider in planning processes. These are referred to as “other important resources and values” (OIRV). These resources and values have been selected because they are important in the operation and management of the park and warrant special consideration in park planning.

The following other important resources and values have been identified for Lake Mead NRA:

- **Experiential Opportunities** – The park provides opportunities for park visitors to experience the natural world and cultural context through important visual connections, dark night skies, natural sounds, and natural smells.
- **Clean Air** – The park is characterized by good air quality and protected air quality-related values, such as visibility, as both components of the natural system provide for healthy conditions for park visitors, partners, and employees.
- **Transboundary Connectivity** – The park is managed within a broader context such that ecological, cultural, and managerial connectivity to adjacent conservation lands is fostered, including shared and adjacent wilderness areas, “Areas of Critical Environmental Concern,” critical habitat for listed species, wildlife management areas, and regional parks and trails.

Related Resources

- **Related Resources, Facilities, and Operations Not Managed by the National Park Service** – Within the park boundaries, numerous resources, facilities, and operations are managed by other local, state, and federal agencies, including major water supply infrastructure for the Las Vegas Valley, two major federal dams affecting lake water levels/volumes, a state wildlife refuge, a federal and a state fish hatchery, two county parks, major federal and state highways, and utility transmission corridors. Although other agencies hold the primary management responsibility for these facilities and sites, Lake Mead National Recreation Area is directly affected by their management and the National Park Service collaborates in their respective management decisions.



Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, park purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for park staff to develop opportunities for visitors to explore and relate to all park significance statements and fundamental and other important resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by park resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the park and its resources. These themes help explain why a park story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the park.

The following interpretive themes have been identified for Lake Mead NRA:

1. The striking landscapes of Lake Mead National Recreation Area awaken the human spirit with opportunities for wilderness solitude and offer millions of visitors a place for relaxation, recreation, and renewal.
2. The convergence of three deserts, two geographical provinces, and North America's largest inland reservoir creates a mosaic of landforms and rich, diverse, but fragile ecosystems that allows us to explore the lessons of interdependence found in the natural world around us.
3. Water is life in the desert, creating diversity and prosperity that has long attracted people to this area. Over the long continuum of human activity at Lake Mead National Recreation Area, interaction with the river changed the people, changed the river, and changed the desert. This relationship continues today and into the future as new opportunities and challenges emerge.



Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental and other important resources and values change over time, the analysis of planning and data needs will need to be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

Special Mandates and Administrative Commitments

Many management decisions for a park unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a park that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the park, or through a judicial process. They may expand on park purpose or introduce elements unrelated to the purpose of the park. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, arrangements for emergency service responses, etc. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the park and facilitate working relationships with other organizations. They are an essential component of managing and planning for Lake Mead NRA.

For more information about the existing special mandates and administrative commitments for Lake Mead NRA, please see appendix C. Other notable planning documents that guide the management of Lake Mead NRA are also included in appendix C.

Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the park's fundamental and other important resources and values, and develop a full assessment of the park's planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

There are three sections in the assessment of planning and data needs:

1. analysis of fundamental and other important resources and values (see appendix D)
2. identification of key issues
3. identification of planning and data needs (including spatial mapping activities or GIS maps)

The analysis of fundamental and other important resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.



Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value. Please see appendix D for the analysis of fundamental and other important resources and values.

Identification of Key Issues and Other Important or Related Issues

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for a park. Key issues often raise questions regarding park purpose and significance and fundamental and other important resources and values. For example, a key issue may pertain to the potential for a fundamental or other important resource or value in a park to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions that are not directly related to purpose and significance, but which still affect them indirectly. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Lake Mead NRA and the associated planning and data needs to address them:

Key Issues

- **Operational Capacity** — Lake Mead NRA’s staffing level has long been inadequate to meet minimally acceptable standards in multiple program areas. This shortfall has been identified in several budget and staffing assessments since the 1990s. Since then, the park’s staffing level dropped even further. Between 2002 and 2013, base-funded full time equivalent employees dropped from 242 to 143. The Southern Nevada Public Land Management Act (SNPLMA) provided a significant funding source for projects and staffing for about 12 years (approximately 85 full time equivalents). This allowed Lake Mead NRA to offset losses in base-funded operational capacity with project funds from the act. Since 2014, funding available from this fund source has been significantly reduced due to the economic downturn and reduced sale of public lands in the Las Vegas area. This reduced funding exposed serious staffing deficiencies at Lake Mead NRA, previously masked by this external funding source.

Capacity shortfalls have impeded the day-to-day ability to fulfill the purpose of the park and address the broad spectrum of challenges and issues at Lake Mead NRA, including the ability to provide adequate visitor services and safety, to protect natural and cultural resources, and to maintain park facilities.

- **Lowering and Fluctuating Lake Levels** — In 2014, Lake Mead reached historic lows. This is the result of many factors, including full use by the lower basin states and Mexico of their Colorado River water allocations and a significant increase in use by the upper basin states. Additional factors include climate change and historic drought conditions, which contribute to a forecast of continued lowering lake levels with continued fluctuations. Every time the lake elevation drops one foot in elevation, an additional 10–30 feet of new shoreline is exposed, depending on the topography of the area.

From 2002 to 2012, the National Park Service invested \$36 million from multiple funding sources to extend launch ramps, create new parking areas, extend utilities, relocate docks, and reposition navigational aids. Three launch ramps have closed and three marinas have been relocated to adapt to the fluctuations. These actions challenge the visitor-use experiential thresholds established in the lake management plan and have had a negative impact on nearby communities and the economic feasibility of authorized concessioners.

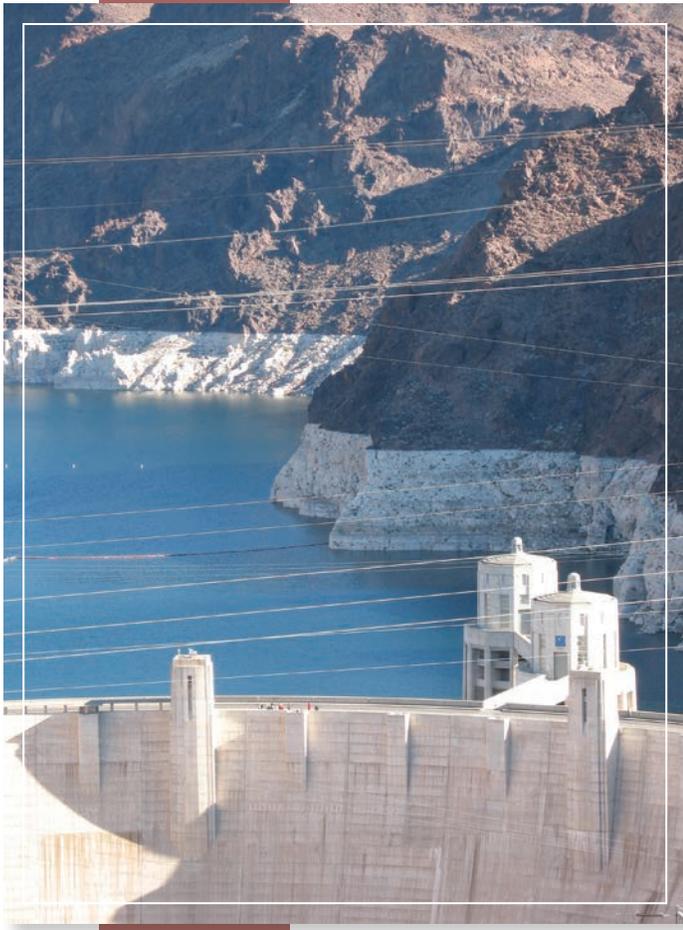
Lowering lake levels open up disturbed shoreline habitats for weed invasion, increase the potential for the spread of aquatic invasive plant species, and potentially exacerbate conditions that degrade water quality. Harmful algal blooms and water-borne pathogens due to consistently lowering lake levels may potentially threaten human health. Low water conditions in Lake Mead could also affect some spring discharges that might be sourced from seepage of impounded lake water. Low water also provides for uncontrolled recreational access via exposed shorelines to undisturbed habitats and archeological resources that were previously inaccessible. Sharp quagga mussel shells on newly exposed shoreline create safety problems for visitors.

The lower Lake Mead drops, the more difficult and expensive it is to extend ramps. Water intakes are impacted and well sites may be impacted, resulting in the loss of potable water at major developed areas and destinations within the park. Additional

grade control structures will be needed in the Las Vegas Wash to protect facilities and resources as the lake continues to drop. Decision making that accounts for the long-term reality of the lake level rising and falling over time is especially difficult given the immediate need of responding to its dramatic decline.

In 2014, the Bureau of Reclamation operational plan projected water elevations that would result in the loss of all ramp access to Lake Mead within the next two years without costly ramp extensions. The park’s low water amendment to the lake management plan addresses operations down to an elevation of 1,050 feet. An amendment, planning to an elevation of 950 feet, is being prepared. The “bathtub ring” of white mineral deposits and mudflats and denuded shorelines, along with abandoned high-grounded facilities detract from the scenery of the lake and have led to negative reports and comments about the lake. Despite declining water levels, Lake Mead remains one of the largest reservoirs in the United States and can still accommodate millions of visitors annually, so long as access to the lake is maintained.

Lake Mohave lake levels are also subject to minor fluctuations, but these fluctuations are more moderate and there is not a consistent decline. However, lower lake levels in Lake Mead could result in releases of warmer water through the Hoover Dam to Lake Mohave. This could potentially alter the ecosystem and recreational water conditions.



Other Important or Related Issues

Please see appendix E for a complete list and description of the following issues:

- Climate change impacts
- Deteriorating infrastructure with a growing maintenance backlog
- Commercial services issues, including expired contracts, possessory interest, and investment issues
- Flash flood vulnerability at many locations throughout the park and frequent road wash-outs
- Removal, relocation, restoration, and/or reuse of discontinued facilities at many locations
- Demand for transmission lines through the park
- Renewable energy development near the park boundary
- Air tour overflight impacts
- Agreements with multiple local, state, and federal interests within the park
- Lack of park recognition and identity
- Coordination of widely dispersed gateway community interest and involvement
- Ongoing coordination with 18 tribes claiming an affiliation with the park
- Potential threats from privately owned lands and mineral interests within the park, as well as boundary encroachment
- Water quality – see “Riverine and Reservoir Ecosystems” in appendix D
- Quagga mussels – see “Riverine and Reservoir Ecosystems” in appendix D
- Management of grazing within the park
- Cooperative management of wild horses and burros with multiple agencies
- New, unique, and shifting visitor uses appearing without adequate planning
- Accessibility issues at many park facilities
- An increase in conflicts and problems associated with high use coves around the lake
- Threats to the wilderness values of designated wilderness and lands found suitable for wilderness designation due to inappropriate uses and rapid growth – see “Lands with Wilderness Character” in appendix D
- Backcountry visitor impacts due to littering and dumping, illegal off-highway vehicle use, improper disposal of human waste, graffiti and tagging of facilities and resources, illegal firewood harvesting, cactus poaching, social trails, and large-group parties.
- Obsolete recreational zoning from lowering lake water levels



Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, park significance, and park purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, studies, research activities, and analyses may be required to provide adequate knowledge of park resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform park management efforts to secure funding and support for planning projects.

Criteria and Considerations for Prioritization

The following criteria were used to evaluate the priority of each planning or data need:

- Ability of the plan to address multiple or interrelated issues
- Emergency/urgency of the issue
- Prevention of resource degradation
- Consideration of protection of the fundamental resources and values
- Ability to impact visitor use and experience
- Funding availability for the planning effort, study, or data collection
- Feasibility of completing the plan or study
- Opportunities, including interagency partnership or assistance



High Priority Plans Underway or Recently Completed

The following high priority plans underway or very recently completed address park issues identified during the assessment of planning and data needs process. These projects address long-standing needs, protect past investments, fulfill legal requirements, guide resource management decisions, and provide critical concession guidance. These are:

- development concept plans for Katherine Landing and Cottonwood Cove (recently completed)
- wilderness management plan (recently completed)
- resource stewardship strategy (recently completed)
- low water level general management plan amendment (in process)

Because these planning efforts provide value toward resolving key issues and can be brought to completion in a short time frame for relatively low cost, it is recommended that they continue on track.

High Priority Planning Needs

These high priority needs were identified in an interdisciplinary workshop and represent the top four new planning needs at Lake Mead NRA.

Highest Priority Planning Needs	Issues Addressed
Partnership/communication strategy	<ul style="list-style-type: none"> • Operational capacity
Visitor use management plan	<ul style="list-style-type: none"> • Lowering lake levels • Operational capacity • Approved road system • Shoreline/cove use • Trails strategy
Commercial services plan/strategy	<ul style="list-style-type: none"> • Lowering lake levels • Operation capacity and standards • Current visitor interests and trends • Financial feasibility of contracts



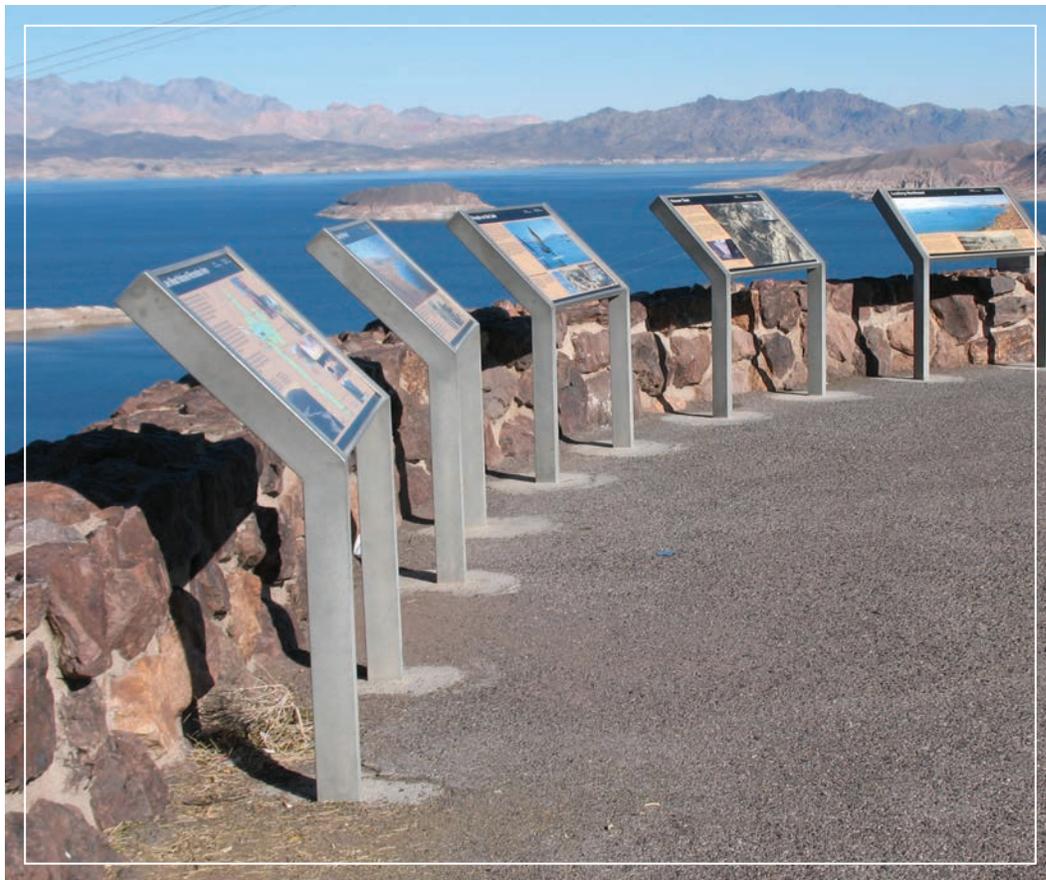
Partnership/Communication Strategy.

Rationale — Building both internal and external advocacy will aid Lake Mead NRA in meeting its purpose and protecting fundamental resources and values by addressing its capacity shortfall.

Scope — An experienced team would provide a coordinated approach to communications and marketing for external (community, public, and partner) and internal (NPS) audiences. These strategies would focus on mitigating diminished capacity through increased awareness of the purpose of Lake Mead NRA, its operational challenges, the services it provides, and its unique needs. A communications strategy to better engage leaders and potential partners, both within and outside the National Park Service, would allow the park to focus its efforts toward increasing its capacity.

As a secondary objective, the same team could also propose or design an appropriate custom mechanism to analyze and plan for operational efficiency in a way that accounts for Lake Mead NRA’s unique challenges and mandates and addresses staffing, maintenance, infrastructure, equipment, and resource and visitor protection needs across all divisions. This effort could include analyzing staff reorganization opportunities, increasing interagency, concessioner, and nonprofit partnering to leverage resources, establishing programmatic priorities, and conducting a law enforcement needs assessment.

An experienced team of upper management-level participants would be charged with developing partnership/advocacy strategies that will replace lost funding as well as address unfunded needs at Lake Mead NRA. Outside assistance would be critical, especially assistance that can be brought “up to speed” quickly without devoting more park staff time than necessary. A visit and review of the park’s operational structure by the regional director would be an important part of this effort.



Visitor Use Management Plan.

Rationale — The way visitors experience Lake Mead NRA is ever-changing. The park needs a better understanding of visitation patterns, trends, and visitor characteristics to guide management decisions in the future. Visitor use management issues facing Lake Mead NRA include use conflicts and congestion on the lake; water quality issues related to visitation; social trails; backcountry road use; and the need to balance visitation with the protection of fundamental resources and values. A comprehensive evaluation of recreational uses and visitor use patterns is needed to address these challenges.

Specific issues that would be addressed through a visitor use management plan include:

- management strategies for high use areas consistent with the park purpose
- strategies to address user conflicts
- management strategies for special events (e.g., appropriateness of locations, mitigation, etc.)
- operational capacity
- ability to respond to new technologies for commercial services
- evaluation of mitigation of potential adverse impacts to cultural and natural resources through establishment of user capacity indicators and management strategies
- identification of new visitor use opportunities, particularly as the park continues to experience lowering lake levels
- visitor management strategies to address water quality issues associated with peak visitation days.

Scope — The visitor use management plan would evaluate current visitor use patterns and characteristics, identify visitor use management goals and objectives, identify indicators and standards that define acceptable levels of use, and identify appropriate visitor use management strategies throughout the park, and particularly for backcountry roads, shoreline use and management, backcountry camping, trails, and high-use coves. Public outreach would be an important component of the planning process, as would an analysis of staff structures and funding needed to meet objectives. A comprehensive visitor use survey that includes analysis of visitor values, changing demographics, and emerging interests would be a critical first step to this effort. A public affairs component would also be needed to communicate changes in management direction to local visitors and stakeholders.

Significant outside assistance would be required to complete this plan. Planning program assistance could be used for plan development, management, and facilitation. A comprehensive and robust visitor use survey would also require outside expertise.



Commercial Services Plan/Strategy.

Rationale — Historic lowering water levels and changing demographics threaten the economic viability of private commercial operations, including concessioners. Although several existing plans provide general direction for concession management, there are outstanding issues that impact the ability of the park to implement the guidance. Possessory interest issues have accrued to levels that prevent companies from bidding on contracts and lead to deteriorating conditions at marinas due to a lack of reinvestment. Commercial services provided under commercial use authorizations should also be considered. Guidance that enables contracts and provides high-quality and high-priority services is needed.

Scope — The primary purpose of this plan/strategy would be to provide direction for management of commercial services over the next 10 to 15 years. The plan would provide details on how the park’s commercial service providers would be managed to achieve overall park goals and meet desired resource conditions and visitor experiences. Importantly, the plan/strategy would provide guidance that is responsive to changes in demand, emerging uses and services, and other changing circumstances. In addition, the plan/strategy would:

- deal explicitly and creatively with possessory interest issues
- reduce deferred maintenance, including cultural resource maintenance, which could positively impact franchise fee revenues
- respond to visitor requests and interests that are appropriate for this park unit
- manage historical trailer village visitor/concession use
- remove historical cabin site
- seek input from qualified concessioners that operate and understand commercial service businesses at the beginning of the planning process in an open and transparent manner
- remain general enough to respond to changing economic and environmental conditions

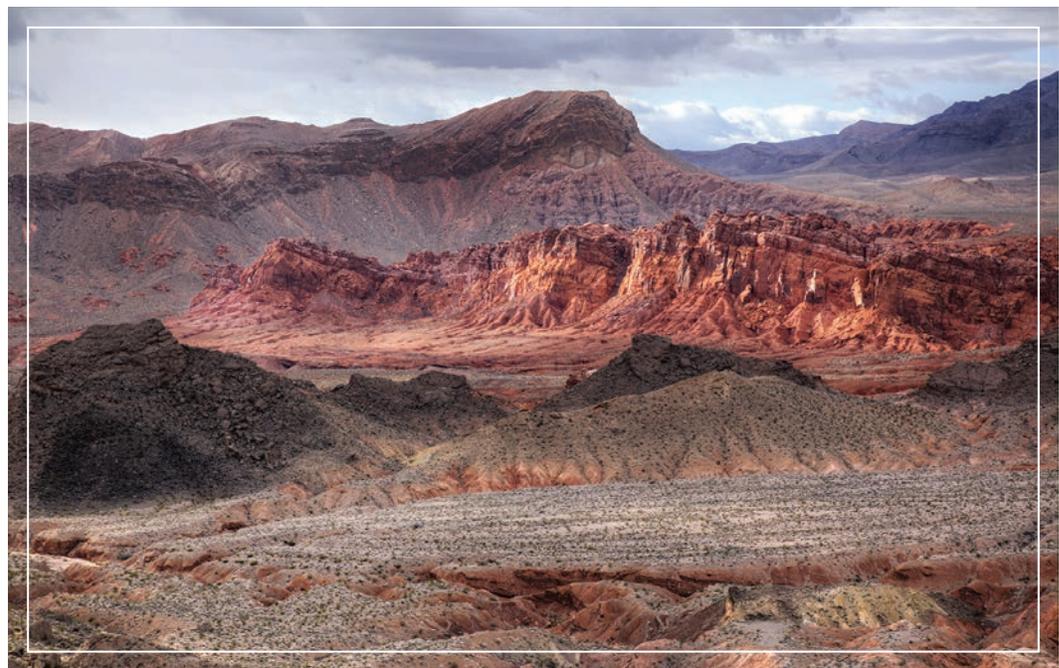
Because of the unique nature of commercial services at Lake Mead NRA, a traditional concessions management plan is being reevaluated. The park needs creative, innovative assistance and would benefit from private sector input. The park needs the region and Washington to explore and champion new ways of managing commercial services in the National Park Service.



Other Important Planning and Data Needs

Other Important Planning and Data Needs	Priority M/L
Natural Resources	
Climate change vulnerabilities and plausible future scenarios – Climate change will impact all aspects of park management; thus a comprehensive analysis of resource vulnerabilities and exploration of plausible climate futures will inform all planning projects. The following activities should be conducted: Complete climate change vulnerability assessments for natural and cultural resources. Use climate change scenario planning as a living process to organize the understanding from these assessments into a new way of strategically planning and managing within the context of uncertain climate futures. Integrate this process into park planning and management to bring appropriate climate change adaptation into planning and management documents.	M
Guidelines for park response to elevated levels of harmful aquatic algal blooms, eco-toxins, and other water-borne human health hazards	M
Comprehensive shoreline riparian habitat management plan	L
Cultural Resources	
Ethnographic study for nontribal affiliated groups	M
Preservation plan for Lost City (ancestral Puebloan site) to assess geohazards and prescribe mitigation measures	M
Scope of collections statement	M
Collections management plan	M
Collections storage plan	M
Fire and security survey	M
Emergency operations plan for collections	M
Historic structure reports (headquarters, warehouse)	M
Inventory and study of submerged cultural resources in Lakes Mead and Mohave	M
Resource studies for St. Thomas Historic Town Site, Lost City Ancestral Puebloan Site, and rock art	M
Visitor Experience	
Update accessibility plan	M
Multi-modal recreation plan (including bicycle, pedestrian, and water trails)	M
Soundscape management plan	M
Visual resource management plan	M
Long-range interpretive plan	M
Education action plan	M

Other Important Planning and Data Needs	Priority M/L
Facilities and Operations	
Capital investment strategy – to address deteriorating infrastructure	M
Facility master plan – particularly to address flash flood vulnerability	M
Lake Mead Institute strategic plan	M
Emergency services plan and continuity of operations	M
Removal/restoration plans for cabin sites and trailer villages – these plans would include determination of future uses for those areas	M
Emergency response plan for acute airborne toxin exposure (accidental roadway spills, etc.)	M
Public transportation feasibility study	M
Volunteer plan update	M
Law enforcement needs assessment using the Visitor Management-Resource Protection Assessment Program	M
Physical security plan	M
Flash flood vulnerability assessment(s) (data need)	M
Structure rehab/removal/mothballing plans for Lake Mead Lodge, Echo Bay Lodge/Restaurant/Marina, Katherine Motel, and Katherine’s Shower House/ Records Building	M
Operational efficiency plan (see advocacy strategy above)	M
Boundary adjustment study	L



Part 3: Contributors

Lake Mead National Recreation Area

Bill Dickinson, Superintendent (retired)
Patrick Gubbins, Deputy Superintendent
Jennifer Haley, Chief of Resource Management and Visitor Services
Lila Walker, Chief of Business Center
Bruce Nyhuis, Chief of Maintenance and Engineering
Kevin Turner, Visitor Services and Education Manager
Gary Karst, Water Resources Division
Mary Hinson, Chief Ranger (former)
Adam Kelsey, Chief Ranger
David Hughey, Supervisor of Maintenance Operations
Steve Spearman, Supervisory Environmental Protection Specialist (retired)
Steve Daron, Cultural Resources Manager
Mike Boyles, Resource Management Specialist
Mark Sappington, Biologist/GIS Coordinator
Christie Vanover, Public Affairs Officer
Nancy Bernard, Volunteer Coordinator
Julie Drugatz, Chief of Commercial Services
Roxanne Dey, Commercial Services
Heidie Grigg, Commercial Services
Alice Newton, Vegetation Management
Gary Warshefski, Deputy Superintendent (retired)
Alan O'Neill, Superintendent (retired)
Jim Holland, Park Planner (retired)
Kent Turner, Chief, Resources Management (retired)
Bill Burke, Resource Management Specialist (retired)

NPS – Pacific West Region

Brad Phillips, Outdoor Recreation Planner
Jean Boscacci, Outdoor Recreation Planner and Realty Specialist
Katelyn Walker, Outdoor Recreation Planner
Kirstie Haertel, Regional Archeologist

NPS – Washington Support Office

Pam Holtman, Quality Assurance Coordinator, WASO Park Planning and Special Studies

NPS – Denver Service Center, Planning Division

Don Wojcik, Project Manager and Natural Resource Specialist
Steve DeGrush, Natural Resource Specialist
Melanie Myers, GIS Specialist
Nancy Shock, Foundation Coordinator
Sande Dingman, Natural Resource Specialist (former)
Danielle Hernandez, Visual Information Specialist
Ken Bingenheimer, Editor

Appendixes

Appendix A: Enabling Legislation for Lake Mead National Recreation Area

78 STAT.] PUBLIC LAW 88-639—OCT. 8, 1964

1039

Public Law 88-639

AN ACT

October 8, 1964
[S. 653]

To provide an adequate basis for administration of the Lake Mead National Recreation Area, Arizona and Nevada, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in recognition of the national significance of the Lake Mead National Recreation Area, in the States of Arizona and Nevada, and in order to establish a more adequate basis for effective administration of such area for the public benefit, the Secretary of the Interior hereafter may exercise the functions and carry out the activities prescribed by this Act.

Lake Mead National Recreation Area. Administration.

SEC. 2. Lake Mead National Recreation Area shall comprise that particular land and water area which is shown on a certain map, identified as "boundary map, RA-LM-7060-B, revised July 17, 1963", which is on file and which shall be available for public inspection in the office of the National Park Service of the Department of the Interior. An exact copy of such map shall be filed with the Federal Register within thirty days following the approval of this Act, and an exact copy thereof shall be available also for public inspection in the headquarters office of the superintendent of the said Lake Mead National Recreation Area.

Boundaries.

Filing with Federal Register.

The Secretary of the Interior is authorized to revise the boundaries of such national recreation area, subject to the requirement that the total acreage of that area, as revised, shall be no greater than the present acreage thereof. In the event of such boundary revision, maps of the recreation area, as revised, shall be prepared by the Department of the Interior, and shall be filed in the same manner, and shall be available for public inspection also in accordance with the aforesaid procedures and requirements relating to the filing and availability of maps. The Secretary may accept donations of land and interests in land within the exterior boundaries of such area, or such property may be procured by the Secretary in such manner as he shall consider to be in the public interest.

Boundary revision.

Donations of land.

In exercising his authority to acquire property by exchange, the Secretary may accept title to any non-Federal property located within the boundaries of the recreation area and convey to the grantor of such property any federally owned property under the jurisdiction of the Secretary, notwithstanding any other provision of law. The properties so exchanged shall be approximately equal in fair market value: *Provided*, That the Secretary may accept cash from or pay cash to the grantor in such an exchange in order to equalize the values of the properties exchanged.

Property acquisition.

Establishment or revision of the boundaries of the said national recreation area, as herein prescribed, shall not affect adversely any valid rights in the area, nor shall it affect the validity of withdrawals heretofore made for reclamation or power purposes. All lands in the recreation area which have been withdrawn or acquired by the United States for reclamation purposes shall remain subject to the primary use thereof for reclamation and power purposes so long as they are withdrawn or needed for such purposes. There shall be excluded from the said national recreation area by the Secretary of the Interior any property for management or protection by the Bureau of Reclamation, which would be subject otherwise to inclusion in the said recreation area, and which the Secretary of the Interior considers in the national interest should be excluded therefrom.

Property exclusion.

SEC. 3. The authorities granted by this Act shall be subject to the following exceptions and qualifications when exercised with respect

Hualapai Indian lands.

to any tribal or allotted lands of the Hualapai Indians that may be included within the exterior boundaries of the Lake Mead National Recreation Area :

(a) The inclusion of Indian lands within the exterior boundaries of the area shall not be effective until approved by the Hualapai Tribal Council.

(b) Mineral developments or use of the Indian lands shall be permitted only in accordance with the laws that relate to Indian lands.

(c) Leases and permits for general recreational use, business sites, home sites, vacation cabin sites, and grazing shall be executed in accordance with the laws relating to leases of Indian lands, provided that all development and improvement leases so granted shall conform to the development program and standards prescribed for the Lake Mead National Recreation Area.

(d) Nothing in this Act shall deprive the members of the Hualapai Tribe of hunting and fishing privileges presently exercised by them, nor diminish those rights and privileges of that part of the reservation which is included in the Lake Mead Recreation Area.

Recreational purposes.

SEC. 4. (a) Lake Mead National Recreation Area shall be administered by the Secretary of the Interior for general purposes of public recreation, benefit, and use, and in a manner that will preserve, develop, and enhance, so far as practicable, the recreation potential, and in a manner that will preserve the scenic, historic, scientific, and other important features of the area, consistently with applicable reservations and limitations relating to such area and with other authorized uses of the lands and properties within such area.

Activities.

(b) In carrying out the functions prescribed by this Act, in addition to other related activities that may be permitted hereunder, the Secretary may provide for the following activities, subject to such limitations, conditions, or regulations as he may prescribe, and to such extent as will not be inconsistent with either the recreational use or the primary use of that portion of the area heretofore withdrawn for reclamation purposes:

- (1) General recreation use, such as bathing, boating, camping, and picnicking;
- (2) Grazing;
- (3) Mineral leasing;
- (4) Vacation cabin site use, in accordance with existing policies of the Department of the Interior relating to such use, or as such policies may be revised hereafter by the Secretary.

Hunting, fishing, trapping.

SEC. 5. The Secretary of the Interior shall permit hunting, fishing, and trapping on the lands and waters under his jurisdiction within the recreation area in accordance with the applicable laws and regulations of the United States and the respective States: *Provided*, That the Secretary, after consultation with the respective State fish and game commissions, may issue regulations designating zones where and establishing periods when no hunting, fishing, or trapping shall be permitted for reasons of public safety, administration, or public use and enjoyment.

Regulations.

SEC. 6. Such national recreation area shall continue to be administered in accordance with regulations heretofore issued by the Secretary of the Interior relating to such areas, and the Secretary may revise such regulations or issue new regulations to carry out the purposes of this Act. In his administration and regulation of the area, the Secretary shall exercise authority, subject to the provisions and limitations of this Act, comparable to his general administrative authority relating to areas of the national park system.

The superintendent, caretakers, officers, or rangers of such recreation area are authorized to make arrests for violation of any of the regulations applicable to the area or prescribed pursuant to this Act, and they may bring the offender before the nearest commissioner, judge, or court of the United States having jurisdiction in the premises.

Arrests.

Any person who violates a rule or regulation issued pursuant to this Act shall be guilty of a misdemeanor, and may be punished by a fine of not more than \$500, or by imprisonment not exceeding six months, or by both such fine and imprisonment.

Violations.

SEC. 7. Nothing in this Act shall deprive any State, or any political subdivision thereof, of its civil and criminal jurisdiction over the lands within the said national recreation area, or of its rights to tax persons, corporations, franchises, or property on the lands included in such area. Nothing in this Act shall modify or otherwise affect the existing jurisdiction of the Hualapai Tribe or alter the status of individual Hualapai Indians within that part of the Hualapai Indian Reservation included in said Lake Mead National Recreation Area.

Jurisdiction.

SEC. 8. Revenues and fees obtained by the United States from operation of the national recreation area shall be subject to the same statutory provisions concerning the disposition thereof as are similar revenues collected in areas of the national park system with the exception, that those particular revenues and fees including those from mineral developments, which the Secretary of the Interior finds are reasonably attributable to Indian lands shall be paid to the Indian owner of the land, and with the further exception that other fees and revenues obtained from mineral development and from activities under other public land laws within the recreation area shall be disposed of in accordance with the provisions of the applicable laws.

Revenues and fees.

SEC. 9. A United States commissioner shall be appointed for that portion of the Lake Mead National Recreation Area that is situated in Mohave County, Arizona. Such commissioner shall be appointed by the United States district court having jurisdiction thereover, and the commissioner shall serve as directed by such court, as well as pursuant to, and within the limits of, the authority of said court.

Mohave County, Ariz. Appointment of commissioner.

The functions of such commissioner shall include the trial and sentencing of persons committing petty offenses, as defined in title 18, section 1, United States Code: *Provided*, That any person charged with a petty offense may elect to be tried in the district court of the United States, and the commissioner shall apprise the defendant of his right to make such election, but shall not proceed to try the case unless the defendant, after being so apprised, signs a written consent to be tried before the commissioner. The exercise of additional functions by the commissioner shall be consistent with and be carried out in accordance with the authority, laws, and regulations, of general application to United States commissioners. The provisions of title 18, section 3402, of the United States Code, and the rules of procedure and practice prescribed by the Supreme Court pursuant thereto, shall apply to all cases handled by such commissioner. The probation laws shall be applicable to persons tried by the commissioner and he shall have power to grant probation. The commissioner shall receive the fees, and none other, provided by law for like or similar services.

62 Stat. 831.

Probation laws.

SEC. 10. There are hereby authorized to be appropriated not more than \$1,200,000 for the acquisition of land and interests in land pursuant to section 2 of this Act.

Appropriation.

Approved October 8, 1964.

Appendix B: Related Federal Legislation

Public Law 107-282 (Abbreviated)

CLARK COUNTY CONSERVATION OF PUBLIC LAND
AND NATURAL RESOURCES ACT OF
2002

Public Law 107-282
107th Congress

An Act

To establish wilderness areas, promote conservation, improve public land, and provide for high quality development in Clark County, Nevada, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Clark County Conservation of Public Land and Natural Resources Act of 2002.”

SEC. 2. TABLE OF CONTENTS.

The table of contents of this Act is as follows:

- Sec. 1. Short title.
- Sec. 2. Table of contents.
- Sec. 3. Definitions.
- Sec. 4. Authorization of appropriations.

TITLE II--WILDERNESS AREAS

- Sec. 201. Findings.
- Sec. 202. Additions to National Wilderness Preservation System.
- Sec. 203. Administration.
- Sec. 204. Adjacent management.
- Sec. 205. Military overflights.
- Sec. 206. Native American cultural and religious uses.
- Sec. 207. Release of wilderness study areas.
- Sec. 208. Wildlife management.
- Sec. 209. Wildfire management.
- Sec. 210. Climatological data collection.
- Sec. 211. National Park Service lands.

SEC. 3. DEFINITIONS.

In this Act:

- (1) Agreement.--The term “Agreement” means the Agreement entitled “Interim Cooperative Management Agreement Between the United States of the Interior Bureau of Land Management and Clark County,” dated November 4, 1992.
- (2) County.--The term “County” means Clark County, Nevada.
- (3) Secretary.--The term “Secretary” means--
 - (A) the Secretary of Agriculture with respect to land in the National Forest System; or
 - (B) the Secretary of the Interior, with respect to other Federal land.
- (4) State.--The term “State” means the State of Nevada.

TITLE II--WILDERNESS AREAS

SEC. 201. FINDINGS.

The Congress finds that--

- (1) public land in the County contains unique and spectacular natural resources, including
 - (A) priceless habitat for numerous species of plants and wildlife; and
 - (B) thousands of acres of pristine land that remain in a natural state;
- (2) continued preservation of those areas would benefit the County and all of the United States by--
 - (A) ensuring the conservation of ecologically diverse habitat;
 - (B) conserving primitive recreational resources; and
 - (C) protecting air and water quality.

SEC. 202. ADDITIONS TO NATIONAL WILDERNESS PRESERVATION SYSTEM.

(a) Additions.--The following land in the State is designated as wilderness and as components of the National Wilderness Preservation System:

- (1) Arrow canyon wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 27,530 acres, as generally depicted on the map entitled "Arrow Canyon," dated October 1, 2002, which shall be known as the "Arrow Canyon Wilderness."
- (2) Black canyon wilderness.--Certain Federal land within the Lake Mead National Recreation Area and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 17,220 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Black Canyon Wilderness."
- (3) Bridge canyon wilderness.--Certain Federal land within the Lake Mead National Recreation Area, comprising approximately 7,761 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Bridge Canyon Wilderness."
- (4) Eldorado wilderness.--Certain Federal land within the Lake Mead National Recreation Area and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 31,950 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Eldorado Wilderness."
- (5) Ireteba peaks wilderness.--Certain Federal land within the Lake Mead National Recreation Area and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 32,745 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Ireteba Peaks Wilderness."
- (6) Jimbilnan wilderness.--Certain Federal land within the Lake Mead National Recreation Area, comprising approximately 18,879 acres, as generally depicted on the map entitled "Muddy Mountains," dated October 1, 2002, which shall be known as the "Jimbilnan Wilderness."
- (7) Jumbo springs wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 4,631 acres, as generally depicted on the map entitled "Gold Butte," dated October 1, 2002, which shall be known as the "Jumbo Springs Wilderness."
- (8) La madre mountain wilderness.--Certain Federal land within the Toiyabe National Forest and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 47,180 acres, as generally depicted on the map entitled "Spring Mountains," dated October 1, 2002, which shall be known as the "La Madre Mountain Wilderness."
- (9) Lime canyon wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 23,233 acres, as generally depicted on the map entitled "Gold Butte," dated October 1, 2002, which shall be known as the "Lime Canyon Wilderness."

- (10) Mt. charleston wilderness additions.--Certain Federal land within the Toiyabe National Forest and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 13,598 acres, as generally depicted on the map entitled "Spring Mountains," dated October 1, 2002, which shall be included in the Mt. Charleston Wilderness.
- (11) Muddy mountains wilderness.--Certain Federal land within the Lake Mead National Recreation Area and an adjacent portion of land managed by the Bureau of Land Management, comprising approximately 48,019 acres, as generally depicted on the map entitled "Muddy Mountains," dated October 1, 2002, which shall be known as the "Muddy Mountains Wilderness."
- (12) Nellis wash wilderness.--Certain Federal land within the Lake Mead National Recreation Area, comprising approximately 16,423 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Nellis Wash Wilderness."
- (13) North mccullough wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 14,763 acres, as generally depicted on the map entitled "McCulloughs," dated October 1, 2002, which shall be known as the "North McCullough Wilderness."
- (14) Pinto valley wilderness.--Certain Federal land within the Lake Mead National Recreation Area, comprising approximately 39,173 acres, as generally depicted on the map entitled "Muddy Mountains," dated October 1, 2002, which shall be known as the "Pinto Valley Wilderness."
- (15) Rainbow mountain wilderness.--Certain Federal land within the Toiyabe National Forest and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 24,997 acres, as generally depicted on the map entitled "Spring Mountains," dated October 1, 2002, which shall be known as the "Rainbow Mountain Wilderness."
- (16) South mccullough wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 44,245 acres, as generally depicted on the map entitled "McCulloughs," dated October 1, 2002, which shall be known as the "South McCullough Wilderness."
- (17) Spirit mountain wilderness.--Certain Federal land within the Lake Mead National Recreation Area and an adjacent portion of Federal land managed by the Bureau of Land Management, comprising approximately 33,518 acres, as generally depicted on the map entitled "Eldorado/Spirit Mountain," dated October 1, 2002, which shall be known as the "Spirit Mountain Wilderness."
- (18) Wee thump joshua tree wilderness.--Certain Federal land managed by the Bureau of Land Management, comprising approximately 6,050 acres, as generally depicted on the map entitled "McCulloughs," dated October 1, 2002, which shall be known as the "Wee Thump Joshua Tree Wilderness."

(b) BOUNDARY.--

- (1) LAKE OFFSET.--The boundary of any portion of a wilderness area designated by subsection (a) that is bordered by Lake Mead, Lake Mohave, or the Colorado River shall be 300 feet inland from the high water line.
- (2) ROAD OFFSET.--The boundary of any portion of a wilderness area designated by subsection (a) that is bordered by a road shall be at least 100 feet from the edge of the road to allow public access.

(c) MAP AND LEGAL DESCRIPTION.--

- (1) IN GENERAL.--As soon as practicable after the date of enactment of this Act, the Secretary shall file a map and legal description of each wilderness area designated by subsection (a) with the Committee on Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate.
- (2) EFFECT.--Each map and legal description shall have the same force and effect as if included in this section, except that the Secretary may correct clerical and typographical errors in the map or legal description.
- (3) AVAILABILITY.--Each <<NOTE: Public inspection.>> map and legal description

shall be on file and available for public inspection in the appropriate offices of the Bureau of Land Management, National Park Service, or U.S. Forest Service, as applicable.

(d) WITHDRAWAL.--Subject to valid existing rights, the wilderness areas designated in this section are withdrawn from--

- (1) all forms of entry, appropriation, and disposal under the public land laws;
- (2) location, entry, and patent under the mining laws; and
- (3) operation of the mineral leasing, mineral materials, and geothermal leasing laws.

SEC. 203. ADMINISTRATION.

(a) Management.--Subject to valid existing rights, each area designated as wilderness by this title shall be administered by the Secretary in accordance with the Wilderness Act (16 U.S.C. 1131 et seq.), except that--

- (1) any reference in that Act to the effective date shall be considered to be a reference to the date of enactment of this Act; and
- (2) any reference in that Act to the Secretary of Agriculture shall be considered to be a reference to the Secretary of the Interior with respect to lands administered by the Secretary of the Interior.

(b) LIVESTOCK.--Within the wilderness areas designated under this title that are administered by the Bureau of Land Management, the grazing of livestock in areas in which grazing is established as of the date of enactment of this Act shall be allowed to continue, subject to such reasonable regulations, policies, and practices that the Secretary considers necessary, consistent with section 4(d)(4) of the Wilderness Act (16 U.S.C. 1133(d)(4)), including the guidelines set forth in Appendix A of House Report 101-405.

(c) INCORPORATION OF ACQUIRED LANDS AND INTERESTS.--Any land or interest in land within the boundaries of an area designated as wilderness by this title that is acquired by the United States after the date of enactment of this Act shall be added to and administered as part of the wilderness area within which the acquired land or interest is located.

(d) WATER RIGHTS.--

(1) Findings.--Congress finds that--

- (A) the lands designated as Wilderness by this Act are within the Mojave Desert, are arid in nature, and include ephemeral streams;
- (B) the hydrology of the lands designated as wilderness by this Act is locally characterized by complex flow patterns and alluvial fans with impermanent channels;
- (C) the subsurface hydrogeology of the region is characterized by ground water subject to local and regional flow gradients and artesian aquifers;
- (D) the lands designated as wilderness by this Act are generally not suitable for use or development of new water resource facilities and there are no actual or proposed water resource facilities and no opportunities for diversion, storage, or other uses of water occurring outside such lands that would adversely affect the wilderness or other values of such lands; and
- (E) because of the unique nature and hydrology of these desert lands designated as wilderness by this Act and the existence of the Clark County Multi-Species Habitat Conservation Plan it is possible to provide for proper management and protection of the wilderness, perennial springs and other values of such lands in ways different from those used in other legislation.

(2) STATUTORY CONSTRUCTION.--

- (A) Nothing in this Act shall constitute or be construed to constitute either an express or implied reservation by the United States of any water or water rights with respect to the lands designated as Wilderness by this Act.
- (B) Nothing in this Act shall affect any water rights in the State of Nevada existing on the date of the enactment of this Act, including any water rights held by the United States.

- (C) Nothing in this subsection shall be construed as establishing a precedent with regard to any future wilderness designations.
- (D) Nothing in this Act shall be construed as limiting, altering, modifying, or amending any of the interstate compacts or equitable apportionment decrees that apportion water among and between the State of Nevada and other States.
- (E) Nothing in this subsection shall be construed as limiting, altering, modifying, or amending the Clark County Multi-Species Habitat Conservation Plan (MSHCP) with respect to the lands designated as Wilderness by this Act including the MSHCP's specific management actions for the conservation of perennial springs.

(3) NEVADA WATER LAW.--The Secretary shall follow the procedural and substantive requirements of the law of the State of Nevada in order to obtain and hold any water rights not in existence on the date of enactment of this Act with respect to the wilderness areas designated by this Act.

(4) NEW PROJECTS.--

- (A) As used in this paragraph, the term "water resource" facility means irrigation and pumping facilities, reservoirs, water conservation works, aqueducts, canals, ditches, pipelines, wells, hydropower projects, and transmission and other ancillary facilities, and other water diversion, storage, and carriage structures. The term "water resource" facility does not include wildlife guzzlers.
- (B) Except as otherwise provided in this Act, on and after the date of the enactment of this Act, neither the President nor any other officer, employee, or agent of the United States shall fund, assist, authorize, or issue a license or permit for the development of any new water resource facility within the wilderness areas designated by this Act.

SEC. 204. ADJACENT MANAGEMENT.

- (a) In General.--Congress does not intend for the designation of wilderness in the State pursuant to this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area.
- (b) Nonwilderness Activities.--The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness designated under this title shall not preclude the conduct of those activities or uses outside the boundary of the wilderness area.

SEC. 205. MILITARY OVERFLIGHTS.

Nothing in this title restricts or precludes--

- (1) low-level overflights of military aircraft over the areas designated as wilderness by this title, including military overflights that can be seen or heard within the wilderness areas;
- (2) flight testing and evaluation; or
- (3) the designation or creation of new units of special use airspace, or the establishment of military flight training routes, over the wilderness areas.

SEC. 206. NATIVE AMERICAN CULTURAL AND RELIGIOUS USES.

Nothing in this Act shall be construed to diminish the rights of any Indian Tribe. Nothing in this Act shall be construed to diminish tribal rights regarding access to Federal lands for tribal activities, including spiritual, cultural, and traditional food-gathering activities.

SEC. 208. WILDLIFE MANAGEMENT.

(a) IN GENERAL.--In accordance with section 4(d)(7) of the Wilderness Act (16 U.S.C. 1133(d)(7)), nothing in this title affects or diminishes the jurisdiction of the State with respect to fish and wildlife management, including the regulation of hunting, fishing, and trapping, in the wilderness areas designated by this title.

(b) **MANAGEMENT ACTIVITIES.**--In furtherance of the purposes and principles of the Wilderness Act, management activities to maintain or restore fish and wildlife populations and the habitats to support such populations may be carried out within wilderness areas designated by this title where consistent with relevant wilderness management plans, in accordance with appropriate policies such as those set forth in Appendix B of House Report 101-405, including the occasional and temporary use of motorized vehicles, if such use, as determined by the Secretary, would promote healthy, viable, and more naturally distributed wildlife populations that would enhance wilderness values and accomplish those purposes with the minimum impact necessary to reasonably accomplish the task.

(c) **EXISTING ACTIVITIES.**--Consistent with section 4(d)(1) of the Wilderness Act (16 U.S.C. 1133(d)) and in accordance with appropriate policies such as those set forth in Appendix B of House Report 101-405, the State may continue to use aircraft, including helicopters, to survey, capture, transplant, monitor, and provide water for wildlife populations, including bighorn sheep, and feral stock, horses, and burros.

(d) **WILDLIFE WATER DEVELOPMENT PROJECTS.**--Subject to subsection (f), the Secretary shall, authorize structures and facilities, including existing structures and facilities, for wildlife water development projects, including guzzlers, in the wilderness areas designated by this title if--

- (1) the structures and facilities will, as determined by the Secretary, enhance wilderness values by promoting healthy, viable and more naturally distributed wildlife populations; and
- (2) the visual impacts of the structures and facilities on the wilderness areas can reasonably be minimized.

(e) **Hunting, Fishing, and Trapping.**--The Secretary may designate by regulation areas in consultation with the appropriate State agency (except in emergencies), in which, and establish periods during which, for reasons of public safety, administration, or compliance with applicable laws, no hunting, fishing, or trapping will be permitted in the wilderness areas designated by this title.

(f) **Cooperative Agreement.**--No later than one year after the date of enactment of this Act, the Secretary shall enter into a cooperative agreement with the State of Nevada. The cooperative agreement shall specify the terms and conditions under which the State (including a designee of the State) may use wildlife management activities in the wilderness areas designated by this title.

SEC. 209. WILDFIRE MANAGEMENT.

Consistent with section 4 of the Wilderness Act (16 U.S.C. 1133), nothing in this title precludes a Federal, State, or local agency from conducting wildfire management operations (including operations using aircraft or mechanized equipment) to manage wildfires in the wilderness areas designated by this title.

SEC. 210. CLIMATOLOGICAL DATA COLLECTION.

Subject to such terms and conditions as the Secretary may prescribe, nothing in this title precludes the installation and maintenance of hydrologic, meteorologic, or climatological collection devices in the wilderness areas designated by this title if the facilities and access to the facilities are essential to flood warning, flood control, and water reservoir operation activities.

SEC. 211. NATIONAL PARK SERVICE LANDS.

To the extent any of the provisions of this title are in conflict with laws, regulations, or management policies applicable to the National Park Service for Lake Mead National Recreation Area, those laws, regulations, or policies shall control.

Proclamation 7265 of January 11, 2000

PROCLAMATION 7265 OF JANUARY 11, 2000

Establishment of the Grand Canyon-Parashant National Monument (#7265)

By the President of the United States of America

A Proclamation

The Grand Canyon-Parashant National Monument is a vast, biologically diverse, impressive landscape encompassing an array of scientific and historic objects. This remote area of open, undeveloped spaces and engaging scenery is located on the edge of one of the most beautiful places on earth, the Grand Canyon. Despite the hardships created by rugged isolation and the lack of natural waters, the monument has a long and rich human history spanning more than 11,000 years, and an equally rich geologic history spanning almost 2 billion years. Full of natural splendor and a sense of solitude, this area remains remote and unspoiled, qualities that are essential to the protection of the scientific and historic resources it contains. The monument is a geological treasure. Its Paleozoic and Mesozoic sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the geologic history of the Colorado Plateau. Deep canyons, mountains, and lonely buttes testify to the power of geological forces and provide colorful vistas. A variety of formations have been exposed by millennia of erosion by the Colorado River. The Cambrian, Devonian, and Mississippian formations (Muav Limestone, Temple Butte Formation, and the Redwall Limestone) are exposed at the southern end of the lower Grand Wash Cliffs. The Pennsylvanian and Permian formations (Calville Limestone, Esplanade Sandstone, Hermit Shale, Toroweap Formation, and the Kaibab Formation) are well exposed within the Parashant, Andrus, and Whitmore Canyons, and on the Grand Gulch Bench. The Triassic Chinle and Moenkopi Formations are exposed on the Shivwits Plateau, and the purple, pink, and white shale, mudstone, and sandstone of the Triassic Chinle Formation are exposed in Hells Hole.

The monument encompasses the lower portion of the Shivwits Plateau, which forms an important watershed for the Colorado River and the Grand Canyon. The Plateau is bounded on the west by the Grand Wash Cliffs and on the east by the Hurricane Cliffs. These cliffs, formed by large faults that sever the Colorado Plateau slicing north to south through the region, were and are major topographic barriers to travel across the area. The Grand Wash Cliffs juxtapose the colorful, lava-capped Precambrian and Paleozoic strata of the Grand Canyon against the highly faulted terrain, recent lake beds, and desert volcanic peaks of the down-dropped Grand Wash trough. These cliffs, which consist of lower and upper cliffs separated by the Grand Gulch Bench, form a spectacular boundary between the basin and range and the Colorado Plateau geologic provinces. At the south end of the Shivwits Plateau are several important tributaries to the Colorado River, including the rugged and beautiful Parashant, Andrus, and Whitmore canyons. The Plateau here is capped by volcanic rocks with an array of cinder cones and basalt flows, ranging in age from 9 million to only about 1000 years old. Lava from the Whitmore and Toroweap areas flowed into the Grand Canyon and dammed the river many times over the past several million years. The monument is pocketed with sinkholes and breccia pipes, structures associated with volcanism and the collapse of underlying rock layers through ground water dissolution.

Fossils are abundant in the monument. Among these are large numbers of invertebrate fossils, including bryozoans and brachiopods located in the Calville limestone of the Grand Wash Cliffs, and brachiopods, pelecypods, fenestrate bryozoa, and crinoid ossicles in the Toroweap and Kaibab formations of Whitmore Canyon. There are also sponges in nodules and pectenoid pelecypods throughout the Kaibab formation of Parashant Canyon. The Grand Canyon-Parashant National Monument contains portions of geologic faults, including the Dellenbaugh fault, which cuts basalt flows dated 6 to 7 million years old, the Toroweap fault, which has been active within the last 30,000 years, the Hurricane fault, which forms the Hurricane Cliffs and extends over 150 miles across northern Arizona and into Utah, and the Grand Wash fault, which bounds the west side of the Shivwits Plateau and has approximately 15,000 feet of displacement across the monument.

Archaeological evidence shows much human use of the area over the past centuries. Because of their remoteness and the lack of easy road access, the sites in this area have experienced relatively little vandalism. Their good condition distinguishes them from many prehistoric resources in other areas. Prehistoric use is documented by irreplaceable rock art images, quarries, villages, watchtowers, agricultural features, burial sites, caves, rockshelters, trails, and camps. Current evidence indicates that the monument was utilized by small numbers of hunter-gatherers during the Archaic Period (7000 B.C. to 300 B.C.). Population and utilization of the monument increased during the Ancestral Puebloan Period from the Basketmaker II Phase through the Pueblo II Phase (300 B.C. to 1150 A.D.), as evidenced by the presence of pit houses, habitation rooms, agricultural features, and pueblo structures. Population size decreased during the Pueblo III Phase (1150 A.D. to 1225 A.D.). Southern Paiute groups replaced the Pueblo groups and were occupying the monument at the time of Euro-American contact. Archeological sites in the monument include large concentrations of ancestral Puebloan (Anasazi or Hitsuatsinom) villages, a large, intact Pueblo II village, numerous archaic period archeological sites, Ancestral Puebloan sites, and Southern Paiute sites. The monument also contains areas of importance to existing Indian tribes. In 1776, the Escalante-Dominguez expedition of Spanish explorers passed near Mount Trumbull. In the first half of the 19th century, Jedediah Smith, Antonio Armijo, and John C. Fremont explored portions of this remote area. Jacob Hamblin, a noted Mormon pioneer, explored portions of the Shivwits Plateau in 1858 and, with John Wesley Powell, in the 1870s. Clarence Dutton completed some of the first geological explorations of this area and provided some of the most stirring written descriptions. Having traversed this area by wagon at the request of the territorial legislature, Sharlot Hall recommended it for inclusion within the State of Arizona when it gained Statehood in 1912. Early historic sawmills provided timber that was hauled 70 miles along the Temple Trail wagon road from Mt. Trumbull down the Hurricane Cliffs to St. George, Utah. Ranch structures and corrals, fences, water tanks, and the ruins of sawmills are scattered across the monument and tell the stories of the remote family ranches and the lifestyles of early homesteaders. There are several old mining sites dating from the 1870s, showing the history of mining during the late 19th and early 20th centuries. The remote and undeveloped nature of the monument protects these historical sites in nearly their original context.

The monument also contains outstanding biological resources preserved by remoteness and limited travel corridors. The monument is the junction of two physiographic ecoregions: the Mojave Desert and the Colorado Plateau. Individually, these regions contain ecosystems extreme to each other, ranging from stark, and desert to complex, dramatic higher elevation plateaus, tributaries, and rims of the Grand Canyon. The western margin of the Shivwits Plateau marks the boundary between the Sonoran/Mojave/Great Basin floristic provinces to the west and south, and the Colorado Plateau province to the northeast. This intersection of these biomes is a distinctive and remarkable feature. Riparian corridors link the plateau to the Colorado River corridor below, allowing wildlife movement and plant dispersal. The Shivwits Plateau is in an arid environment with between 14 to 18 inches of precipitation a year. Giant Mojave Yucca cacti proliferate in undisturbed conditions throughout the monument. Diverse wildlife inhabit the monument, including a trophy-quality mule deer herd, Kaibab squirrels, and wild turkey. There are numerous threatened or endangered species as well, including the Mexican spotted owl, the California condor, the desert tortoise, and the southwestern willow flycatcher. There are also candidate or sensitive species, including the spotted bat, the western mastiff bat, the Townsend's big eared bat, and the goshawk, as well as two federally recognized sensitive rare plant species: *Penstemon distans* and *Rosa stellata*. The ponderosa pine ecosystem in the Mt. Trumbull area is a biological resource of scientific interest, which has been studied to gain important insights regarding dendroclimatic reconstruction, fire history, forest structure change, and the long-term persistence and stability of presettlement pine groups.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and

other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Grand Canyon-Parashant National Monument:

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Grand Canyon-Parashant National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Grand Canyon-Parashant National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 1,014,000 acres, which is the smallest area compatible with the proper care and management of the objects to be protected. For the purpose of protecting the objects identified above, all motorized and mechanized vehicle use off road will be prohibited, except for emergency or authorized administrative purposes. Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Arizona with respect to fish and wildlife management.

The establishment of this monument is subject to valid existing rights.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. Sale of vegetative material is permitted only if part of an authorized science-based ecological restoration project. Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

This proclamation does not reserve water as a matter of Federal law nor relinquish any water rights held by the Federal Government existing on this date. The Federal land managing agencies shall work with appropriate State authorities to ensure that water resources needed for monument purposes are available.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management and the National Park Service, pursuant to applicable legal authorities, to implement the purposes of this proclamation. The National Park Service and the Bureau of Land Management shall manage the monument cooperatively and shall prepare an agreement to share, consistent with applicable laws, whatever resources are necessary to properly manage the monument; however, the National Park Service shall continue to have primary management authority over the portion of the monument within the Lake Mead National Recreation Area, and the Bureau of Land Management shall have primary management authority over the remaining portion of the monument.

The Bureau of Land Management shall continue to issue and administer grazing leases within the portion of the monument within the Lake Mead National Recreation Area, consistent with the Lake Mead National Recreation Area authorizing legislation. Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing leases on all lands under its jurisdiction shall continue to apply to the remaining portion of the monument.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation. Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this eleventh day of January, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twentyfourth.

WILLIAM J. CLINTON

Appendix C: Inventory of Special Mandates, Administrative Commitments, and Existing Plans

Special Mandates

Name	Mandate Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
National Parks Air Tour Management Act	Legislation	2000, and 2012 amendment – Ongoing	Federal Aviation Administration and air tour industry operators and representatives	Per the 2012 amendments to the National Parks Air Tour Management Act, Lake Mead NRA is required to either develop an air tour management plan (ATMP) or enter into voluntary agreements with air tour operators.	Lake Mead NRA has decided not to enter into voluntary agreements with tour operators and will prepare an ATMP when possible. As of December 2013, the ATMP remains on hold pending resolution of issues concerning the Grand Canyon National Park ATMP. The Federal Aviation Administration would be the lead agency for this plan.
Federal Lands Recreation Enhancement Act	Legislation	Ongoing	NPS Washington Office (WASO) Park visitors	Lake Mead NRA is allocated 80% of the funds collected from its entrance stations.	Failure to plan and spend this funding appropriately with minimal annual carryover could result in fewer funds remaining at the park in the future. The NPS cost of collections targets a small percentage to be used to collect fees which severely impacts the ability for the park to collect fees in all areas and make contact with park visitors.
Gold Butte National Conservation Area Act (S. 199 and H.R. 856)	Legislation	Pending	Bureau of Land Management (BLM)	Pending legislation would create a national conservation area on BLM lands on Gold Butte and formally designate wilderness on NPS lands on Gold Butte.	Referred to US Senate Committee on 1/20/2015.

Name	Mandate Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Grazing	Enabling legislation	1964 – Ongoing	Grazing allottees	Lake Mead NRA is one of only a few NPS units for which grazing is authorized in the enabling legislation. Grazing is authorized but not mandated and is permissible as long as it is not in conflict with other park purposes.	Trespass grazing by a former allottee is a significant issue. This issue will continue to be addressed through administrative and judicial processes.
Hunting / trapping	Enabling legislation	1964 – Ongoing	Federal and state wildlife management agencies CUA permittees Hunters and hunting groups	Lake Mead NRA enabling legislation allows for hunting within the park in accordance with the laws and regulations of the United States and the states of Nevada and Arizona.	
Southern Nevada Public Lands Management Act of 1998, as amended (PL 105-263)		10/19/1998– Ongoing	Department of the Interior (DOI)	Allows the Bureau of Land Management to sell public land in southern Nevada. A portion of the revenue generated is available to DOI agencies and has funded numerous projects at Lake Mead.	
Clark County Conservation of Public Land and Natural Resources Act of 2002 (PL 107-282)	Wilderness designation	2002 – Ongoing	Park visitors, tribes, special recreation users such as climbers	The Clark County Conservation and Resource Protection Act of 2002 designated 185,080 acres of wilderness in nine separate wilderness areas within Lake Mead NRA.	More than 340,000 acres of additional land has been recommended for wilderness designation. The region's rapid growth and inappropriate uses are threatening the wilderness values of these lands. Legislation included guidance for interagency aerial operations over wilderness lands and for burro or for wildlife management.

Administrative Commitments

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
American Federation of Government Employees – Local 3062	Memorandum of understanding	Ongoing	Local 3062	Lake Mead NRA has a basic agreement with the union that represents all nonsupervisory wage board employees.	This is the only union in the National Park Service with which wage rates are negotiated.
Arizona Game and Fish Department (AGFD)	Memorandum of understanding	Ongoing	AGFD	The park cooperates with the State of Arizona on a variety of issues, including wildlife and bighorn management, fishing, hunting, law enforcement, and conservation issues.	
Basic Management Industries	Memorandum of understanding	1955 – Ongoing	BMI and its customers	This private company continues to take an allocation of water from Lake Mead to sell to customers. Basic Management Industries uses infrastructure within park boundaries for which it has a legislatively authorized right-of-way for transmission.	Basic Management Industries was the first water purveyor of the Las Vegas Valley to take water from Lake Mead beginning in 1955.
Bureau of Reclamation (BOR) operations (Hoover Dam and Davis Dam)	Interagency agreement	Ongoing	BOR, CUA permittees, and concessioners	The Bureau of Reclamation is responsible for the operation and management of Hoover Dam, which impounds Lake Mead, and Davis Dam, which impounds Lake Mohave. Management of the Colorado River system determines the surface elevation of Lake Mead. The bureau also manages withdrawn lands within the boundary of Lake Mead NRA.	The park partners with the Bureau of Reclamation on many recreation programs including trails and river recreation.
Burro management	Interagency agreement	Ongoing	BLM	Burros are managed consistent with an approved burro management plan in cooperation with adjacent recognized wild burro herds on BLM lands.	Management is complicated by the involvement of three BLM district offices, two BLM state offices, and a lack of funding for census and capture activities essential for the maintenance of authorized herd sizes on BLM lands that would prevent significant drift onto NPS lands.

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Cabin sites	Permit	Ongoing	Cabin site permittees	Approximately 60 privately owned cabins exist on publicly owned lands within Lake Mead NRA. The removal of these cabins and conversion of the lands back to public use is part of a long-term solution that allows the slow removal of cabins as permits expire without a renewal option for new owners.	Cabin sites can be used within the length of stay limitations in the park compendium.
Authorized concessioners	Concession contracts	Varied	Concessioners	Lake Mead NRA manages eight authorized concession contracts for major developed areas and services that include recreational vehicle parks, food service, marina operations, overnight accommodations, boat tours, and raft trips.	High levels of possessory interest held by concessioners, as well as historic lowering levels on Lake Mead, economic conditions, and deteriorating facilities make new contracts challenging. These conditions place a financial burden on the park and concession partners. The park is pursuing new special legislation and leasing options to address these issues.
Commercial use authorization	Permits	Varied	Private business owners	Lake Mead NRA manages more than 120 permits that consist of at least 25 different service types.	
Davis Camp	Interagency agreement	Ongoing	Mohave County and BOR		At the southern end of the park, Mohave County, in collaboration with the park and the Bureau of Reclamation, has established a county park that is popular with visitors to the area. The Park may consider lease options.

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Desert Landscape Conservation Cooperative	Memorandum of understanding	Ongoing	Representatives from federal, state, and local government agencies	The Desert Landscape Conservation Cooperative is a regional partnership that seeks to provide scientific and technical support, coordination, and communication to resource managers and the broader community to address climate change and other landscape-scale ecosystem stressors.	
Desert Managers Group	Interagency agreement	Ongoing	Representatives from federal, state, and local government agencies	Established as a forum for government agencies to address and discuss issues of common concern related to desert resource conservation.	
Echo Bay developed area	Concession contract	Ongoing	Concessioners and the public	The marina has been closed and removal is planned, leaving limited land-based facilities (trailer village, recreational vehicle park, land-based fuel remain open as part of a contract amendment with an existing concession contract).	This northern developed area has been affected by lowering water levels. Decisions need to be made about the future of the site. The Park is exploring future marina capacities and use under a concessions lease.
Exotic Plant Management Team	Memorandum of understanding	Ongoing	Representatives from federal, state, and local government agencies	Lake Mead NRA is the host park for the Exotic Plant Management Team, which travels extensively throughout the southwest to control the spread of nonnative vegetation. The team provides services to other parks as well as state, and local entities and other federal agencies.	
Fish hatcheries	Interagency agreement	Ongoing	Nevada State Department of Wildlife and USFWS	There are two fish hatcheries within the park boundary. One is managed by the Nevada State Department of Wildlife on Lake Mead and the other managed by the US Fish and Wildlife Service on Lake Mohave at Willow Beach.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Glen Canyon Long-Term Experimental and Management Plan	Interagency agreement	Ongoing	BOR	The National Park Service and Bureau of Reclamation are preparing an environmental impact statement to evaluate the operation of Glen Canyon Dam and identify management actions and experimental options that will allow for adaptive management of the dam for the next 15–20 years.	
Grand Canyon Agreement (Pearce Ferry Road and Take-out)	Interagency agreement	Ongoing	Grand Canyon National Park (GRCA), GRCA concessioners, Lake Mead NRA, and GRCA CUAs, general public, tribal interests	Under the existing agreement, Grand Canyon National Park made a commitment to pay for the maintenance of Pearce Ferry Road and the take-out area, which is used extensively for raft trips through the Grand Canyon that terminate in Lake Mead NRA.	MOU/MOA are currently expired. Parks are working to renew.
Clark County Multi-Species Habitat Protection Plan	Interagency agreement	1995 – Ongoing	Federal, state, and local agencies	The Clark County Multi-Species Habitat Protection Plan includes approximately 80 species and more than 400,000 acres of protected habitat within Lake Mead NRA.	
Lower Colorado River Multi-Species Program	Interagency agreement	Ongoing	Federal, state, and local agencies	The Lower Colorado River Multi-Species Program, which includes Lake Mead NRA, provides protection of more than 80 species while meeting water delivery needs and requirements.	
Virgin River habitat recovery and conservation plan	Interagency agreement	Ongoing	City of Mesquite, Nevada, and federal, state, and local agencies	The City of Mesquite is coordinating an interagency effort to develop a Virgin River habitat recovery and conservation plan.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Host park	Interagency agreements	Ongoing	WASO, NPS Pacific West Region, Mojave Network, and partnership programs	<p>Lake Mead NRA is the host park for a number of WASO, PWR, Mojave Network, and partnership programs. The park provides logistical and operational support for these programs. These programs include:</p> <ol style="list-style-type: none"> 1. WASO Exotic Plant Management Team 2. WASO Special Agents 3. WASO Office of Professional Responsibility 4. WASO/PWR Water Rights Program 5. PWR/ Mojave Network Major Acquisition Buying Office 6. PWR/ Mojave Network Servicing Human Resources Office 7. PWR/ Mojave Network Inventory and Monitoring Program 8. PWR Renewable Energy Program 9. Mojave Network Safety Program 10. Mojave Network Facility Management Software System Program 11. WASO Natural Sounds Specialist 12. PWR Natural Sounds and Night Skies Specialist <p>Serving as a host park does impact Lake Mead NRA as travel ceilings, office space, IT capacity and other administrative responsibilities impact its staff. There are benefits to the park as well in supporting these positions including greater access to network or regional professionals.</p>	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Hualapai Tribe	Intertribal agreement	Ongoing	GRCA and the Hualapai Tribe	Grand Canyon National Park, Lake Mead NRA, and the Hualapai Tribe have been involved in ongoing consultations relative to the management of the Colorado River along the common boundaries.	
Interagency Communication Center	Interagency agreement	Ongoing	Federal, state, and local agencies	The Interagency Communication Center is located at Lake Mead NRA in Boulder City, Nevada and serves 8.1 million acres of federal land in southern Nevada and northwestern Arizona.	
Katherine Mine site	Interagency agreement	Ongoing	Park	Near the Katherine Landing area, there is an historical, multigenerational mining site. This site is dangerously eroding, has been closed to the public, and studies are being conducted to determine the extent of the underground mine, its overall condition, and alternatives to make it safe. Steps have been taken to mark the area and make it inaccessible to visitors.	
Lake Mead Institute	Memorandum of agreement	Ongoing	Park, visitors, Western National Parks Association, Great Basin Institute, Outside Las Vegas Foundation, other partners, concessioners	The Lake Mead Institute is a partnership designed to provide education, service, and scientific opportunities in support of Lake Mead NRA.	
Lake Mead Lodge	Expired Concession Contract	Ongoing	Concessioners, state historic preservation office, NPS and its solicitors, former concessioner, the public	The lodge and related historic district is planned to be removed and the site restored to its natural condition.	The lowering water level of Lake Mead has indirectly caused the demise of the Lake Mead Lodge Historic District. Litigation has been settled, and efforts toward removal have been initiated.

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Las Vegas Wash	Interagency agreement	Ongoing	Federal, state, and local agencies, concessions	The Las Vegas Wash Coordinating Committee brings together 29 interested federal, state and local agencies to address stormwater, water quality, and erosion management.	From the Las Vegas Valley, approximately 150 million gallons per day of stormwater, treated effluent, and urban runoff flows through the Las Vegas Wash to Lake Mead. This causes serious issues, including erosion and water quality that needs to be monitored and addressed. Additional grade control structures need to be constructed within the Wash.
Laughlin Regional Heritage Greenway Park and Trail	Interagency agreement	Ongoing	Laughlin, Nevada; Clark County; BOR; and the NPS	This project includes more than nine miles of trails in the area of Laughlin and was developed as a partnership between Clark County, the Bureau of Reclamation, and the National Park Service.	
Law enforcement and emergency services	Interagency agreements	Ongoing		The park cooperates with other local, state, and federal agencies that have overlapping jurisdictions for providing law enforcement and emergency services.	
Military training exercises	Special use permit and memorandum of understanding	Ongoing		The park is used for military training currently authorized by a special use permit but which will eventually be addressed in a memorandum of understanding.	
Mojave Desert Initiative	Interagency agreement	Ongoing		The Mojave Desert Initiative was established as a forum for government agencies and other partners to collaboratively address wildfire and invasive species issues within a defined eco region of the northeast Mojave Desert.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Mojave Network coordination	Interagency agreement	Ongoing	Death Valley National Park, Great Basin National Park, Joshua Tree National Park, Manzanar National Historic Site, Mojave National Preserve, Parashant National Monument	Lake Mead NRA coordinates and collaborates with other parks in the Mojave Network	
Museum and archives		Ongoing		Museum collections at Lake Mead NRA are housed both on-site and off-site and include 100,900 museum objects and 166 linear feet of archives.	
Native plant nursery	Interagency agreements with BLM Las Vegas Field Office, Kingman BLM for seed increase and seed collection	Ongoing	Lake Mead NRA and adjacent land managers, concessions	Lake Mead NRA's nursery grows native plants both for park projects and for partners and adjacent land managers involved in desert and wetland restoration activities.	
Nevada Department of Wildlife	Interagency agreement and memorandum of understanding	Ongoing	State of Nevada	The park cooperates with the State of Nevada on a variety of issues, including wildlife and bighorn sheep management, hunting, law enforcement, and conservation issues.	
Nonprofit partners		Ongoing		The park works collaboratively with a number of nonprofit partners.	
Overton Beach Developed Area	Terminated concession contract due to low water	Terminated in 2007	General public, especially gateway communities	This northernmost developed area of the park has been left dry by the lowering water levels of the park. The concession operation closed in 2006, the other public facilities closed just over a year later, and the road entering the area was closed to vehicles in 2010 because of low water, limited capacity, and possible vandalism. The area will be reopened as a primitive area with no services in 2015.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Overton Wildlife Management Area	Cooperative management agreement	Ongoing	Nevada Department of Wildlife and hunters in the general public	Approximately 15,000 acres of park land is managed by the Nevada Department of Wildlife for wildlife based recreation, including hunting. The park is currently developing a new agreement for this joint management. The original agreement predates the park enabling legislation.	
Lake Mead Water Quality Forum	Memorandum of understanding	Ongoing	Nevada Department of Environmental Protection	Sponsored through a memorandum of understanding with the Nevada Department of Environmental Protection to provide interagency water quality monitoring.	
Lake Mead Ecosystem monitoring workgroup	Memorandum of understanding	Ongoing	Nevada Department of Environmental Protection	Conducts monitoring activities as directed by the Lake Mead Water Quality Forum.	
Private Inholdings	Memorandums of understanding	Ongoing	Hoover Dam Lodge, mining claims holders, others	<p>Hoover Dam Lodge is a hotel casino located on a private inholding entirely within the boundary of Lake Mead NRA. Park managers are challenged to ensure this property is managed consistent with the purposes for which the park was established. Hotel ownership has changed, requiring the development of new understanding and cooperation.</p> <p><i>Mining claims:</i> the park is attempting to purchase inholdings associated with mining claims, but there are limited funds for doing so.</p> <p><i>Other inholdings:</i> the park has more than 16,000 acres of private inholdings that creates challenges to preserve park resources and values.</p>	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Quagga mussel coordination	Interagency agreement	Ongoing	State of Nevada, State of Arizona, USFWS, 100th Meridian, and Regional Committees with participation by many western states and their stakeholders, media, and elected officials	Collaborative efforts with the states of Nevada and Arizona as well as with the US Fish and Wildlife Service have been developed to prevent spread of this species, to the extent possible.	The nonnative quagga mussel exists in Lakes Mead and Mohave. The park has taken significant efforts to prevent the spread of this species to uncontaminated waters. Quagga mussel spread is a concern for all western states.
Railroad Tunnel Trail	Interagency agreement	Ongoing	NPS, BOR, general public, CUA permittees, new owners of private inholding hotel and casino	This popular trail includes land under jurisdiction of the National Park Service and Bureau of Reclamation and is jointly managed.	
Recovery plans and teams	Interagency agreement and memorandum of understanding	Ongoing	Federal, state, and local agencies	<p><i>Desert tortoise:</i> the tortoise is federally listed as threatened north and west of the Colorado River including lands of the park.</p> <p><i>Razorback sucker:</i> the razorback is federally listed as endangered in both Lake Mead and Lake Mohave.</p> <p><i>Relict leopard frog:</i> the relict leopard frog was once thought extinct and is protected by a multiagency conservation agreement that precludes federal listing as are several rare plant species.</p>	
Renewable energy	Interagency agreement and memorandum of understanding	Ongoing	Federal, state, and local agencies and renewable energy developers	The development of renewable energy has resulted in several areas near the park boundary being proposed for wind and solar developments, transmission lines, and corridors.	
Research and collecting permits	Special use permit	Ongoing	Research permittees	The park has as many as 80 permits issued to outside scientists in any one year and may process 30 or more applications annually.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Rights-of-way	Interagency agreement and memorandum of understanding	Ongoing	Utilities operators	<p>There are 59 utilities in the park that are or should be authorized with a right-of-way permit:</p> <p><i>NPS utilities:</i> Power is supplied to the park by NV Energy, Overton Power, and UniSource Energy Services. Phone service is supplied by CenturyLink, Moapa Valley Telephone, and Citizens Utilities.</p> <p><i>Nonpark utilities:</i> The park also contains electrical transmission and distribution lines, waterlines, fiberoptic lines, and wireless telecommunication facilities which serve customers outside of the National Park Service. There are two major transmission line corridors identified in the park’s general management plan.</p>	
River Mountains Loop Trail	Memorandum of understanding	Ongoing	Cities of Henderson and Boulder City, Nevada; BOR; user groups; coordinating committee; hiking public; tour groups; neighboring businesses; Las Vegas Convention and Visitors Authority	This nonmotorized recreational trail was developed through a collaborative partnership and connects Henderson, Boulder City, and Lake Mead NRA. Seventeen miles of the trail are located within the park.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Roads, highways, and transportation	Interagency agreements	Ongoing	Federal, state, and local agencies	<p><i>ADOT:</i> the Arizona Department of Transportation maintains the Arizona portion of US Highway 93, more than 15 miles of which are inside the park.</p> <p><i>NDOT:</i> the Nevada Department of Transportation maintains the Nevada portion of US Highway 93, nearly 5 miles of which are inside the park.</p> <p><i>Mohave County:</i> the county maintains some roads leading into the park such as Temple Bar Road and Pearce Ferry Road.</p> <p><i>Clark County:</i> the county maintains some roads leading into the park such as Cottonwood Cove Road.</p> <p><i>Boulder City Bypass:</i> the Regional Transportation Commission of Nevada is moving forward with construction of a US 93 corridor, which would bypass Boulder City and create 1 mile of new highway within the park boundary. It crosses through rugged terrain adjacent to wilderness areas</p> <p><i>Interstate 11:</i> there is a proposal to construct a new interstate highway north to south through the area. Alternatives include routes through the Boulder Beach area of the park, which is the most highly visited area of the park.</p>	
Southern Nevada Agency Partnership / Service First Agreement	Interagency agreement	Ongoing	Federal agencies	The Service First Agreement allows federal government agencies to share resources across jurisdictional boundaries. The Southern Nevada Agency Partnership includes NPS, BLM, USFWS, and the USFS	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Southern Nevada Water Authority (SNWA) and Alfred Merritt Smith Water Treatment Facility (AMSWTF)	Interagency agreement	Ongoing	SNWA and AMSWTF	The Southern Nevada Water Authority draws water from Lake Mead to serve the Las Vegas Valley and southern Nevada area. In addition to the intakes, a major water treatment plant (AMSWTF) and the associated water pipelines/ transmission lines are located within Lake Mead NRA.	
Special use permits	Permit	Ongoing	Public	The park issues more than 200 permits in a single year for special events and special uses that provide a benefit to an individual, group, or organization rather than to the public at large.	
Traditional cultural properties		Ongoing	Tribes	Consultation with tribes is needed to ensure their interests in the traditional cultural properties are being served.	There are two traditional cultural properties, Spirit Mountain and Gold Strike Canyon/ Sugarloaf Mountain, partially located within Lake Mead NRA. A number of other areas, including Lost City, St. Thomas, Willow Beach, and Bridge Canyon, have been identified as culturally significant by tribes and other cultural groups.
Tribal interests		Ongoing	Tribes	Eighteen tribes claim an affiliation with Lake Mead NRA and are consulted with on issues of mutual concern.	
Water quality	Interagency agreement	Ongoing	Nevada Department of Environmental Protection and Arizona Department of Environmental Quality	The park works with state regulatory agencies (Nevada Department of Environmental Protection and Arizona Department of Environmental Quality) to maintain compliance with water quality standards and regulations as they pertain to developed areas and to construction projects.	

Name	Agreement Type	Start Date – Expiration Date	Stakeholders	Purpose	Notes
Water rights		Ongoing	Local government agencies, private industry, and private landowners	Lake Mead NRA is actively involved in this water rights issue, including the study, monitoring, and protest of ground water applications that could impact park springs, stream inflows, and associated resource values.	With lower basin states fully using their Colorado River water allocations, the demand for developable ground water in the southern Nevada region is extremely high.
Western National Parks Association	Cooperating association with Pacific West Region, cooperating agreement with National Park Service	Ongoing	Western National Parks Association	The Western National Parks Association is a nonprofit cooperating association of the National Park Service and develops publications that support Lake Mead NRA's visitor center.	
Black Canyon National Water Trail	Interagency agreement	Ongoing	Lower Colorado River Water Trail Alliance, which includes Lake Mead NRA, BOR, local businesses, and nonprofit groups; NPS Rivers, Trails, and Conservation Assistance Program	Lake Mead NRA and the Bureau of Reclamation are responsible for water trail management. These agencies work in partnership with the alliance, which serves an advisory role in support of management activities.	



Existing Plans

Name	Purpose	Notes
Lake Mead NRA general management plan (1986)	The park's general management plan provides the overall management direction for the park, establishing management zones to provide for recreational opportunities while also protecting park resources.	
Lake Mead NRA burro management plan (1995)	The plan addresses the environmental impacts caused by nonnative burros in the national recreation area. The plan called for the elimination of burros in portions of the national recreation area. Control methods that were identified in the plan include live removal (e.g., helicopter/trap, helicopter/rope, and helicopter/net-gun) and fencing.	
Lake Mead NRA minerals management plan (1988)	Procedures manual for park staff and lessees that outlines processes for mineral development operations within designated areas.	The park's enabling legislation specifically provides for mineral leasing, one of only a handful of NPS units in which mineral entry was not withdrawn at the time of establishment or later withdrawn from mineral entry by the Mining in the Parks Act of 1976 (PL 94-429). Valid claims are governed by regulations in Title 36 CFR, Part 9A.
Lake Mead NRA lake management plan (2003)	The lake management plan amends the park's general management plan to provide additional direction for managing recreation on Lakes Mead and Mohave.	The plan provided for the phased elimination of two-stroke personal watercraft on Lakes Mead and Mohave. Those restrictions went fully into effect in 2013 with an allowance for watercraft that meet the US Environmental Protection Agency (EPA) 2006 emission standards through the use of direct-injection two-stroke or four-stroke engines. It is expected that this requirement may reduce jet ski use in the park.
Low water general management plan amendment (2005)	Guides park operations on Lake Mead for waters that drop to a lake elevation of 1050 feet mean sea level (MSL).	This low water amendment to the general management plan was finalized in 2005 in response to drought-induced, lowering lake levels. A new amendment to address lake elevations below 1050 feet MSL to 950 feet MSL is planned to begin in 2014.



Appendix D: Analysis Tables for Fundamental Resources and Values and Other Important Resources and Values

Fundamental Resources and Values

Fundamental Resource or Value	Abundant Land and Water Recreation
Related Significance Statements	#1, #2, #6
Description	<p>The park offers abundant opportunities for a wide range of land- and water-based recreational pursuits. Frontcountry settings offer swimming, beach lounging, boating, sailing, kayaking, fishing, hiking/walking, bicycling, picnicking, as well as car, tent, and recreational vehicle camping. Backcountry settings offer opportunities for self-reliant and self-directed adventures in boating, river rafting, boat tours, self-contained camping, hiking, backpacking, 4x4 travel on approved roads, climbing and canyoneering, swimming, SCUBA diving, fishing, wildlife watching, and hunting.</p>
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Reported visitation at Lake Mead NRA was 6.3 million visitors in 2012. Annual visitation hit a high of more than 10 million visitors in 1995 after decades of sustained growth and has been slightly trending downward in the last 15 years so that the park currently supports about as many visitors as in the 1970s. In 2014, visitation is increasing. • While significant visitation occurs year-round, about two-thirds of the visitors come during the warm season months of April through September when the primary visitor use is focused on water-based recreation. • Overnight stays in the park totaled 172,000 in 2012, including over 20,000 overnight stays in the backcountry without agency- or concession-provided facilities (NPS Statistics website). Most overnight backcountry use is associated with boat-accessed shoreline camping, which continues to be a very popular activity. • Water elevation of Lake Mead hit a low of 1,080 feet mean sea level (MSL) in 2014. The general trend of Lake Mead is lowering lake elevation, punctuated by periodic rise and fall of elevation in response to antecedent watershed conditions, downstream demands, and the allocation of appropriated water rights. Lake Mohave is a pass-through reservoir below Lake Mead that experiences predictable seasonal fluctuations in elevation in response to downstream demand of water users, but generally maintains a relatively stable elevation. The water elevation is a major influence on visitor access and use. • Lake Mead provides 759 miles of shoreline and 157,418 acres of surface water (at 1,220 feet elevation) with major marinas at Callville Bay (Nevada), Hemenway Harbor (Nevada) and Temple Bar (Arizona), as well as a major boat ramps (Nevada) and Grand Canyon take-out site at South Cove (Arizona). With historic low water levels, the result is fewer marinas and launch facilities and challenging economic conditions. Some shoreline facilities associated with former marina locations, particularly on the Overton Arm were “moth-balled” waiting for higher water conditions to return. • Lake Mohave provides 309 miles of shoreline and 28,084 acres of surface water (at 647 feet elevation) with major marinas at Willow Beach (Arizona), Cottonwood Cove (Nevada) and Katherine Landing (Arizona). The trend is stable due to a stable water level. • While no comprehensive survey of the entire park exists, sampling for various purposes and visual observation indicates that most visitors come from regional urban centers including Las Vegas, Phoenix, Los Angeles, and San Diego. • The varied terrain, lakes, and extreme environments offered in the park are also popular for visitors to pursue trail running, biking, swimming, kayaking, SCUBA, and other sports interests. Many of these activities are managed as organized events permitted as special park uses.

<p>Fundamental Resource or Value</p>	<p>Abundant Land and Water Recreation</p>
<p>Current Conditions and Trends (continued)</p>	<ul style="list-style-type: none"> • The park offers more than 600 miles of backcountry roads, including both 2x4 and 4x4 routes. Road counters for primary backcountry routes are installed in some locations but trend data are collected and the process for dissemination is being devised. • Black Canyon Water Trail designated as a National Water Trail in June 2014, which includes a 30-mile stretch of the Colorado River from the downstream side of Hoover Dam to the mouth of Eldorado Canyon, south of Boulder City. • The lake management plan (2003) provided for the phased elimination of two-stroke personal watercraft on Lakes Mead and Mohave. Those restrictions went fully into effect in 2013 with an allowance for watercraft that meet the US Environmental Protection Agency (EPA) 2006 emission standards through the use of direct-injection two-stroke or four-stroke engines. It is expected that this requirement may reduce jet ski use in the park. • Interest in wildlife for nonconsumptive uses (e.g., wildlife watching) continues to increase, with particular interest in the bighorn sheep populations visible from US Highway 93. • Interest in and subsequent harvest rates of game species for hunting are stable or increasing. Harvested species include bighorn sheep, quail, and rabbits. This activity is managed by the Nevada Department of Wildlife and Arizona Game and Fish Department. • Trapping activities in the park focus on bobcat, but also include lawful take of other species such as gray fox, kit fox, ringtail, and badger. Interest in and subsequent harvest rates of game species for trapping are unknown. • State game agencies continue to actively manage bighorn sheep populations to establish or augment subpopulations to ensure long-term herd sustainability and augment populations in formerly populated mountain ranges in which they have been extirpated. Efforts have also been made to maintain habitat connectivity between subpopulations, including the construction of highway overpasses on US 93 in 2011. • Game fish are actively stocked in Lakes Mead and Mohave. Rainbow Trout are a put-and-take fishery, while large-mouth bass, small-mouth bass, striped bass, crappie, and catfish are both stocked and reproduce naturally in park waters. Fish stocking and regulation of anglers is managed by the Nevada Department of Wildlife and Arizona Game and Fish Department. Many fishing tournaments are hosted annually on park waters, including local, regional, and national tournaments. • Healthy sport fisheries and interest in sport fishing exist in Lakes Mead and Mohave. Concern exists that the sport fishery may be in decline following the introduction of several aquatic invasive species, including quagga mussels and gizzard shad. • Microcystis algae (blue-green algae), which can be toxic to humans and animals in abundance, was present during late winter and spring of 2015 in sufficient quantity on both Lake Mead and Lake Mohave to necessitate visitor swimming and water recreation advisories and enhanced water monitoring. Increases in microcystis had been noticed during 2011–2014 on Lake Mohave, but not at levels warranting action. The trend in microcystis abundance appears to be increasing. The park is working with interagency partners to enhance monitoring and develop appropriate public education and management responses. • Water-borne pathogens, such as West Nile virus and Naegleria fowleri, have been detected in the park vicinity and the potential exists for occurrence in the park. Both species pose health risks to park visitors and employees.

Fundamental Resource or Value	Abundant Land and Water Recreation
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • Low water (below 1,080 feet MSL elevation) makes many existing shoreline facilities unusable in their current design and location. Low water also exacerbates conditions that degrade water quality, increases the potential for invasion by aquatic invasive plant species, and may increase potential for water-borne human pathogens. • Climate change and regional water demand are the primary threats for water decline. • Illegal off-road vehicle use remains a persistent threat to terrestrial systems. Inappropriate/ destructive visitor behaviors, such as illegal off-highway vehicle use, littering, dumping, illegal campfires, improper disposal of human waste, graffiti and tagging of facilities and resources, illegal firewood harvesting, and large group parties can all threaten the quality of backcountry and shoreline settings or the opportunity to experience them in an unimpacted state. • Frequency of requests for special use permits to host large-scale sporting events in the park (such as fishing tournaments, triathalons, long-distance bicycle and running events) could diminish the backcountry experience in some areas even though most large events occur in the frontcountry. These large special events diminish the frontcountry experience as well as clog roads with bicyclists and other athletes. Roads are occasionally closed off entirely. • Exceedances of the visitor use thresholds established in the lake management plan could occur due to the popularity of shore launching of some watercraft and the reduced surface area and facility capacity as a result of low lake levels on Lake Mead. • Low water levels on Lake Mead have largely eliminated the Bonelli Bay semiprimitive use area that was identified in the lake management plan, thus reducing the availability of protected waters for paddlecraft and low-wake watercraft use. • The lake management plan zoned the upper Black Canyon reach of Lake Mohave for primitive recreation and numerous restrictions of types of motorized water craft allowed during certain days and seasons, but those restrictions are frequently violated by motorboat users. • Invasive plants, particularly athel, saltcedar, puncturevine, and fountain grass, are prevalent in some shore use areas and may degrade recreation opportunities because of encroachment into sandy beaches. • Car strikes of bighorn sheep continue to be a threat along US 93, and tend to be escalating on the Nevada portion, but have been somewhat mitigated with the recent construction of highway overpasses over the Arizona portion. • Invasive aquatic species (including quagga mussels and gizzard shad) continue to negatively affect aquatic food chains, which favors some game fish and diminishes other game fish. • Illegal take of wildlife continues to be an issue, including potential for reptile poaching. State game and fish agencies’ goals and perspectives sometimes differ from those of the National Park Service. • Water-borne human and wildlife indicator bacteria (e.g., E. coli and fecal coliforms) for water quality suitability for full body contact have been noted for short durations. This is generally detected immediately following high-use weekends in the waters near popular coves. • Declining water levels and changing demographics threaten the economic viability of private concession operations. Although several existing plans provide general direction for concession management, there are outstanding issues that impact the ability of the park to implement the guidance. Possessory interest issues have accrued to levels that prevent companies from bidding on contracts and lead to deteriorating conditions at marinas due to a lack of reinvestment.

Fundamental Resource or Value	Abundant Land and Water Recreation
<p>Threats and Opportunities (continued)</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • Revisit thresholds established in the lake management plan on periodic intervals and compare them to actual visitor use data to determine if thresholds are being exceeded. • Continue implementation of the lake management plan, including the restrictions on two-stroke personal water craft, zoning, and visitor capacity limits. • Revitalize concession facilities and services in developed areas using leases and special legislation. • Continue collaboration with state game and fish agencies to promote watchable wildlife and manage game species in a way that is ecologically sustainable and minimizes impacts on park visitors and values. • Emphasize and promote nonmotorized water-based recreation that is less dependent on shoreline facilities. • Maintain interagency partnerships with jurisdictional interests in park resources to identify common issues, promote shared monitoring, and implement issue-specific mitigation. • Greater public education related to resource values. • Implement Climate Friendly Parks Action Plan.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • The way visitors experience Lake Mead NRA is ever-changing. The park needs a better understanding of visitation patterns, trends, and visitor characteristics to guide management decisions in the future. Visitor use management issues facing Lake Mead NRA include use conflicts and congestion on the lake; water quality issues related to visitation; social trails; and the need to balance visitation with the protection of fundamental resources and values. A comprehensive evaluation of recreational uses and visitor use patterns is needed to address these challenges. • More information on the fur-bearing species to determine if the level of take on trapped populations is sustainable. • Climate change will impact all aspects of park management, thus a comprehensive analysis of resource vulnerabilities and exploration of plausible climate futures is needed to inform all planning projects.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Shoreline facilities at many locations are in areas at risk for flash flooding and should be re-assessed to minimize threats to life and safety of park visitors and staff. Willow Beach has already been redesigned. Katherine Landing and Cottonwood Cove are currently being evaluated for redesign in a development concept plan. • A visitor use management plan is needed to evaluate current visitor use patterns and characteristics, identify visitor use management goals and objectives, identify indicators and standards that define acceptable levels of use, and identify appropriate visitor use management strategies throughout the park, and particularly for backcountry roads, shoreline use and management, backcountry camping, trails, and high-use coves. • Continue engagement with state agencies regarding planning efforts focused on harvested and/or watchable wildlife species. • Guidelines for park response to elevated levels of harmful aquatic algal blooms, eco-toxins, and other water-borne human health hazards. • A new low water amendment to the general management plan is needed to update the low water GMP amendment, providing comprehensive management and visitor access direction for lake level scenarios below 1,050 feet and for fluctuations over the long-term, beyond current projections. • A nontraditional commercial services plan is needed to provide direction for management of commercial services over the next 10 to 15 years, particularly dealing with issues of low water, possessory interests, and aging infrastructure. The plan would provide details on how the park's commercial services providers would be managed to achieve overall park goals and meet desired resource conditions and visitor experiences. • Periodically update interpretive action plan to incorporate the latest scientific information about park resources, particularly water quality, into effective public messages to be conveyed through a variety of delivery mechanisms.

Fundamental Resource or Value	Abundant Land and Water Recreation
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The park’s 1964 enabling legislation (PL 88-639) provides that “The Secretary of the Interior shall permit hunting, fishing, and trapping on the lands and waters under this jurisdiction within the recreation area in accordance with the applicable laws and regulations of the United States and the respective States: Provided, That the Secretary, after consultation with the respective State fish and game commissions, may issue regulations designating zones where and establishing periods when no hunting, fishing, or trapping shall be permitted for reasons of public safety, administration, or public use and enjoyment” • Policies and guidelines understood as the “Law of the River” including the 2007 interim guidelines for shortage criteria for the Lower Colorado River • Nevada Department of Environmental Protection water quality standards specific to Lakes Mead and Mohave • NPS Concessions Management Improvement Act of 1998 • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> (chapter 8, “Use of the Parks”) • Director’s Order 4: <i>Diving Management</i> • Director’s Order 6: <i>Interpretation and Education</i> • Director’s Order 9: <i>Law Enforcement Program</i> • Director’s Order 17: <i>National Park Service Tourism</i> • Director’s Order 28: <i>Cultural Resource Management</i> • Director’s Order 42: <i>Accessibility for Visitors with Disabilities in National Park Service Programs, Facilities, and Services</i> • Draft Director’s Order 48: <i>(NPS48) Standard Evaluation and Rate Approval for Commercial Services</i> • Director’s Order 53: <i>Special Park Uses</i> • NPS <i>Natural Resource Management Reference Manual 77</i> • Director’s Order 83: <i>Public Health</i> • NPS <i>Transportation Planning Guidebook</i>



Fundamental Resource or Value	Opportunities to Appreciate Spectacular Scenery
Related Significance Statements	#2, #4
Description	<p>The park offers opportunities to appreciate spectacular visual resources including: deep canyons, dry washes, sheer cliffs, near and distant mountain ranges, the variable reflection and motion of the lakes, colorful soils and rock formations, mosaics of visual texture provided by different vegetation, and appealing contrasts between rugged desert landscapes and vast water bodies.</p>
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • The two decades prior to 2007 saw a great expansion in the urbanization of lands surrounding the park, particularly in the Las Vegas Valley and Colorado River Valley. While such urbanization has slowed with struggling local economies, the potential is there to rebound and expand ever farther along the ridgelines surrounding the lakes. • Industry-scale renewable energy development on BLM lands adjacent to the park continues to be an increasing threat on the scenic values of the park (e.g., solar fields such as the Eldorado Solar Field, which is nearby but only visible to a few high points within the park). • Light pollution originating from the urban Las Vegas Valley and Laughlin dims the night sky over much of the park. • Several regional power transmission corridors intersect the park. Power transmission lines are obvious in several areas of the park, particularly in the vicinity of the Boulder Basin near Hoover Dam and near Davis Dam. • The spectacular visual resources are an inherent part of the park’s landscape, but the ability for the park’s visitors to enjoy them is greatly influenced by environmental conditions at a specific time and place as well as the opportunities that are provided by park infrastructure to enjoy the scenery. Specifically, airborne particulates greatly affect visibility in the park and viewing opportunities for enjoying dark night skies. Urban air pollution from Las Vegas is often a problem as is fugitive dust from the arid landscape. Smoke from western forest fires, which are generally increasing in size and frequency, also contribute to reduced visibility in the park. • The park includes several iconic scenic drives, of which the most popular are Lakeshore Drive and Northshore Drive, and hundreds of miles of backcountry roadways that also traverse spectacular scenery. There are hundreds of scenic overlooks (both developed and undeveloped) with spectacular scenery within the park that invite visitors to stop and enjoy the view.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Green energy development interest on lands adjacent to the park, particularly in the Searchlight and Temple Bar areas, will probably result in viewshed changes in the near future if additional solar arrays and wind farms are constructed. • Potential mining operations within the viewshed along Northshore Road also threaten to diminish the park’s scenery. • The receding lake level in Lake Mead has resulted in a ring around the lake that is visible as either white mineral deposits on rock walls or as mud flats and denuded shorelines. In many places around the Boulder basin the shorelines also include the remains of park facilities, including boat ramps and parking lots far up the shore as well as foundations and anchors associated with marina facilities that have been relocated to deeper water locations. These characteristics may be considered by some visitors to detract from the scenery. • Existing shoreline recreational sites are subject to destructive visitor behaviors including graffiti, vandalism, litter, dumping, illegal off-road vehicle use, and improper disposal of human waste, all of which detract from scenic values of the park and degrade the quality of recreational settings.

Fundamental Resource or Value	Opportunities to Appreciate Spectacular Scenery
<p>Threats and Opportunities (continued)</p>	<p>Threats (continued)</p> <ul style="list-style-type: none"> • Poor visibility caused by airborne particulates, including both local sources (such as the dust plume following a vehicle driving on unpaved roads) as well as nonpoint sources (such as regional haze) all affect the ability to enjoy the visual resources. More specifically it results in lost visual acuity to detect detail in the near ground and may result in the complete loss of far ground features. • Many of the park’s scenic overlooks were established when Lake Mead was at or near full pool. With the current condition and future projected conditions for lower lake levels, many of those overlooks may not offer the intended lake view. <p>Opportunities</p> <ul style="list-style-type: none"> • Engage with agencies involved in land use planning decisions adjacent to park lands, including serving as a cooperating agency for BLM energy development projects. • Analyze viewshed impacts associated with proposed park development, mitigate to the extent possible. • Explore the use of emerging tools such as NPScape to characterize visual landscapes and change overtime. • Manage park infrastructure and utility rights-of-way in such a way as to preserve and improve visual resources. For example, this might include undergrounding, rerouting, or redesigning some overhead lines and utility poles. • Consider the opportunity to provide for new scenic overlooks at more suitable locations whenever park road projects are designed.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Establish a viewshed monitoring program to detect change over time from key observation points using repeat photo points. • Complete a visual resource inventory per NPS standards.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • A visual resource management plan is needed to identify, design, and implement specific management actions to preserve quality visual resources and mitigate degraded visual resources that might be identified by the viewshed monitoring program and/or visual resource inventory.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The park’s 1964 enabling legislation (PL 88-639) provides that the area be administered for the “general purposes of public recreation, benefit and use” and also provides for the preservation of scenic features • Executive Order 11514, “Protection and Enhancement of Environmental Quality” • Clean Air Act (42 USC 7401 et seq.) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • NPS Management Policies 2006 • Sections 1.4, 1.6, 3.1, 4.4, and 4.7 call for the National Park Service to conserve and protect scenery, scenic vistas, and air quality



Fundamental Resource or Value	Riverine and Reservoir Ecosystems
Related Significance Statements	#1, #7
Description	The park includes riverine and reservoir ecosystems of the Colorado River system, including open water, shoreline environments, and outstanding water quality at the heart of the park.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • With the ability to store approximately 29 million acre-feet of water, Lake Mead is the largest reservoir by volume in the United States. Lake Mead stores water that supplies three western states (California, Arizona, and Nevada) and Mexico. Its uses, several of which are critical to life in the West, are diverse: drinking water for approximately 25 million people, agricultural irrigation, habitat for numerous fish and other wildlife species, world-class recreational opportunities, and hydropower generation. Lake Mead’s downstream neighbor, Lake Mohave, re-regulates releases from the Hoover Dam to provide for required downstream deliveries, is the site of a national fish hatchery, serves as important habitat for fish and wildlife including federally listed endangered species, and provides recreational opportunities. For these reasons, the health of Lakes Mead and Mohave are of interest to and the responsibility of multiple federal, state, and local agencies. • Generally the park has very good water quality in Lakes Mead and Mohave, as measured against EPA National Lake Assessment guidelines and state water quality standards. Algae and chlorophyll indicator levels in Lake Mead are well monitored and have been declining since 2003, most likely as a result of improved wastewater treatment processes for effluent streams entering the park. Bacterial monitoring occasionally detects fecal coliform counts exceeding guidelines in certain high-use coves and the trend is stable. • Water elevation of Lake Mead hit a low of 1,080 feet MSL in 2014. The general trend of Lake Mead is lowering lake elevation, punctuated by periodic rise and fall of elevation in response to upstream watershed conditions and downstream demand. Lake Mohave is a pass-through reservoir below Lake Mead that experiences predictable seasonal fluctuations in elevation in response to downstream demand of water users, but generally maintains a relatively stable elevation. • Numerous studies have documented the presence of endocrine disruptors and biomarkers related to endocrine disruptors in fish. Current research (2013) is investigating potential for population impacts and the trends are currently unknown. • On January 1, 2013, the 2003 carbureted two-stroke motor ban on personal watercraft went into effect and regulatory efforts are underway to ban all two-stroke motors not meeting 2006 EPA guidelines for the manufacture of marine motors. Implementation of these bans is intended to improve water quality as a result of reduction in hydrocarbon pollution of Lakes Mead and Mohave. • Healthy sportfisheries and interest in sport fishing exist in Lakes Mead and Mohave. Concern exists that the sport fishery may be in decline following the introduction of several aquatic invasive species, including quagga mussels and gizzard shad. • Microcystis algae (blue-green algae), which can be toxic to humans and animals in abundance, was present during late winter and spring of 2015 in sufficient quantity on both Lake Mead and Lake Mohave to necessitate visitor swimming and water recreation advisories and enhanced water monitoring. Increases in microcystis had been noticed during 2011–2014 on Lake Mohave, but not at levels warranting action. The trend in microcystis abundance appears to be increasing. The park is working with interagency partners to enhance monitoring and develop appropriate public education and management responses. • Riverine habitats associated with the Colorado River, Muddy River, and Virgin River also exist within the park. The reach considered riverine versus reservoir is directly dependent upon reservoir levels such that during low water conditions the park supports as much as 35 miles of riverine habitat while at full pool the park supports very little riverine habitat.

Fundamental Resource or Value	Riverine and Reservoir Ecosystems
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • Low water (below 1,080 feet MSL elevation) makes many existing shoreline facilities unusable in their current design and location. Low water also exacerbates conditions that degrade water quality, increases the potential for invasion by aquatic invasive plant species, and may increase potential for water-borne human pathogens. • Urban stormwater and treated wastewater from increasing urbanization adjacent to park lands as well as agricultural run-off, aquatic invasive species, and altered riverine flow regimes in the Colorado River, Muddy River, and Virgin River are a source for a wide range of pollutants, including endocrine disrupting compounds, pesticides, fertilizers, and hydrocarbons. • Water pollution by hydrocarbons from carbureted two-stroke boat engines and other chemical and bacteriological pollutants originating with boats and marina operations have historically been a persistent threat to the park's water quality, but the new regulations are expected to reduce this threat significantly. • Contaminants such as industrial byproducts, organochlorine pesticides, and metals from shallow groundwater contributions to the Las Vegas Wash are a documented threat to water quality in that area of the park. • Water-borne human and wildlife pathogens (e.g., E. coli and fecal coliforms) are a persistent concern throughout the lakes. • Climate change effects on water quality and quantity as a result of an increase in mean annual temperature and historic drought conditions may exacerbate many of the threats listed above. An increase in storm intensity/frequency projected for the region may increase pollution from local runoff (e.g., urban stormwater). An increase in mean annual air temperature projected for the region would increase surface water temperatures and could increase the potential for water-borne pathogens, noxious algae, and aquatic invasive species. <p>Opportunities</p> <ul style="list-style-type: none"> • Emphasize and promote nonmotorized water based recreation that is less dependent on shoreline facilities. • Maintain interagency partnerships with jurisdictional interests in park waters to identify common issues, promote shared monitoring, and implement issue-specific mitigation to address water quality concerns. • Conduct greater public education related to water quality issues. • Develop interpretation/education of the influences from climate change on riverine and reservoir ecosystems.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Lakewide survey of basic limnological constituents for each lake, to include no less than quarterly monitoring no fewer than 20 stations across Lake Mead, including stations in every major basin and no fewer than 4 stations in Lake Mohave as outlined in the ecological monitoring plan for Lakes Mead and Mohave (2010). • Monitoring endocrine-disrupting compounds and contaminants in the water column and sediments and their impacts on fish and wildlife populations. • Understanding quagga mussel impacts on lake ecosystems. • Climate change will impact all aspects of park management, thus a comprehensive analysis of resource vulnerabilities and exploration of plausible climate futures will inform all planning projects.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Guidelines for park response to elevated levels of harmful aquatic algal blooms, eco-toxins, and other water-borne human health hazards. • Update Lake Mead ecological and limnological monitoring plan periodically (e.g., every 5–10 years). • Update the quagga response plan to address operations, education, monitoring, research, and impacts based on experience, realized trends, and anticipated needs. • Assessment of climate change vulnerabilities and plausible future scenarios.

Fundamental Resource or Value	Riverine and Reservoir Ecosystems
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Policies and guidelines understood as the “Law of the River” including the 2007 interim guidelines for shortage criteria for the Lower Colorado River • Nevada Department of Environmental Protection and Arizona Department of Environmental Quality water quality standards specific to Lakes Mead and Mohave • The park currently has the following state appropriative water right on the Muddy River: <i>Application 10188; Certificate 5126; Priority Date – Dec. 1, 1937; Amount – 25 cubic feet per second (cfs), not to exceed 2,247.28 acre-feet per year; Purpose of Use – irrigation and propagation of migratory waterfowl</i> • Executive Order 11988, “Floodplain Management” • Executive Order 11990, “Protection of Wetlands” • Executive Order 13112, “Invasive Species” • Clean Water Act of 1972, as amended • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 77-1: <i>Wetland Protection</i> • Director’s Order 77-2: <i>Floodplain Management</i> • <i>NPS Natural Resource Management Reference Manual 77</i> • <i>NPS Management Policies 2006</i> (chapter 4, “Natural Resource Management”)



Fundamental Resource or Value	Groundwater
Related Significance Statements	#3, #6, #7
Description	The park contains groundwater resources of sufficient quality and quantity to support springs as well as the specialized aquatic and riparian habitats they provide.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> Historically, surface discharge has been quantified for larger, regionally, or subregionally sourced springs at two locations in the park: Northshore Road spring complex and springs in the Black Canyon area below Hoover Dam. The Northshore Road spring complex primarily discharges groundwater from a regional carbonate-rock groundwater flow system. The majority of this discharge occurs at Rogers Spring and Blue Point Spring, where annual discharge has generally been steady, averaging about 1.64 cfs and 0.56 cfs over periods of record spanning 28 years and 14 years, respectively, as of October 2013. Long-term ecological monitoring of these springs is the subject of the Mojave Network Inventory and Monitoring (I&M) Program Selected Large Springs Monitoring Protocol, which is currently under development. In the Black Canyon, several warm and cold springs are present that discharge water in varying amounts. Preliminary results from a study by the US Geological Survey (USGS) indicate that total annual spring discharge in the upper portion of the canyon may range from 1.5 cfs to 10 cfs, with a portion of this discharge probably originating from the seepage of impounded lake water. Numerous smaller, more localized springs occur elsewhere in the park, but quantification of surficial discharge from these springs generally was based on visual estimation. Long-term ecological monitoring of a subset of these springs is the subject of the Mojave Network I&M Program Aridland Springs Monitoring Protocol, which is currently under development. Native aquatic organisms, including rare and endemic aquatic invertebrates, have been identified in many springs, though inventories are incomplete and long-term monitoring has not been established. Human use of springs for recreational purposes is a long-standing visitor activity within the park, with particular interest in soaking in natural hot or warm springs. In many locations, visitors alter the spring morphology by constructing impoundments to hold the water and deepen the pool. Such actions also increase human health risks due to creation of more hospitable conditions for pathogens such as the <i>Naegleria fowleri</i> amoeba for which the park routinely posts warning signs at popular soaking springs. Most springs support some amount of associated riparian vegetation and habitat, though the extent of that habitat is highly variable from site to site. While many springs have historically supported nonnative saltcedar, palms, and other invasive species, NPS efforts over the last 20 years have removed the majority of those invasive plants so the trend in the quality of the riparian habitat provided is generally improving.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> Regional groundwater pumping presents the greatest threat to maintaining adequate surficial discharges from the regionally sourced Northshore Road spring complex, where an estimated 60,000 acre-feet/year of groundwater rights are already permitted and approximately 300,000 acre-feet/year of additional groundwater-right applications are pending in the southern portion of the regional groundwater flow system. Recent groundwater modeling results simulating different cumulative pumping scenarios indicated that pumping of all permitted rights could result in considerable long-term reductions in flow at Rogers and Blue Point Springs, and that increased pumping of the successively larger amounts of the pending rights could exacerbate these impacts, potentially resulting in substantial near-term reductions in discharge or cessation of flow in these springs.

Fundamental Resource or Value	Groundwater
<p>Threats and Opportunities (continued)</p>	<p>Threats (continued)</p> <ul style="list-style-type: none"> • Preliminary results from an ongoing study by the US Geological Survey indicate that existing and proposed pumping from local aquifers in the valleys surrounding the Black Canyon area is unlikely to adversely impact spring discharges in the canyon due to hydrogeological conditions that are likely to discourage a good hydrologic flow connection. However, it is conceivable that extended periods of low water conditions in Lake Mead could have an effect on some spring discharges that are sourced from seepage of impounded lake water. • Smaller springs located around the park are less likely to be impacted by regional groundwater pumping, as many of these springs may have more localized flow systems that tend to be isolated from regional flow systems and pumping. However, discharges from these springs may be more sensitive to climate change effects. • Introduction and/or presence of nonnative terrestrial and aquatic species (plants and animals), including saltcedar, palms, aquarium species (from illegal aquarium dumps), and the potential for introduction of quagga mussels are persistent threats to springs, particularly those with a naturally or artificially impounded pool. • Depreciative human behaviors at springs, including physical modification, litter, chemical contamination, theft of warning signs, and improper disposal of human waste is an ongoing problem at many locations. Human activity in and around springs also diminishes their value for some wildlife species due to displacement and may have unintended and largely unknown impacts on aquatic organisms. • Trampling, erosion, and fouling by feral burros and trespass livestock are a threat in some spring locations. • Climate change effects on aquifer recharge as a result of an increase in mean annual temperature and historic drought conditions could impact these important groundwater supplies and spring discharge (e.g., Northshore Road spring complex, Black Canyon area, and other smaller springs). A continued increase in mean annual temperature is projected for the region. • There is potential for chemical contamination and or flow alteration at high use springs due to the persistent problem with visitor modifications to these natural features. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue ongoing nonnative plant control at springs, ideally putting spring sites on a rotating schedule for inspection and retreatment. • Continue interagency collaboration and constructive engagement in the bio-political water rights administration and environmental compliance arenas to address local and regional groundwater pumping concerns and to provide for protection of the park’s groundwater resources for park purposes in perpetuity. • Expand or improve public education efforts to minimize impacts on springs and spring habitats caused by recreational uses. • Develop interpretation and education of the influences from climate change on groundwater aquifers (public water supplies) and springs and the importance of water conservation. • Apply sustainable management for park operations by following the Green Parks Plan to conserve water.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Develop the I&M Riparian Vegetation Monitoring protocol to monitor status and trends of vegetation around springs. • Maintain the collection of continuous spring discharge data at Blue Point Spring by the Mojave I&M Network. If possible, it would be desirable to restore USGS monitoring of the spring’s discharge in the future. • Expand understanding of the potential source of water to the larger springs located near the Arizona shoreline of the park to better evaluate their vulnerability to increased groundwater development in northwestern Arizona.

Fundamental Resource or Value	Groundwater
<p>Data and/or GIS Needs (continued)</p>	<ul style="list-style-type: none"> • Incorporate additional hydrogeological and pumping information into the recently developed DOI agency groundwater flow model of the southern portion of the regional carbonate-rock flow system to improve the model's predictive capability in the Virgin River Valley and Tule Desert area. • Expand understanding of the potential effects that reduced spring discharge might have on maintaining the specialized habitats associated with these springs. And, subsequently, determine if existing NPS water rights are sufficient to maintain the habitat to meet park purposes. • Continue work on Black Canyon Spring Study to include baseline characterization in cooperation with the US Geological Survey.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Assist NPS Water Resources Branch personnel in developing status reports for park management summarizing the current water rights setting at the park, and general hydrologic trends indicated by the data collected as part of ongoing monitoring, management, and mitigation plans the National Park Service negotiated with water developers in the area. These reports should be updated on a regular basis into the future. • Following issuance of the USGS study report for Black Canyon area, evaluate whether or not to maintain the collection of continuous discharge data from selected springs in the canyon. • Coordinate with the US Geological Survey to develop a scope of work to evaluate the potential source of water to larger springs located near the Arizona shoreline of the park, in case funding should become available. • If long-term continuous discharge monitoring at Rogers and/or Blue Point Springs cannot be supported by the park, coordinate with the Mojave Network I&M program to assume discharge monitoring at these springs under the Selected Large Springs Monitoring Protocol. Coordination would also include the Mojave Network I&M program assuming continuous water level monitoring at a nearby, recently installed, groundwater monitoring well, once the US Geological Survey terminates its current monitoring activities at this well. • Assessment of climate change vulnerabilities and plausible future scenarios.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <p>The following springs have state appropriate rights granted:</p> <ul style="list-style-type: none"> • Rogers Spring: <i>Application 10092; Certificate 4476; Priority Date – Feb. 16, 1937; Amount – 0.44 cfs; Purpose of Use – land inundation for migratory waterfowl refuge</i> • Kelsey's Springs (a.k.a. Angell's Springs): <i>Application 1802; Certificate 296; Priority Date – Aug. 22, 1910; Amount – 0.56 cfs; Purpose of Use – irrigation and domestic</i> • Clean Water Act of 1972, as amended • Secretarial Order 3289 "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • NPS <i>Natural Resource Management Reference Manual 77</i> • NPS <i>Management Policies 2006</i> (chapter 4, "Natural Resource Management")



<p>Fundamental Resource or Value</p>	<p>Diverse Array of Geologic Features and Processes</p>
<p>Current Conditions and Trends</p>	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Surface hydrology in the park is represented by perennial streams (Colorado River, Virgin River, and the Muddy River) and spring brooks, along with ephemeral streams and washes. While the perennial streams can be a major erosional/depositional force, their effects largely go unnoticed in the park because much of this occurs beneath lake level, but may be revealed from occasional bathymetric surveys of the lake floor. Ephemeral streams and washes only flow during extreme or prolonged precipitation events, and tend to dominate the surficial hydrology features in the park. Ephemeral streams and washes tend to be an episodic erosional/depositional force, expressed by flash flooding that can cause significant erosion and mass wasting of surficial geologic materials and flood damage to park infrastructure. The US Geological Survey maintains a few monitoring sites in the park to gauge flood flows, but little else has been documented about ephemeral stream hydrology. • Small dune fields exist in a few coves along the shores of Lake Mead and Lake Mohave, most notably Sandy Cove in the Boulder Basin and the Katherine Dunes near Katherine Landing on Lake Mohave. Dunes provide specialized habitat, including the habitat for rare psammophilic plants and animals, and also serve as popular visitor destinations. Some species are monitored on dune sites but there is no ongoing monitoring of the dune morphology itself. • Geohazards exist in the park, most notably the risk from flash flooding that has resulted in tens of millions of dollars of damage to park infrastructure and loss of human life. Other geohazards include the potential for rockfall along both paved and unpaved roads and seismic activity associated with numerous fault zones within the park. • Paleo resources found within Lake Mead NRA include trackways, vertebrate fossils, invertebrate fossils, and petrified wood. Opportunistic condition assessments of in-situ sites indicate most are stable while a few show signs of deterioration due to natural weathering processes. Many rare, high-value fossils have been excavated and are curated by the National Park Service. • Mineral resources, including sand and gravel, gypsum, turquoise, gold, silver, and copper, exist within the park and are subject to extraction as provided by in patented and unpatented mining claims on park lands and associated with private inholdings. Interest in extraction of precious metals increases when market demands are high and value increases. • Numerous abandoned mine lands remain within the park, including hundreds of mine sites with thousands of mine openings. Those mine openings that are in areas that are easily accessible to the visiting public have largely been mitigated for public safety but additional work is needed to inventory and mitigate abandoned mine lands.
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • Human alteration of ephemeral drainage patterns could potentially occur as a result of inadvertent erosion of nonsanctioned roads and hiking trails that visitors have created. Such erosion could cause disruptions to existing drainages or create new drainages over time. • Mining, both legal and illegal, has the potential for soil and water contamination, alteration of physical landscapes, increased fugitive dust, increased hazards for park visitors, and diminished visitor experiences. Such impacts are mitigated to the extent possible via the permitting process. • Illegal collection of and/or damage to paleo resources by park visitors and park operations is a potential threat to paleo resources, particularly in undocumented sites.

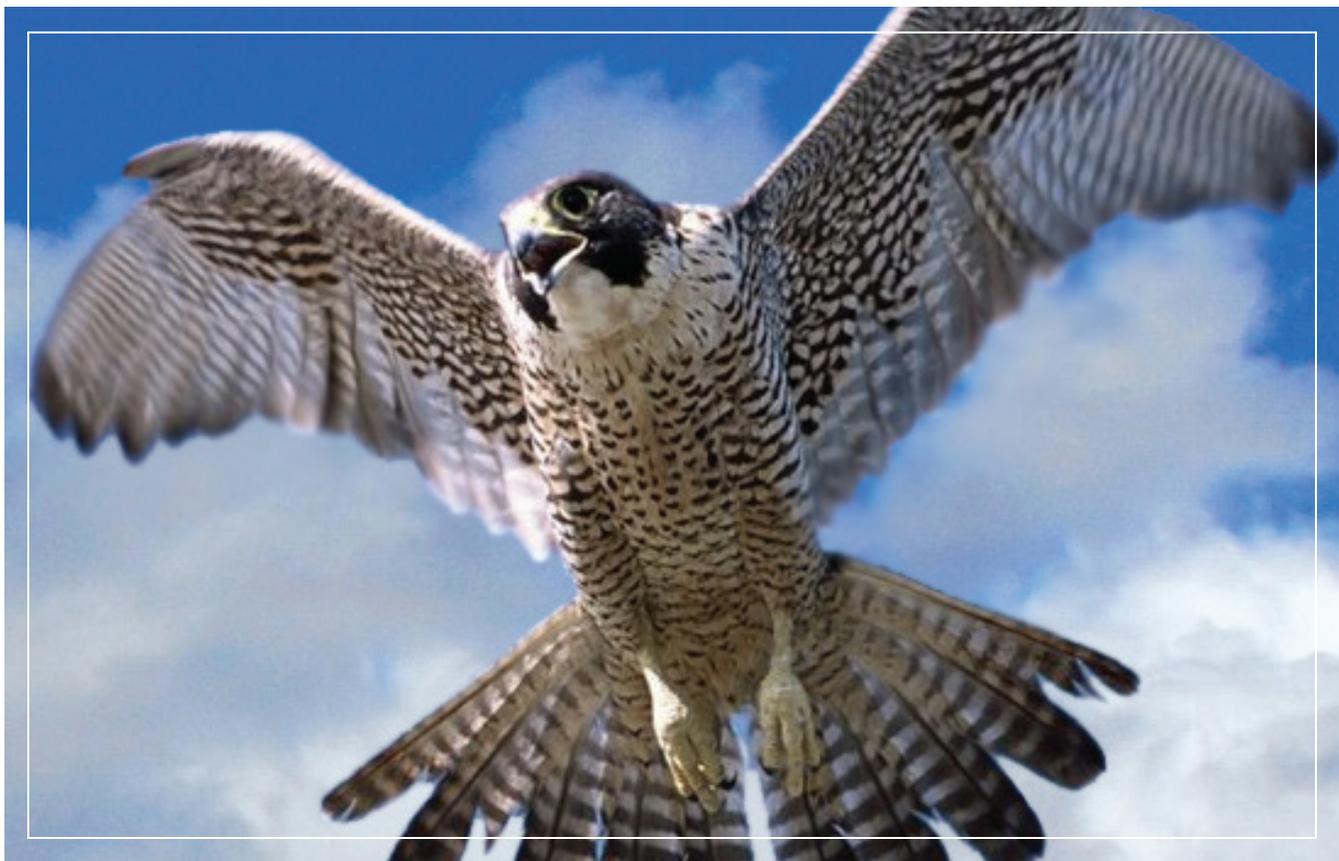
Fundamental Resource or Value	Diverse Array of Geologic Features and Processes
<p>Threats and Opportunities (continued)</p>	<p>Threats (continued)</p> <ul style="list-style-type: none"> • Geocaching and resulting disturbance to surface features, particularly in and around mine sites and areas of geologic interest continue to be a threat. • Stabilization of dunes due to nonnative plants is a persistent problem, particularly at Sandy Cove. <p>Opportunities</p> <ul style="list-style-type: none"> • Careful design of park roads and infrastructure to minimize disruption to surface hydrology. • Identify and mitigate, to the extent possible, geohazards at park developed areas. Continue abandoned mine land inventory and mine closure work in coordination with Geologic Resources Division, including continued use and maintenance of the abandoned mine land database. • Maintain list and continue legal acquisition of mining claims to terminate and rehabilitate abandoned mine lands including the mitigation of hazards to park visitors.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Survey of fossiliferous strata and paleo surfaces within the park is needed to complete a field inventory of in-situ paleo resources on park lands. • Repeated ground observation and/or remote sensing should be used to determine periodic changes to dune fields and sand sheets and fluvial processes. • Geohazards should be mapped and the susceptibility of park infrastructure and critical park resources to these hazards should be assessed and monitored. • Maintain and update the inventory of patented and unpatented mining claims in coordination with the Bureau of Land Management.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • A plan is needed for the preservation of Lost City (ancestral Puebloan site) to assess geohazards and prescribe mitigation measures.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The park’s enabling legislation specifically provides for mineral leasing, one of only a handful of NPS units in which mineral entry was not withdrawn at the time of establishment or later withdrawn from mineral entry by the Mining in the Parks Act of 1976 (PL 94–429). Valid claims are governed by regulations in Title 36 CFR, Part 9A. Park-specific operations are established in the park’s minerals management plan. <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • NPS <i>Natural Resource Management Reference Manual 77</i> • NPS <i>Management Policies 2006</i> (chapter 4, “Natural Resource Management”)



Fundamental Resource or Value	Functional Desert Habitats
Related Significance Statements	#3, #6
Description	The park preserves resilient and ecologically functional native plant and animal assemblages within diverse terrestrial desert habitats.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Major plant communities are in the process of being mapped as part of the Mojave Network I&M Vegetation Mapping effort and future integrated upland monitoring efforts will focus on the creosote bursage community. • While no complete inventory exists of nonvascular plants within the park, including biological soil crusts, there have been recent efforts to salvage and transplant crusts and much has been learned in the process about the crusts that occur in the gypsum soils. • While no complete inventory exists for invertebrates, including important granivores and pollinators, there have been recent survey efforts focused on gypsum soil habitats that have yielded species new to science. • Invasive annual plant populations are highly variable, primarily responding to precipitation patterns. However, the trend for mature stands of perennial woody invasive plants, such as saltcedar, is generally declining following years of constant control efforts and the recent arrival of biocontrol beetles, though new and often short-lived populations of saltcedar continue to invade the recently exposed substrates around Lake Mead as water levels recede. • Invasive annual plant populations are highly variable, primarily responding to precipitation patterns. • While there is currently no permitted grazing allowed in the park, feral and trespass cattle are being monitored and documented. Cases of trespass cattle have increased on the Nevada lands of the park while such cases have decreased on the Arizona lands of the park following the recent construction of an exclusion fence on the park boundary. Fence maintenance is an ongoing issue. • A wide variety of fauna use the habitats provided within the park. Where wildlife species are the focus of management attention they have been included in other, more specific fundamental resources and values. • Bighorn sheep pneumonia and other wildlife diseases such as contagious ecthyma (aka "sore mouth"), an infectious dermatitis of sheep that can affect humans through direct contact.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Invasive plants threaten native plant communities and the habitat they provide with both direct displacement as well as indirect effects, such as the invasive annual grasses that spread wildfire into fire intolerant shrublands and other nonnative plants that invade and stabilize dunes to the detriment of rare psammophilic plants. Of particular concern are new invasive species that may become established, especially via the urban interface and in aquatic habitats. These concerns are compounded by the recent loss of organization capacity and dedicated funding source to actively pursue early detection and eradication efforts. • Wildland fire in low elevation, fire-intolerant plant communities remains a threat, particularly in high-use recreational areas such as roadsides and shorelines because of the frequency of human-caused ignitions. • Off-road vehicle trespass and other anthropogenic disturbances harass and sometimes kill native wildlife, fragment habitat, and serve to spread both invasive plants and unwanted wildfire. • Nitrogen and fugitive dust deposition, resulting in direct impacts on plants and potentially long-term alteration of soil chemistry, are pervasive threats in all park habitats.

Fundamental Resource or Value	Functional Desert Habitats
<p>Threats and Opportunities (continued)</p>	<p>Threats (continued)</p> <ul style="list-style-type: none"> • Climate change is a pervasive threat to all park habitats, particularly changing precipitation patterns, including the seasonality, frequency, and intensity of precipitation events, which directly affects germination, recruitment, reproduction, and persistence of plant communities and species. • Soil destabilization due to crust die-off, off-road vehicle use, feral ungulate trampling, and vascular plant cover reduction are localized threats in some areas. • Lowering regional water tables from groundwater withdrawals and warming climate threaten springs and seeps and mesquite and cottonwood/willow woodlands. • A pervasive threat is that lowering lake levels opens up disturbed shoreline habitats for weed invasion, creating thousands of acres of moist soil environments without competition. • Illegal collection of reptiles within the park threatens populations and disturbs habitat. • Pneumonia spread in bighorn sheep populations can cause catastrophic die-offs. Multiple strains of pneumonia have been documented in sheep populations in the park. At the time of publication, only sheep on the Nevada side of the park have been tested. • Climate change probably is a threat to many desert plant communities and the habitat they provide, though such impacts are not well understood at this time. Such impacts are most profound on riparian systems and high elevation woodlands. Climate change may decrease cryptobiotic crusts and allow more airborne dust to occur. • Carbon sequestration reduction due to utility-scale renewable energy developments outside park. <p>Opportunities</p> <ul style="list-style-type: none"> • Focus limited resources and control efforts on highest priority invasive plant species or sites based on the priorities established in the exotic plant management plan (2010). • Improve early detection and containment efforts to minimize the effects of unwanted wildland fire. • Mitigate off-road vehicle trespass through barrier installation, education, and enforcement. • Work with Mojave Network I&M Program to develop and implement a riparian vegetation protocol and an early detection protocol for invasive species. • Continue collaboration on climate change science and adaptation planning through engagement with the Desert Landscape Conservation Cooperative. • Work with neighboring governmental entities (Bureau of Land Management, cities) to help control off-road vehicles, feral burro population expansion, and trespass cattle. • Maintain native plant nursery to provide native genetic material for restoration purposes, including biological soil crusts.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Continue to maintain the nonnative plant database to inventory nonnative plant species, map treated areas, and monitor nonnative plant populations over time; seek improvements to the data structure to better inform management decisions. • Continue work to inventory nonvascular plants and invertebrates, expanding current efforts beyond gypsum soil habitats. • Determine sources and rates of deposition for fugitive dust and nitrogen. • Determine increase/decrease in soil stability at a landscape scale. • Continue work to document and track changes in fire regimes, and the fate of both fire tolerant and fire intolerant plant communities and species over time. • Conduct additional collections of blood and tissue samples from bighorn sheep populations to monitor the spread of pneumonia. At the time of publication, only sheep on the Nevada side of the park have been tested. • Climate change will impact all aspects of park management, thus a comprehensive analysis of resource vulnerabilities and exploration of plausible climate futures is needed to inform all planning projects related to plant and animal habitats.

Fundamental Resource or Value	Functional Desert Habitats
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Climate change planning including vulnerability assessments for key species, climate change adaptation opportunities, and scenario planning are needed to inform park response to climate change. • Periodically update exotic plant management plan (2010), including review of target species list, park priorities, and annual work plans. • Periodically update fire management plan (2004, updated 2011), including fuel treatment priorities and changes in fire management strategies and tactics in response to results of new research or emerging issues. • Backcountry roads management plan to reduce illegal uses, dust, and land disturbance. • Complete resource stewardship strategy to develop comprehensive strategies and priorities for the protection and restoration of habitats. • Document habitat management practices to assure continuity over time. • Administrative procedures and formal guidelines are needed to provide procedures for evaluating requests for grazing.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • Endangered Species Act of 1973, as amended • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Executive Order 13112, "Invasive Species" • Secretarial Order 3289 "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • NPS Natural Resource Management Reference Manual 77 • NPS Management Policies 2006 (chapter 4, "Natural Resource Management")



Fundamental Resource or Value	Species of Conservation Interest
Related Significance Statements	#3, #6
Description	The park hosts populations and protected habitat for plant and animal species of conservation interest, including federally listed species and their critical habitats, species protected under conservation plans in lieu of listing, species that are new to science, and ecologically rare and endemic species.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> The park includes both the threatened Mojave desert tortoise (<i>Gopherus agassizii</i>) and the candidate Sonoran desert tortoise (<i>Gopherus morafkai</i>), with the Colorado River serving as the legal distinction between the two species. It also includes designated critical habitat on the Nevada side of the park for the Mojave desert tortoise and the park actively participates in the interagency recovery effort including research and monitoring. Two endangered fish, bonytail chub (<i>Gila elegans</i>) and razorback sucker (<i>Xyrauchens texanus</i>), occur in the Lower Colorado River including the waters of Lake Mead and Lake Mohave which are also designated critical habitat for both species. Though reservoir environments are generally unsuitable habitat for Colorado River native fishes, which thrive in warm, turbid, free-flowing rivers, the razorback has persisted and is known to spawn in eight areas of the park. To overcome game fish predation and improve survival of the species, the park participates in an interagency effort to collect the young fish, rear them in grow-out ponds in the park, and release them back into the wild as larger fish. The trend in adult survivorship after release is stable though recruitment in the wild is still unsuccessful. Wild bonytail chub have not been detected in Lake Mead or Mohave since 2005 and it is unknown if this wild population persists or reproduces, though the USFWS Willow Beach Fish Hatchery on Lake Mohave does rear bonytail chub and releases them as six-inch fish into park waters. Releases have occurred in Lake Mohave backwaters such as Davis Cove. The woundfin (<i>Plagopterus argentissimus</i>) is an endangered species of minnow endemic to the Virgin River that sometimes is found as far south as the confluence of the Virgin River, Muddy River, and Overton Arm of Lake Mead during low water conditions depending on riverine water flows. Rangelwide it is considered declining and most of the park is not considered suitable habitat for this species. The species is monitored by the Nevada Department of Wildlife and Bureau of Reclamation. The southwestern willow flycatcher (<i>Empidonax traillii extimus</i>) is an endangered riparian bird species that occurs along tree dominated riparian habitats of the Colorado River, potentially including the shorelines of Lake Mead and Lake Mohave. Lake Mead NRA includes three sites listed in the Lower Colorado Recovery Unit. Previous breeding sites in the park are no longer active due to the loss of habitat due to changes in water level. There are occasionally sightings within the park of migrating or dispersing individuals, but no known breeding sites are in the park. California condors (<i>Gymnogyps californianus</i>) were reintroduced upstream of Lake Mead and are occasionally seen in the upper reaches of Lake Mead near the mouth of the Grand Canyon. For the first time since the beginning of the reintroduction into Arizona, there are 4 confirmed wild condor chicks at Grand Canyon. As of October 18, 2013, current NPS population numbers indicate a total free-flying wild condor population in Arizona/Utah of 69. The Yuma clapper rail (<i>Railus longirostris yumanensis</i>) is an endangered bird that occurs in emergent riparian habitats of the Colorado River, potentially including some of the tributaries and shorelines of Lake Mead and Lake Mohave. Most of Lake Mead NRA shoreline habitat is unsuitable due to the fluctuations in water level, loss of riverine characteristics, and lack of marsh habitat. Potential habitat exists in discrete sections of shoreline where conditions intermittently support marsh establishment, though no rails have been documented within the park.

Fundamental Resource or Value	Species of Conservation Interest
<p>Current Conditions and Trends</p>	<ul style="list-style-type: none"> • The park supports and actively manages suitable habitat and self-sustaining populations of these state-listed species: three-corner milkvetch (<i>Astragalus geyeri</i> var. <i>triquetrus</i>), ringstem (<i>Anulocaulis leiosolenus</i>), sticky buckwheat (<i>Eriogonum viscidulum</i>), and Las Vegas bearpoppy (<i>Arctomecon californica</i>) as well as relict leopard frog (<i>Rana onca</i>), Gila monster (<i>Heloderma suspectum</i>), California leaf-nosed bat (<i>Macrotus californicus</i>), Townsend’s big-eared bat (<i>Corynorhinus townsendii</i>), yellow-billed cuckoo (<i>Coccyzus americanus</i>), chuckwalla (<i>Sauromalus ater</i>), peregrine falcon (<i>Falco peregrinus</i>), and other animal species. • Rare plant population monitoring since 2007 indicates a great deal of inter-annual variation in population trends in annual plant species, including those of conservation interest and the invasive annual plants that invade the same habitat. Some populations decline in direct response to site-specific impacts (e.g., weed invasion, off-road vehicles, or cattle trespass) and some have rebounded once the impact is removed. • The California leaf-nosed bat is a relatively common species in the park as a year-round resident that remains active year-round (no hibernacula) in relatively large colonies and also establishes maternity colonies in several locations. The Townsend’s big-ear bat is a relatively rare species in the park that rarely congregates in large numbers, but does establish low density hibernacula in a few locations. Due to the rarity of this species, maternity colonies are largely unknown but presumably exist in or near the park. Both species are relatively stable. • Chuckwalla and Gila monster both continue to persist within the park though distributions and population dynamics are largely unknown. • Relict leopard frogs continue to persist in multiple locations within the park, including six naturally occurring populations as well as four translocation sites established as refugia. The population trend is generally downward in sites where they are known to be naturally occurring but generally upward in the majority of newly established sites, including natural recruitment and survivorship at all life stages. Populations kept in captivity as part of the ongoing recovery effort are generally stable. • Peregrine falcons are relatively common along the lakeshores of both Lake Mead and Lake Mohave in suitable habitat. They are typically year-round residents and are known to nest in the park. The local population trend is upward. • Yellow-billed cuckoo is a riparian bird species occasionally found in the park, but the park largely lacks suitable mature riparian habitat. This species is not known to nest within the park, though nesting populations are known on riverine habitats outside the park boundary. • Other species of plants or animals, and habitats of conservation interest include those that are endemic to the park (e.g., gypsum soils, sand dunes, springs, and cryptobiotic soils), new to science, and edge-of-range species, including terrestrial and aquatic invertebrates and nonvascular plants.
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • The numerous threats to the federally listed species and/or critical habitat are articulated in detail in their respective recovery plans. The primary relationship to Lake Mead NRA is via habitat conservation. Persistent threats to habitat include invasive species introduction (plant, animal, aquatic, and terrestrial), wildland fire, and climate change as well as human activities (trespass cattle, feral burros, and off-road vehicle trespass). Contamination of water and soils by urban pollutants carried in stormwater is also a threat in some locations for fish species. • Direct mortality is also a risk to the federally listed species either through accidental methods (e.g., tortoise strikes on roadways, unintentional catch of endangered fish by anglers) or through depreciative visitor behaviors (e.g., off-road vehicle trespass). • Rare plant populations and suitable habitat continue to be impacted by illegal off-road vehicle use and invasive annual plants, particularly near recreational destinations and roadways. In addition, trampling by trespass cattle directly impacts sticky buckwheat populations in the Overton Arm area and feral burros damage populations throughout the park.

Fundamental Resource or Value	Species of Conservation Interest
<p>Threats and Opportunities</p>	<p>Threats (continued)</p> <ul style="list-style-type: none"> • Poaching of plant species in general, including recreational flower picking of the bearpoppy which exists in relative abundance near popular scenic drives and waysides, is a persistent issue. • Lack of knowledge regarding pollinators and pollination ecology limits conservation efforts in many ways. • The extirpation of populations reduces genetic diversity, thereby affecting ability of the species to persist over time. • Several mine sites are monitored annually or semiannually, including exit counts to determine bats present as well as mist-netting and acoustical monitoring to identify species present. Many more known bat habitat sites are not monitored consistently and still many potential bat habitats have not been surveyed. • Bat species roosting in mines may be threatened by loss of habitat through mine opening collapse and/or inappropriate mine closures, disturbance to roosting populations caused by human activities in and around mines, and the potential spread of white-nose syndrome or other diseases. • Rare reptiles continue to be threatened by illegal collection for pet trade. • Yellow-billed cuckoo is threatened by the loss of riparian habitat due to invasion by saltcedar (<i>Tamarix</i> spp.) and, more recently, the arrival of biocontrol insects that defoliate the saltcedar (saltcedar leaf beetle, <i>Diorhabda elongata</i>). • Relict leopard frog populations are potentially threatened by alterations of water chemistry and water quantity, and the quality or productivity of their habitat is influenced by the density of adjacent vegetation which affects the water temperatures, potential for predation, and availability of open water habitats. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue interagency collaboration on recovery plan implementation for federally listed species. Particularly relevant to Lake Mead NRA are the collaborative efforts underway to recover desert tortoise and razorback sucker. • Manage tortoise habitat to maintain suitable habitat as well as connectivity to suitable habitat that is likely to remain viable under future climate scenarios. • Continue section 7 consultation on park development and operations and planning efforts to identify and implement conservation measures to aid in the recovery of listed species and to identify terms and conditions for park actions. • Removal of trespass cattle, through either legal resolution or fencing, will mitigate the damage to rare plants caused by trampling. • Remove burros periodically and strategically to mitigate the damages they cause. • Reduction in off-road vehicle trespass through increased education and/or law enforcement, including fencing, post and cable, and barrier installation, will directly reduce new impacts on rare plant populations and/or habitat. • Implementation of the park's recently approved exotic plant management plan targeting rare plant populations as site-led priorities will reduce some impacts on rare plants but will take continuous effort to stay ahead of invasive annual plant species. • Maintain native plant nursery to store rare plant seed and to propagate and increase numbers of plants to provide material for restoration or expansion. • Continue coordination with the abandoned mine land program to identify and protect bat habitat in mines. • Continue to map and mitigate damage by burros, cattle, and off-road vehicles.

Fundamental Resource or Value	Species of Conservation Interest
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Research is needed to inventory and monitor pollinators for rare plant species. • A better understanding of reproductive strategies and seed bank persistence is needed for rare plant species, especially bearpoppy. • Specific propagation requirements for each rare plant species needs to be researched through controlled experimentation to make better use of the limited supply of plant propagules for population restoration or expansion. • The Sonoran desert tortoise is newly described in science and additional research is needed to fully understand the genetic relationships of tortoise populations and species in the park, particularly on the Arizona portion of the park. Furthermore, additional inventory is warranted to understand current tortoise distributions and population dynamics on both the Nevada side and especially the Arizona side given that there is relatively little baseline data about that area. • Better and more systematic inventory of bat populations is needed using acoustical techniques to determine species diversity at key locations. In particular, newly found mine openings need to be surveyed for bat habitat and use. • Research is needed to better understand and assess frog habitat conditions within the park. • Research is needed to better understand nesting success effects on population stability of peregrine falcons. • Research is needed to better understand vulnerability of each rare or protected species to the direct and indirect effects of climate change, and to identify climate change adaptation strategies to aid in the persistence of park populations. • Continued monitoring of bat populations is needed to detect changes in populations, species, and disease prevalence.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • A comprehensive plan is needed to restore riparian habitat for riparian birds while meeting the goals of the park’s fire management plan, exotic plant management plan, and lake management plan. • A written strategy is needed to document bat monitoring, including protocols for initial survey, species inventory, and periodic monitoring, as well as criteria to prioritize sites and standards for data management. • Assessment of climate change vulnerabilities and plausible future scenarios.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • There are several federally listed species covered under the authority of the Endangered Species Act, and including lands within Lake Mead NRA described in approved recovery plans, thus making the park an official participant in species recovery and habitat conservation. • Clark County Multiple Species Habitat Conservation Plan, Virgin River Habitat Conservation and Recovery Plan, and the Lower Colorado River Multiple Species Conservation Plan are all enacted under the authority of the Endangered Species Act to conserve species in lieu of federal listing, and include specific provisions that address species and/or habitats of concern within different but somewhat overlapping geographic areas within Lake Mead NRA. • Endangered Species Act of 1973, as amended • Executive Order 11514, “Protection and Enhancement of Environmental Quality” • Executive Order 13112, “Invasive Species” • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • NPS <i>Natural Resource Management Reference Manual 77</i> • NPS <i>Management Policies 2006</i> (chapter 4, “Natural Resource Management”)

Fundamental Resource or Value	Lands with Wilderness Character
Related Significance Statements	#6
Description	<p>The park contains nine designated wilderness areas (185,080 acres) that possess the following qualities of wilderness character: untrammeled, undeveloped, natural, outstanding opportunities for solitude or primitive and unconfined recreation, and other features of value. The park also contains another 91,963 acres of proposed wilderness, 264,615 acres of eligible wilderness, and 16,816 acres of potential wilderness that may possess these same qualities of wilderness character. These wilderness lands provide both easily accessible and challenging wilderness experiences for park visitors in rugged desert terrain. The wilderness lands also protect large tracts of important habitat and critical water sources for range-wide benefits to many different plant and animal species.¹</p>
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • An approved wilderness management plan is in place for the Muddy Mountains Wilderness and a plan is underway for the remaining eight designated wilderness areas. These plans include limited monitoring of visitor use and resource conditions within wilderness, but such data are not currently being collected. • Four wilderness areas cross jurisdictional boundaries and are managed in cooperation with the Bureau of Land Management. • Designated wilderness areas are managed to preserve wilderness character. Several aspects of wilderness character are monitored through parkwide efforts that are not specific to wilderness, including indicators and measures related to vegetation, wildlife, fire, and water resources. • Soundscape monitoring has been ongoing since 2007 using mobile observation equipment at 16 sites for short periods of time. The trend in frequency, duration, or amplitude of noise intrusions varies by site and season, but generally sites near Lake Mead (particularly Boulder Beach) are noisy due to the frequency of aircraft noise (air tour overflights, commercial aircraft, and military aircraft), and the sites near Lake Mohave are generally much quieter. The diurnal trend in noise peaks during daylight hours with late night time hours is consistently quiet. • Trail counters are in place on several trails in wilderness and on trails that access wilderness (Gold Strike, Cottonwood, Boy Scout, Cleopatra, etc.). Most hiking use is seasonal with use concentrated in the cooler seasons.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Depreciative visitor behavior, including littering, improper disposal of human waste, and illegal campfires, are persistent problems in certain areas. • Legal boundaries of designated wilderness areas are not posted in many areas. • Park operations and projects are not consistently evaluated using a minimum requirements analysis process, especially for activities on the potential wilderness lands in Arizona. • Noise intrusions, particularly from air tours originating in Las Vegas for sightseeing in the Grand Canyon and Hoover Dam (in Lake Mead NRA), are a constant threat to natural sounds in the Lake Mead area. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue interagency cooperation with the Bureau of Land Management to manage adjoining wilderness lands and implementation of interagency wilderness management plans. Such efforts include visitor education and monitoring of visitor use and depreciative behaviors. • Legal boundaries of designated wilderness areas need to be posted (and periodically re-posted) and maps updated to include those boundaries for use by park staff and visitors. • Improve interdivisional cooperation to preserve wilderness character in both designated and potential wilderness lands, including a more robust process to complete minimum requirements analyses and staff training for park personnel outside of resource management.

Fundamental Resource or Value	Lands with Wilderness Character
Data and/or GIS Needs	<ul style="list-style-type: none"> • An ongoing wilderness character monitoring effort needs to be established in the park to meet the requirements of Director's Order 41, including the selection of indicators and measures, defining baseline conditions, and populating the NPS database. • The amount of climbing use, documentation of climbing routes, inventory of fixed climbing hardware, and impacts associated with climbing, is needed to manage this emerging and potentially controversial use in wilderness.
Planning Needs	<ul style="list-style-type: none"> • Complete the existing wilderness management plan effort for eight wilderness areas. • Complete "Wilderness Basics" (as described in NPS Reference Manual 41: Wilderness Stewardship) to compile needed legal and geographic background material for more than 370,000 acres of proposed, eligible, and potential wilderness within the park.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The Clark County Conservation of Public Land and Natural Resources Act (PL 107-282) designated 18 new wilderness areas in Clark County, Nevada, including 9 wilderness areas that are fully or partially within Lake Mead NRA • Pending legislation (S. 1054) related to wilderness designation in the Gold Butte area, including 92,000 acres in the park • Wilderness Act of 1964 (PL 88-577) • National Parks Air Tour Management Act of 2000 <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • Director's Order 41: <i>Wilderness Stewardship</i> • Director's Order 28: <i>Cultural Resource Management</i> • Director's Order 47: <i>Soundscape Preservation and Noise Management</i> • NPS Reference Manual 41: <i>Wilderness Stewardship</i> • NPS Management Policies 2006 (chapter 6, "Wilderness Preservation and Management") • NPS <i>Keeping It Wild in the National Parks User Guide</i>

1. NPS *Management Policies 2006* provides definitions for categories of wilderness, which include "lands with wilderness character" discussed in this foundation document. Definitions are as follows:

Potential Wilderness (6.2.2.1): "A wilderness study may identify lands that are surrounded by or adjacent to lands proposed for wilderness designation but that do not themselves qualify for immediate designation due to temporary nonconforming or incompatible conditions. The wilderness recommendation forwarded to the Congress by the President may identify these lands as 'potential' wilderness for future designation as wilderness when the nonconforming use has been removed or eliminated. If so authorized by Congress, these potential wilderness areas will become designated wilderness upon the Secretary's determination, published in the Federal Register, that they have finally met the qualifications for designation by the cessation or termination of the nonconforming use."

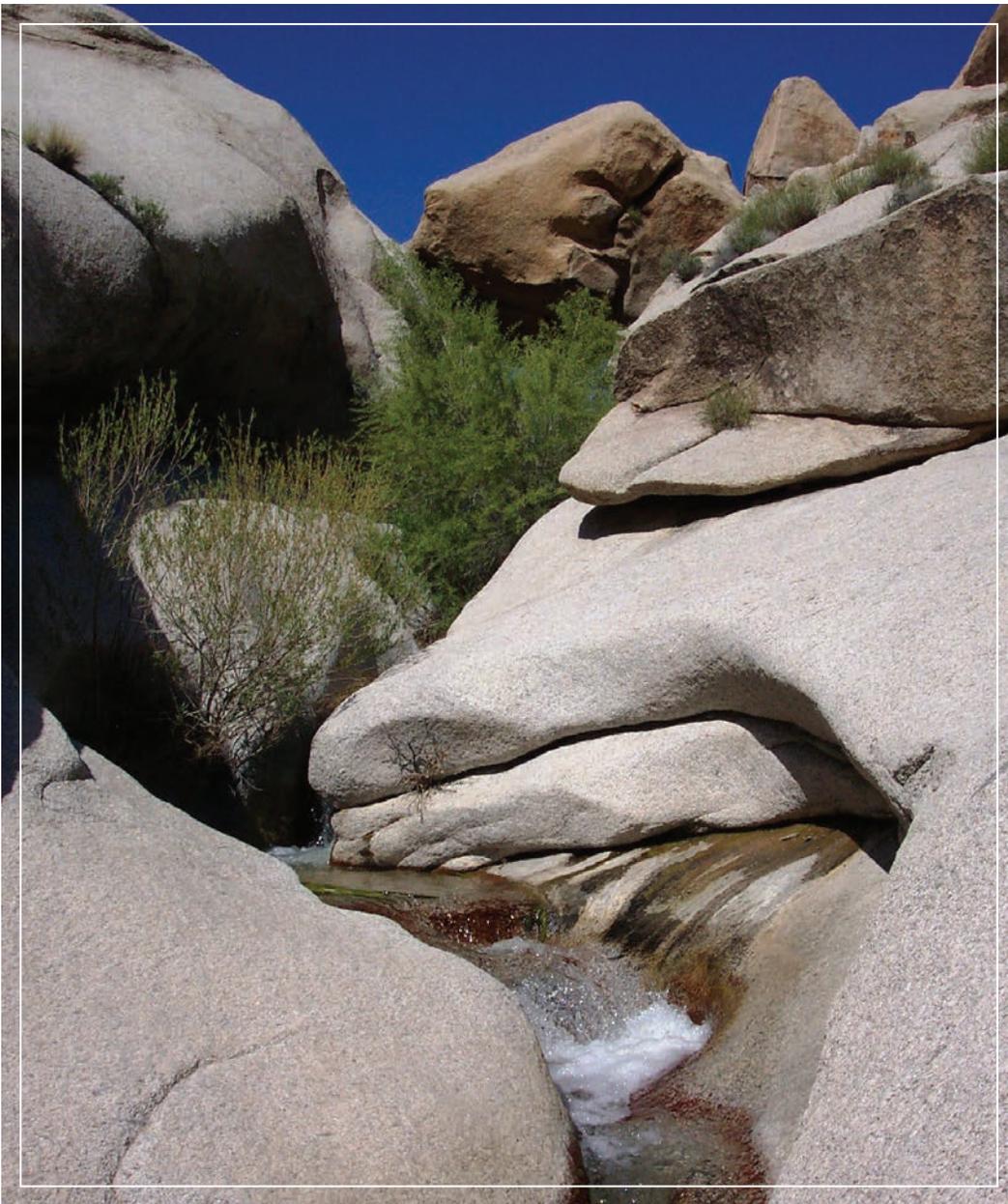
Proposed Wilderness (6.2.2.2): "The findings and conclusions of a formal wilderness study will be reviewed by the Director, who will then determine which lands will be forwarded to the Department of the Interior (Assistant Secretary's Office) as 'proposed' wilderness. The Director's proposed wilderness will identify park lands that the Director believes the Secretary should recommend for immediate wilderness designation, as well as any other lands identified as 'not proposed' or as 'potential' wilderness."

Recommended Wilderness (6.2.3): "The Secretary of the Interior is responsible for recommending to the President those lands under his/her jurisdiction that are suitable or unsuitable for inclusion within the national wilderness preservation system. The Secretary performs this function through the Assistant Secretary's Office by reviewing NPS proposed wilderness and either approving or revising the proposal. The final result is forwarded by the Secretary for the President's consideration. The President is then responsible for transmitting his recommendations with

respect to wilderness designation to both houses of Congress. These recommendations must be accompanied by maps and boundary descriptions. The National Park Service will track the status of the wilderness designation process in Congress.”

Designated Wilderness (6.2.4): “After the President’s wilderness recommendation is formally sent to and considered by Congress, Congress may subsequently enact the legislation needed to include the area within the national wilderness preservation system as ‘designated’ and/or ‘potential’ wilderness. The National Park Service will assist the department and Congress in this process as requested. Lands released by Congress from further wilderness consideration will be managed in accordance with the NPS Organic Act and all other laws, executive orders, regulations, and policies applicable to nonwilderness areas of the national park system.”

Eligible Wilderness (note: not a stand-alone definition as those wilderness categories defined in chapter 6, but is included within a subset of “other” wilderness categories in NPS Management Policies 2006 glossary, page 160): “Federal lands that have been found to possess wilderness character based on the criteria specified in the Wilderness Act. The four categories reflect different stages of the wilderness review process, and all are managed to preserve the wilderness resources and values that make them eligible for wilderness designation.”



Fundamental Resource or Value	Science and Research
Related Significance Statements	#7
Description	The park provides abundant opportunities for applied and empirical research, including the scholarly studies of social science, natural and cultural resources, and physical and biological processes, including climate change. These opportunities include the preservation, curation, and use of park archives and collections.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Relevant research topics include: natural science topics of geology, paleontology, invasion biology, ecological interactions, gradient-oriented research, hydrology, limnological studies, autecological studies, and climate change; cultural topics of cultural chronology, subsistence, settlement patterns, ancestral Puebloan occupation, rock art studies, submerged cultural resources, and ethnographic studies; and social science topics of changing user demographics, recreational use research, international interest in reservoir-centered recreation, visitor safety, and depreciative behaviors. • The park issues an average of 27 research permits annually based on an average of 31 applications, and the trend in number of research permit applications is stable. As of January 2013 there are 30 active research permits. Currently permits are issued primarily for external researchers and for NPS researchers who are undertaking field specimen collections. • Research and scholarship originating from Lake Mead NRA via NPS researchers, NPS cooperators, or external researchers results in a number of peer-reviewed and gray literature publications, though an accurate count is not currently available. • Museum collections at Lake Mead NRA are housed both on-site and off-site and include 100,900 museum objects and 166 linear feet of archives. • Existing collections storage facilities have been upgraded and repaired to the extent possible to meet modern standards but are inadequately sized to house the park’s collection and do not provide adequate work space for scholarship and research. • Park archival holdings related to park operations has increased greatly in recent years due to a focused effort to meet NPS museum standards. • Completion of and/or updating of collections related documentation has been improved. • The park is a partner in implementation of several interagency research efforts including the Southern Nevada Agency Partnership Science and Research Strategy and the Long-term Limnological and Aquatic Resource Monitoring and Research Plan for Lakes Mead and Mohave.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Loss of organizational capacity to attract, process, and support applied research in the park, as well as monitor the array of ongoing research permits. • Loss of dedicated funding to financially support applied research to address the park’s highest priority research needs in natural, cultural, and social sciences. This further exacerbates the loss of organizational capacity to manage research in the park because it diverts much attention to administratively supporting research that, while valuable, is not designed to meet the park’s highest priority applied research needs. • Loss of dedicated funding to financially support maintenance of museum collections and archives. • Loss of museum objects due to environmental damage, inadequate storage, fire, flooding, earthquakes, or theft from public displays. <p>Opportunities</p> <ul style="list-style-type: none"> • Develop and maintain a list of the park’s highest priority applied research needs and share it broadly with universities and the research community. Explore new funding opportunities to attract and support research. • Improve environmental controls, administrative controls, and physical security for the park’s collection storage facility. • Improve administrative oversight for off-site collections storage and/or display.

Fundamental Resource or Value	Science and Research
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Finding aids (i.e., curatorial tools) are needed to support use and management of park collections, including park archives. • An inventory and condition of collections is needed. • Seek out and add research related archival materials to the park collection; implement archival requirements for all research permits and research undertaken by park staff. • An effort is currently underway to inventory and compile resource-related datasets and reports at Lake Mead NRA. A subset of those reports and datasets needs to be uploaded into the NPS Integrated Resource Management Application. • Develop and maintain a GIS dataset (atlas) of established research plots within the park.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • The scope of collection statement, collections management plan, collections storage plan, fire and security survey, and emergency operations plan for collections need to be completed and/or updated. • Use the resource stewardship strategy process to compile status of knowledge of park resources from existing science and scholarship and identify future research needs to support the preservation of the park’s fundamental and other important resources and values.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The original authorization for the “Boulder Dam Recreational Area” (which predates Lake Mead NRA) in 1936 specifically lists NPS responsibility for conserving historic or archeological remains and establishing museums • The park’s 1964 enabling legislation (PL 88-639) provides for the preservation of scientific features <p>NPS Policy-level Guidance (NPS <i>Management Policies 2006</i> and <i>Director’s Orders</i>)</p> <ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> (chapter 2, “Park System Planning”)



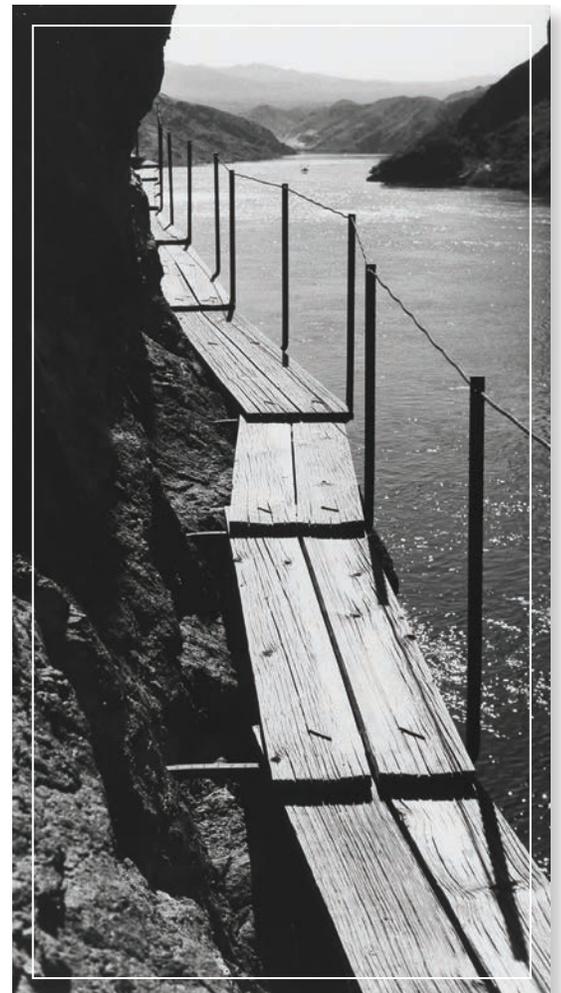
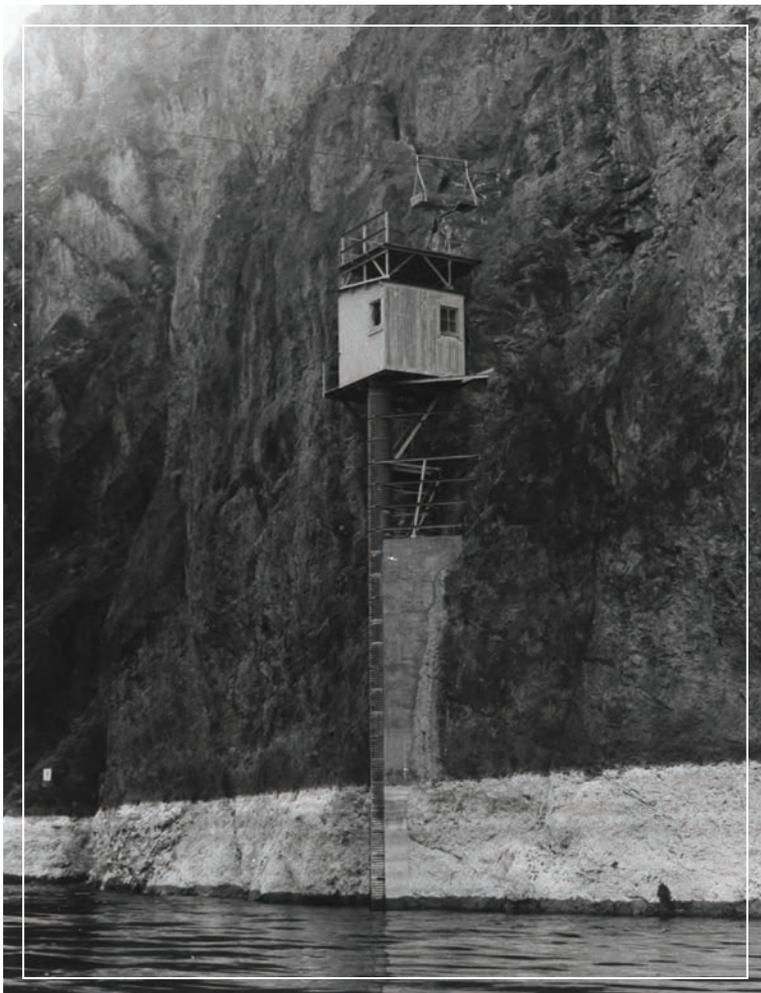
Fundamental Resource or Value	Cultural Landscapes and Historic Structures
Related Significance Statements	#5
Description	<p>The park contains intact historic structures and cultural landscapes. The historic structures include buildings, roads, railroads, and a variety of other structures constructed to serve past human activities, such as agriculture, ranching, mining, and the construction of Hoover Dam. Cultural landscapes include both natural elements (such as land forms, soil, and vegetation) and cultural elements (such as archeological sites and historic structures and submerged resources) that reflect human adaptation and use of the natural environment. Identified potential cultural landscapes within the park relate to the Puebloan occupation, historic mining and settlement, and park development.</p>
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • There are 29 historic structures on the List of Classified Structures. The latest assessments (2009 and 2012) document 18 structures in good condition, 7 in fair condition, and 4 in poor condition. The overall trend of the structure condition has been unchanged. • There is one documented cultural landscape (Katherine Mine).
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Pervasive threats to cultural landscapes and historic structures include deterioration caused by air pollutants, insect and pest infestation, natural erosional and weathering processes, and natural ignitions of wildland fire. • Climate change could impact the cultural landscape and historic structures through a projected increase in mean annual temperature and increase in storm intensity/frequency (e.g., changes in vegetation, flooding, and erosion). • Human activities such as unintentional attrition of contributing elements of a landscape or structure, vandalism and theft, unauthorized excavation and collection, human-ignited fires, and off-road vehicle use. • Loss or damage to landscapes and structures due to a lack of documentation and undefined treatment practices. • Trespass cattle and feral burros trample cultural sites. <p>Opportunities</p> <ul style="list-style-type: none"> • Access to preservation specialists for research, documentation, and maintenance is supported at the regional level and preservation maintenance teams are being developed in other networks. • Scheduled condition assessments are conducted to detect impacts. • Partner with universities and nonprofit groups to document sites where information is needed to inform management decisions. • Law enforcement may serve to curtail illegal human activities.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Periodic monitoring, including condition assessments, is needed on all known cultural landscapes and historic structures. • Spatial data and associations of contributing features need to be improved and accessible for maintenance teams. • List of Classified Structures, cultural landscape inventory, and facility management software system need to be populated with newly generated information and existing records need to be updated on a regular basis. • Determinations of eligibility for listing in the National Register of Historic Places need to be completed for sites that provide opportunities for visitor education and interpretation. • Detailed documentation of known structures will provide a foundation for future maintenance and use. • Reports detailing appropriate treatments and sensitive redesign are needed to retain the integrity of cultural landscapes and historic structures. • Preservation approaches for structures and landscapes within wilderness boundaries.

Fundamental Resource or Value	Cultural Landscapes and Historic Structures
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Historic structures reports are needed for four structures (including Alan Bible Visitor Center, warehouse, and headquarters) to guide the treatment and use of these structures. • Assessment of climate change vulnerabilities and plausible future scenarios.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The original authorization for the “Boulder Dam Recreational Area” (which predates Lake Mead NRA) in 1936 specifically lists NPS responsibility for conserving historic or archeological remains and establishing museums • The park’s 1964 enabling legislation (PL 88-639) provides for the preservation of historic features • Archeological and Historic Preservation Act of 1974 • Executive Order 11593, “Protection and Enhancement of the Cultural Environment” • “Protection of Historic Properties” (36 CFR 800) • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” • National Historic Preservation Act of 1966, as amended (16 USC 470) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 28: <i>Cultural Resource Management (1998)</i> • Director’s Order 28A: <i>Archeology (2004)</i> • NPS <i>Management Policies 2006</i> (chapter 5, “Stewardship” and chapter 4, “Natural Resource Management”) • Historic preservation guidelines and standards



Fundamental Resource or Value	History and Cultural Anthropology
Related Significance Statements	#5
Description	The park helps preserve exemplary stories, places, and other resources associated with Native Americans and their traditional practices, early European and European American exploration, settlement, farming, religious activities, mining, ranching, and government activities that influenced the environment.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Status of completion of required cultural resource inventories: cultural resources bibliography (complete), historic resources study (complete, but dated), administrative history (complete).
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Pervasive threats to cultural remains include deterioration caused by air pollutants, natural erosional and weathering processes, natural ignitions of wildland fire, and invasive plants. • Climate change could impact cultural resources through a projected increase in mean annual temperature and increase in storm intensity/frequency (e.g., increase in invasive plant species, flooding and erosion). • Human activities such as vandalism, unauthorized excavation and collection, depreciative behavior at archeological sites, human-ignited fires, and off-road vehicle use compromise park resources. • Submersion, re-emergence, the chemical corrosion caused by underwater environments, as well as the recent arrival of invasive quagga mussels all pose threats to submerged cultural resources. • Loss of unknown cultural resources because of incomplete survey. • Trespass cattle and feral burros trample cultural sites. • Expansion of invasive plant species (tamarisk) causing structural destabilization and damage from plant growth. <p>Opportunities</p> <ul style="list-style-type: none"> • Monitoring sites on a regular basis serves to provide early detection and opportunities for mitigation for changes to cultural resources. • Partnerships with universities and nonprofit groups increase the capacity to document sites, structures, and landscapes. • Law enforcement may serve to curtail illegal activities.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Periodic monitoring, including condition assessments, is needed on all known cultural resources. • Standard cultural resources databases need to be populated with new information and existing records need to be updated on a regular basis. • Determinations of eligibility for listing in the National Register of Historic Places need to be completed for sites that provide opportunities for visitor education and interpretation. • Detailed documentation of known sites is needed, particularly sites with overlapping and potentially conflicting interests. • Documentation and preservation approaches for sites, American Indian landscapes, and ethnographic resources within wilderness boundaries.
Planning Needs	<ul style="list-style-type: none"> • Special resource studies for St. Thomas Historic Town Site (underway), Lost City Ancestral Puebloan Site, and rock art. • Inventory and study of submerged cultural resources in Lakes Mead and Mohave (underway). • Historic structures reports are needed for four structures to guide the treatment and use of these structures. • The American Indian consultation plan needs to be finalized to guide consultation processes in support of a variety of other projects and plans. • Assessment of climate change vulnerabilities and plausible future scenarios.

Fundamental Resource or Value	History and Cultural Anthropology
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The original authorization for the “Boulder Dam Recreational Area” (which predates Lake Mead NRA) in 1936 specifically lists NPS responsibility for conserving historic or archeological remains and establishing museums • The park’s 1964 enabling legislation (PL 88-639) provides for the preservation of historic features • Archeological and Historic Preservation Act of 1974 • Executive Order 11593, “Protection and Enhancement of the Cultural Environment” • “Protection of Historic Properties” (36 CFR 800) • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” • National Historic Preservation Act of 1966, as amended (16 USC 470) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 28: <i>Cultural Resource Management (1998)</i> • Director’s Order 28A: <i>Archeology (2004)</i> • NPS <i>Management Policies 2006</i> (chapter 5, “Stewardship” and chapter 4, “Natural Resource Management”) • Historic preservation guidelines and standards



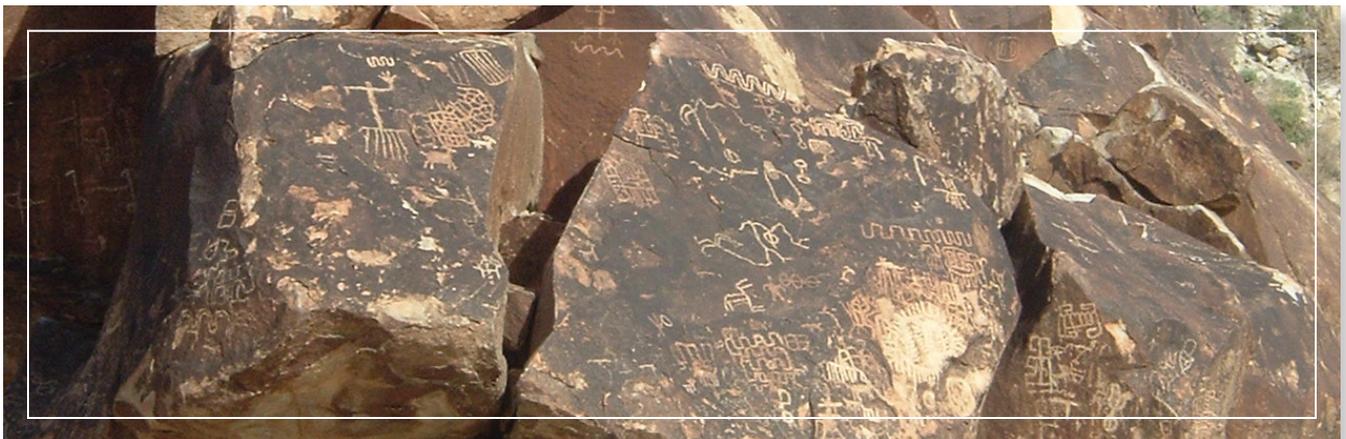
Fundamental Resource or Value	Archeology
Related Significance Statements	#5
Description	<p>The park includes well-preserved archeological sites (including submerged sites) that contribute to our understanding of the human ecology throughout the Holocene. Prehistoric archeological sites range from prehistoric surface artifact scatters to deeply stratified multicomponent sites, pueblo ruins, and rock art sites. Historic archeological sites range from trash scatters and early mining and ranching sites to town sites and complex industrial sites associated with the construction of Hoover Dam.</p>
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Currently there are 786 archeological sites recorded in the archeological sites management system database, including 405 in good condition with a general trend of having more sites in good condition. • Approximately 88% of the park has not yet been systematically surveyed for archeological resources using current professional standards. • Status of completion of required cultural resource inventories: cultural resources bibliography (complete), archeological overview and assessment (complete, but dated), historic resources study (complete, but dated), administrative history (complete). • There are currently six sites listed in the National Register of Historic Places, and the B-29 Bomber is being evaluated for potential national historic landmark study¹.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • Pervasive threats to cultural remains include deterioration caused by air pollutants, natural erosional and weathering processes, and natural ignitions of wildland fire. • Climate change could impact archeological sites through a projected increase in storm intensity/frequency (e.g., flooding and erosion). • Human activities such as vandalism, unauthorized excavation and collection, depreciative behavior at archeological sites, human-ignited fires, and off-road vehicle use compromise park resources. • Submersion, re-emergence, the chemical corrosion caused by underwater environments, as well as the recent arrival of invasive quagga mussels all pose threats to submerged cultural resources. • Loss of unknown cultural resources because of incomplete survey. • Trespass cattle and feral burros trample cultural sites. • Expansion of invasive plant species (tamarisk) causing structural destabilization and damage from plant growth. <p>Opportunities</p> <ul style="list-style-type: none"> • Comprehensive archeological surveys in areas that have a high potential for having sites would aid in both fulfilling resource inventory needs and protecting resources from loss or damage. • Monitoring sites on a regular basis serves to provide early detection and opportunities for mitigation for changes to cultural resources. • Partner with universities and nonprofit groups to document sites. • Law enforcement may serve to curtail illegal activities.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Periodic monitoring, including condition assessments, is needed on all known archeological sites. • Standard cultural resources databases need to be populated with new information and existing records need to be updated on a regular basis. • Determinations of eligibility for listing in the National Register of Historic Places need to be completed for sites that provide opportunities for visitor education and interpretation. • Section 110 survey of unsurveyed lands to locate and document new archeological sites. • Detailed documentation of known sites, particularly rock art sites. • Update archeological overview and assessment and historic resources study.

Fundamental Resource or Value	Archeology
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Special resource studies for St. Thomas Historic Town Site (underway), Lost City Ancestral Puebloan Site, and rock art. • Inventory and study of submerged cultural resources in Lakes Mead and Mohave (underway). • Preservation approaches for archeological sites within wilderness. • Assessment of climate change vulnerabilities and plausible future scenarios.
<p>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the FRV</p> <ul style="list-style-type: none"> • The original authorization for the “Boulder Dam Recreational Area” (which predates Lake Mead NRA) in 1936 specifically lists NPS responsibility for conserving historic or archeological remains and establishing museums • The park’s 1964 enabling legislation (PL 88-639) provides for the preservation of historic features • Archeological and Historic Preservation Act of 1974 • Executive Order 11593, “Protection and Enhancement of the Cultural Environment” • “Protection of Historic Properties” (36 CFR 800) • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” • National Historic Preservation Act of 1966, as amended (16 USC 470) <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • Director’s Order 28: <i>Cultural Resource Management (1998)</i> • Director’s Order 28A: <i>Archeology (2004)</i> • NPS <i>Management Policies 2006</i> (chapter 5, “Stewardship” and chapter 4, “Natural Resource Management”) • Historic preservation guidelines and standards

1. Other national register listed sites at Lake Mead NRA and their property type are listed below. Note that some are archeological sites and some have other classifications:

- Gold Strike Canyon – Surgerloaf Mountain – traditional cultural property
- Grapevine Canyon – archeological site
- Homestake Mine – archeological site
- Pueblo Grande de Nevada – archeological site
- Spirit Mountain - traditional cultural property
- Willow Beach Gauging Station – structure

In addition, the Lake Mead NRA headquarters building located in downtown Boulder City is a contributing element to the Boulder City Historic District that is listed on the National Register of Historic Places.



Other Important Resources and Values

Other Important Resource or Value	Experiential Opportunities
Description	The park provides opportunities for park visitors to experience the natural world and cultural context through important visual connections, dark night skies, natural sounds, and natural smells.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • Measurement of dark night sky conditions have been conducted at several locations throughout the park including: Government Wash (2004), Overton Beach (2004, 2006), and Temple Bar (2005). • Sound monitoring is conducted at several locations throughout the park. The results are highly variable by location based on proximity to scenic overflight paths, military airspace, and commercial air traffic from McCarran Airport in Las Vegas. In some locations, the sounds of motorized boats on Lakes Mead and Mohave are also clearly audible. • There’s been no formal analysis of integral vistas as an air-quality related value and there’s been no formal analysis of visual resources using the visual resource management tools. However, there are numerous iconic vistas within the park that are the subject of interpretive waysides, commercial photography, and artistic expression. Most focus on the interface of water and land that rises in dramatic relief.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • The primary threat to dark night skies is from light pollution originating from urban centers, such as Las Vegas. To a lesser extent park developed areas may contribute to localized light pollution. • Air traffic from multiple sources over the park continues to impact the natural soundscape. The potential for relocating the primary Las Vegas airport to the Ivanpah location would change the locations of where commercial overflights are most prevalent. Possible expansion of the Bullhead City airport would also increase impacts on the southern end of the park. Likewise, changes to Grand Canyon and Hoover Dam scenic overflight tours would also change the temporal or spatial impacts of those noises. <p>Opportunities</p> <ul style="list-style-type: none"> • Retrofit park facilities and design new facilities to reduce light pollution using a variety of technologies (e.g., timers, shielding, etc.). • Educate park visitors about the value of dark night skies and ways they can reduce light pollution.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Continue soundscape monitoring, particularly at these sites: Indian Pass (LAKE 007), Bridge Canyon (LAKE 020), and Temple Bar (LAKE 018). • Conduct a viewshed inventory (NPS guidance pending). • Establish photo points at key observation points throughout the park and periodically collect new photos to analyze change in viewsheds. • Determine visitor perceptions of the value of visual resources. • Establish a schedule of periodic reassessment of night sky condition at key locations, including the baselines already established at Government Wash, Overton Beach, and Temple Bar. • Establish a system to opportunistically collect odor complaints about park facilities and destinations.
Planning Needs	<ul style="list-style-type: none"> • Develop soundscape management plan (draft proposal in PMIS). • A visual resource management plan would be needed to identify, design, and implement specific management actions to preserve high-quality visual resources and mitigate degraded visual resources that might be identified by the viewshed monitoring program and/or visual resource inventory. • Develop a facilities retrofit plan to reduce light pollution from park-owned facilities while still meeting public safety requirements.

Other Important Resource or Value	Experiential Opportunities
<p>Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the OIRV</p> <ul style="list-style-type: none"> • The Clean Air Act (42 USC 7401 et seq.) gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> (chapter 4, "Natural Resource Management" and chapter 8, "Use of the Parks") • Director's Order 4: <i>Diving Management</i> • Director's Order 6: <i>Interpretation and Education</i> • Director's Order 9: <i>Law Enforcement</i> • Director's Order 17: <i>Tourism</i> • Director's Order 28: <i>Cultural Resource Management</i> • Director's Order 42: <i>Accessibility for Visitors with Disabilities in National Park Service Programs, Facilities, and Services</i> • Director's Order 47: <i>Soundscape Preservation and Noise Management</i> • Director's Order 53: <i>Special Park Uses</i> • Director's Order 83: <i>Public Health</i> • NPS <i>Natural Resource Management Reference Manual 77</i> • NPS <i>Transportation Planning Guidebook</i>



Other Important Resource or Value	Clean Air
Description	The park is characterized by good air quality and protected air quality-related values, such as visibility, as both components of the natural system provide for healthy conditions for park visitors, partners, and employees.
Current Conditions and Trends	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • There are no air quality monitoring stations located in Lake Mead, so air quality data are generally interpolated from other stations in the area. • Visibility based on haze index for 2006–2010, estimated average visibility in Lake Mead NRA was 4.6 deciviews (dv) above estimated natural conditions, based on “Group 50,” which is defined as the mean of the visibility observations falling within the range from the 40th through the 60th percentiles. The NPS Air Resources Division (ARD) recommends a visibility desired condition that is consistent with the Clean Air Act goal of less than 2 dv. Currently, visibility conditions at Lake Mead NRA are not meeting ARD recommended desired conditions and warrant a moderate concern. • For 2006–2010, estimated wet sulfur deposition was 0.3 kilograms per hectare per year (kg/ha/yr); therefore, the resource is in good condition (<1 kg/ha/yr) based on ARD standards. • For 2006–2010, estimated wet nitrogen deposition was 0.7 kilograms per hectare per year (kg/ha/yr). The condition is a moderate concern because a risk assessment evaluating ecosystem sensitivity ranked Lake Mead NRA ecosystems as having very high sensitivity to nutrient enrichment effects relative to all Inventory & Monitoring parks. Nitrogen deposition may disrupt soil nutrient cycling and affect biodiversity of certain vegetation communities. Invasive grasses tend to thrive in areas with high nitrogen deposition, displacing native vegetation adapted to low nitrogen conditions. • Ozone based on annual fourth highest eight-hour concentration estimated during 2006–2010 at Lake Mead NRA was 75.0 parts per billion (ppb); therefore, the condition status warrants moderate concern based on ARD standards (61–75 ppb). During 2000–2009, ozone levels at the Lake Mead NRA monitor remained relatively unchanged, so the trend is stable.
Threats and Opportunities	<p>Threats</p> <ul style="list-style-type: none"> • The primary concern with nutrient enrichment effects is that increased soil nitrogen leads to increased spread of invasive grasses, which results in an altered fire regime by increasing fire frequency and size. As many desert shrub species are fire intolerant, this results in wholesale changes to plant communities. • Low volume, isolated surface waters within the park are most at risk of acidification due to atmospheric deposition. Aquatic invertebrates, some of which are rare and endemic, are most likely to be sensitive to changes in pH. Amphibians, such as the rare relict leopard frog, are also likely to be sensitive to changes in pH. • Asbestos and other indoor air pollutants are a possible threat in some of the park’s buildings, though efforts are taken to mitigate such hazards. • Aridification due to climate change could lead to increased fire frequency, increased dust emissions, and ozone formation impacting air quality. <p>Opportunities</p> <ul style="list-style-type: none"> • Reduction in off-road vehicle trespass aids in reducing localized particulates that reduce visibility. • Systematic monitoring of water chemistry at select springs via the I&M program has recently been initiated and will be used to track changes in pH among other parameters. • Apply sustainable management for park operations following the Green Parks Plan to reduce greenhouse gas emissions.
Data and/or GIS Needs	<ul style="list-style-type: none"> • Periodic reassessment of risk of nutrient enrichment and acidification is needed to determine long-term trends.

Other Important Resource or Value	Clean Air
Planning Needs	<ul style="list-style-type: none"> • Visibility as an air quality-related value should be addressed as a component of a comprehensive visual resources management plan.
Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance	<p>Laws, Executive Orders, and Regulations That Apply to the OIRV</p> <ul style="list-style-type: none"> • Clean Air Act (42 USC 7401 et seq.) • Secretarial Order 3289 “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources” <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</p> <ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> (chapter 1, “The Foundation” and chapter 4, “Natural Resource Management”) call for the National Park Service to conserve and protect air quality • NPS <i>Natural Resource Management Reference Manual 77</i>



Other Important Resource or Value	Transboundary Connectivity
<p>Description</p>	<p>The park is managed within a broader context such that ecological, cultural, and managerial connectivity to adjacent conservation lands is fostered, including shared and adjacent wilderness areas, “Areas of Critical Environmental Concern,” critical habitat for listed species, wildlife management areas, and regional parks and trails.</p>
<p>Current Conditions and Trends</p>	<p>Conditions and Trends</p> <ul style="list-style-type: none"> • The park boundary includes a mix of adjacent land uses, some of which are highly compatible with park purposes and some of which represent challenges. There are 174 miles of boundary adjacent to lands managed specifically for conservation purposes, 129 miles adjacent to undeveloped lands, and 103 miles adjacent to lands managed for urban or industrial purposes (even though existing land condition at the present time may be undeveloped). • There are four wilderness areas that cross agency boundaries and are jointly managed by the National Park Service and Bureau of Land Management in Nevada: Muddy Mountains (3,521 acres NPS; 44,498 acres BLM), Eldorado (26,219 acres NPS; 5,760 BLM), Ireteba Peaks (22,209 acres NPS; 10,330 acres BLM), and Spirit Mountain (32,939 acres NPS; 550 acres BLM).¹ • Regionally, there’s also the potential for large-scale wind and solar utility developments on nearby public lands, particularly near Searchlight (in Nevada) northwest of Arizona near US Highway 93, and the White Hills (in Arizona). Such developments may impact park resources and visitor experiences in a variety of ways. • The adjacent urban area Boulder City, Nevada, has a slow-growth ordinance and so has experienced relatively limited growth in recent years. However, the adjacent suburban areas of Las Vegas, including the City of Henderson, Nevada, experienced unprecedented growth for about 15 years prior to the housing market crash in 2008. During this period of growth, the park’s northwest boundary became increasingly urbanized with residential, commercial, and recreational (e.g., golf courses and parks) developments. Since 2008 there has been very little new urban development adjacent to the park. However, some subdivisions that had been graded but not built have lain fallow and become infested with weeds that increase the potential for infestation in the park. Additionally, the high incidence of abandoned and vacant homes has probably increased the area’s feral pet population and prevalence of breeding grounds for mosquito-borne illnesses (e.g., West Nile virus) in unmaintained swimming pools near the park. • The southern end of the park adjoins the resort community of Laughlin, Nevada, and Bullhead City, Arizona, which connect directly to the numerous communities of the Tri-state Colorado River Valley totaling about 100,000 residents. While most of the local recreation focus is on the Colorado River south of the park, there is a substantial amount of local recreational use within the park as well. There is also a multijurisdictional partnership regional urban park located on the extreme south end of the park on the Nevada side below Davis Dam known as the Colorado River Heritage Greenway Trail that is managed under a land use agreement with Clark County, Nevada, and includes a checkerboard of NPS, Bureau of Reclamation, and other lands. Similarly, the NPS land in the historic Davis Camp area on the Arizona side below Davis Dam is managed by Mohave County Parks as a regional urban park under a long-term lease agreement. • The park is also in close proximity to several small communities, including Meadview, Arizona; Searchlight, Nevada; and Overton, Nevada. In many cases, the NPS lands near these communities serve as local parks for the residents and sources of economic revenue for small businesses that cater to park visitors. The Overton Wildlife Management Area is NPS land managed under agreement by the Nevada Department of Wildlife for the purposes of providing wildlife habitat, waterfowl production, and wildlife-focused recreation at the confluence of the Muddy and Virgin Rivers near Overton, Nevada. • The extreme eastern end of the park adjoins Grand Canyon – Parashant National Monument (co-managed by the National Park Service and the Bureau of Land Management), Grand Canyon National Park, and the Hualapai Reservation. • Regional trail networks, such as the River Mountain Loop Trail, also serve to connect park lands with surrounding lands and urban communities.

Other Important Resource or Value	Transboundary Connectivity
<p>Threats and Opportunities</p>	<p>Threats</p> <ul style="list-style-type: none"> • Large-scale energy developments adjacent to the park. • Other changes in land use of currently undeveloped lands not managed primarily for conservation purposes. • Urban spill-over, such as feral pets, dumped aquariums, pollution from stormwater runoff, spread of invasive and ornamental plant species from adjacent urban areas. • Air, noise, and light pollution from adjacent urban areas. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue to engage with regional land managers via forums such as Southern Nevada Agency Partnership, Mojave Desert Initiative, Desert Managers Group, and others.
<p>Data and/or GIS Needs</p>	<ul style="list-style-type: none"> • Periodic evaluation to determine change in compatible and incompatible land use adjacent to the park boundary.
<p>Planning Needs</p>	<ul style="list-style-type: none"> • Revisit and update the land protection plan (1987). • Boundary adjustment study might be useful to address specific locations of incompatible uses.
<p>Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance</p>	<p>Laws, Executive Orders, and Regulations That Apply to the OIRV</p> <ul style="list-style-type: none"> • None identified <p>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</p> <ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> (chapter 3, "Land Protection") • Director's Order 12: <i>Conservation Planning, Environmental Impact Analysis, and Decision-making</i> • Director's Order 41: <i>Wilderness Stewardship</i> • NPS Reference Manual 41: <i>Wilderness Stewardship</i> • NPS <i>Natural Resource Management Reference Manual 77</i> • Secretarial Order 3330 "Improving Mitigation Policies and Practices of the Department of Interior"

1. Wilderness acreages obtained from the Lake Mead National Recreation Area Draft Wilderness Management Plan / Environmental Impact Statement (January 2014).



Appendix E: Other Important or Related Issues

Climate Change

- **Climate change impacts to park resources and values:** Climate change, in conjunction with other stressors, is impacting all aspects of park management from natural and cultural resources to park operations and visitor experience. Average annual temperature increased 0.9°F in the area that includes Lake Mead NRA during the 20th century. In the 21st century, the average annual temperature is projected to increase five to nine times the amount of this 20th century warming. Projections for average annual precipitation are less certain with models projecting both increases and decreases and potential changes in timing and intensity of precipitation. Effective planning and management must be grounded in a comprehension of past dynamics as well as the realization that future conditions may shift beyond the range of variability observed in historical data. Climate change will manifest itself not only as shifts in mean conditions (e.g., increasing mean annual temperature) but also as changes in climate variability (e.g., more intense storms and droughts).
- Primary threats for Lake Mead NRA include population extirpations, continually lowering lake levels, impacts on spring flows, and a potential increase in species invasions. A warming climate can increase water demand and decrease water supply to the extent that, barring major adaptation efforts, substantial future water shortages are likely throughout the larger Southwest, including at Lake Mead NRA. Climate change models indicate higher probabilities of extended periods of extreme low water elevations for Lake Mead. Lower water elevations impact operations and visitor use and have the potential to result in degraded water quality. Climate change models for the Colorado River watershed also predict greater potential for summer flash floods, which could degrade water quality and affect visitor facilities and safety. A warming climate could change visitation patterns and interests and invite the need for innovations to accommodate these changes. Understanding climate change projections, impacts, and uncertainties will facilitate planning actions that are robust regardless of the precise magnitude of change experienced in the coming decades.

Operations and Facilities

- **Deteriorating infrastructure with a growing maintenance backlog:** While the park has been fortunate to be able to address some deteriorated infrastructure, primarily through Southern Nevada Public Land Management Act funding (which is now severely reduced), much remains, and the backlog continues to grow. The park has a \$1.3 billion current replacement value in 2014 dollars, with an identified \$263 million deferred maintenance backlog, which continues to grow annually.
- **Commercial services issues (expired contracts, possessory interest, and investment issues):** Currently, Lake Mead NRA manages eight Category I and Category II concession contracts, generating more than \$40 million in gross receipts at eight developed areas within the park. Six of these contracts have expired and are operating on annual extensions. Facilities associated with these contracts are in need of repairs and investments. Contracts also require the resolution of possessory interest/ leasehold surrender interests. The awarding of new contracts, consistent with the new regulatory requirements and involvement of private consultants, and in consideration of the lowering lake levels on Lake Mead and recent years of economic downturn, are an ongoing issue.

The commercial use authorization (CUA) program is also very active, with more than 120 commercial use authorizations and two to three requests for new permits every week. With an unusually high number (25) of different authorized service types and high demand, Lake Mead NRA is challenged to provide adequate support to this program.

- **Flash flood vulnerability and road washouts:** Many areas of the park remain vulnerable to flash floods. The park recently addressed the threat at Willow Beach and is continuing to address the highest hazard zones, as funding permits. In addition to risks to public safety, flash floods also cause frequent road washouts, placing a strain on park maintenance needs.
- **Removal, relocation, restoration, and/or reuse of discontinued facilities:** Changing lake levels and other dynamic attributes are causing substantial changes in facility use and need in the park. This trend has placed numerous demands on the NPS to remove, relocate, and/or restore discontinued facilities. Vacant and unused facilities create visitor safety issues and vandalism opportunities, are aesthetically unpleasing, and can contribute to natural resource challenges including invasive plant spread. The current issues and challenges at the following locations are described below:
 - **Pearce Ferry take-out:** With dropping lake levels, the old Pearce Ferry raft take-out became unusable, and downstream traffic from Grand Canyon National Park was directed to South Cove, approximately 14 miles downstream/downlake. With further drops in lake level, a major rapid developed making it unsafe for continued traffic downstream past Pearce Ferry, and a new road was developed to the river's edge along with a ramp at a safe take-out location. The road has become a major challenge, suffering frequent washouts and required repairs and maintenance. The ramp also requires frequent maintenance to remove sediment buildup.
 - **Overton Beach:** Because of historic lowering of Lake Mead water levels, the Overton marina was relocated in 2007, the water intake, water treatment plant, and wastewater treatment plant became inoperable, concession operations closed, and the launch ramp became unusable. The road has been closed to vehicular access since April 2010 after the marina was moved, land-based concession operations terminated, ramp closed, and water plant operations discontinued. Site and facilities have been mothballed. The community of Overton continues to be concerned with the closure and its effects on the local economy. Water levels are projected to remain at low levels for the next several years. Because of the area's cultural significance, Overton Beach will be reopened for primitive use with no services in 2015.
 - **Las Vegas Bay:** The park has discontinued water-based concession services at Las Vegas Bay. This site has also seen the relocation of the area's marina and a closure of the ramp due to a lack of water from low lake levels. A housing area, campground, fish cleaner, picnic area, land fuel pumps, and concession-operated dry boat storage still remain.
 - **Echo Bay Marina:** No lodging, restaurant, or marina services remain. Echo Bay Marina closed in 2013 after no offers were made on the advertised prospectus. Feedback from prospective bidders indicated the state of the economy, the deteriorated condition of the facilities, the uncertainty of an ongoing lawsuit with the previous concessioner, and the operational costs and impacts of lowering water levels were factors contributing to a lack of bids. Echo Bay now operates a short-term and long-term recreational vehicle/trailer village, and other limited land-based services. With this closure, the Overton Arm of Lake Mead NRA has no marina operation or on-the-water fuel service for the boating public. In September 2014 the National Park Service concluded an arbitration settlement with the exiting concessioner and is reevaluating the business opportunity with a possible lease option.

- **Trailer villages:** Lake Mead NRA is the only remaining unit of the National Park Service with long-term trailer villages. Originally intended for the storage of recreational vehicles, long-term trailer villages have partial year vacation use. Conversion of long-term trailer villages to necessary and appropriate recreational use is a park priority, controversial, and of significant interest to the Nevada and Arizona congressional delegations and other elected officials. Trailer villages at Willow Beach and Overton Beach have been closed. Development concept plans are complete for Cottonwood Cove and Katherine Landing and consider the future of trailer villages at those locations based on concession financial feasibility. Villages at Callville Bay, Echo Bay, Temple Bar, and Boulder Beach will be reviewed in the future.
- **Vacation cabin sites:** In 2014, more than 60 privately owned vacation cabins remain on publicly owned lands within Lake Mead NRA. The removal of these cabins and conversion of the lands back to public use is part of a long-term solution that allows the slow removal of the cabins as permits expire without a renewal option for new owners.
- **Demand for transmission lines through the park:** Lake Mead NRA's general management plan designates two utility corridors through the park. These corridors support Navajo Power and Western Area Power Administration and are an important link to the new Market Substation, all critical to the power grid in the Western United States. There have been at least a half-dozen additional proposals in recent years to transverse other areas of the park. None of these proposals are compatible with the park's general management plan and threaten park values and resources. Demand for such corridors is expected to increase.
- **Renewable energy development near park boundary:** The demand for renewable energy has resulted in several areas near the park boundary being proposed or planned for wind and solar developments. Construction of industry-scale renewable energy development on BLM lands adjacent to the park continues to be a trend. Renewable energy development interest on lands adjacent to the park, particularly those planned for the Searchlight and Temple Bar areas, will result in dramatic and permanent viewshed changes in the near future if solar arrays and wind farms are constructed. Animal migrations are affected by these developments and wildlife mortality has been documented.
- **Air tour overflight impacts:** An estimated 400 to 600 air tour related overflights solely for transportation purposes fly over Lake Mead every day, some while touring Lake Mead NRA and others while traveling to different destinations (e.g., Grand Canyon National Park and Hualapai Reservation). Even though many of these flights have been characterized as "for transportation only," all of these overflights affect wilderness resources and values (e.g., opportunities for solitude, apparent naturalness of the areas) as well as other park resources and values. Some air tours may be inconsistent with the preservation of wilderness character and values, as stated in NPS Director's Order 41 (section 7.3). Accordingly, the Pacific West Regional Office is working on an air tour noise policy to protect wilderness character against the noise of air tours. Park managers also will continue working with air tour operators and the Federal Aviation Administration to identify appropriate transportation routes that prevent or minimize environmental impacts from air tours over the eight wilderness areas. The Lake Mead air tour management plan has been put on hold pending completion of the Grand Canyon National Park Plan.

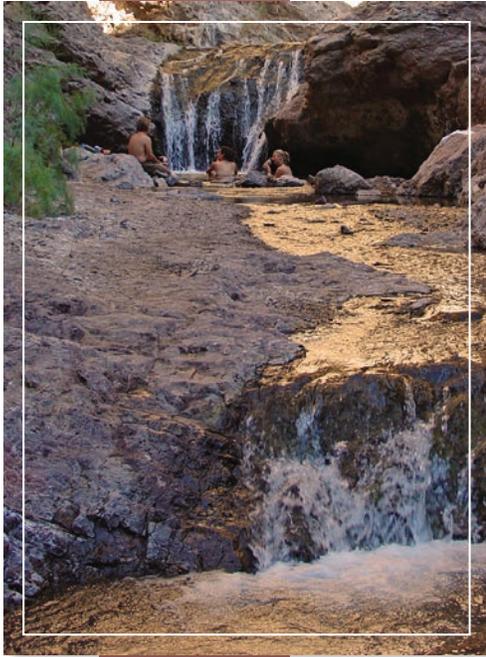
Coordination and Partnership Relationships

- **Agreements with other agencies:** Management of Lake Mead NRA is complicated by multiple state and federal interests and joint management responsibilities within the park boundary. Examples include the Nevada Department of Wildlife Overton Wildlife Refuge; the Nevada Department of Wildlife Lake Mead Fish Hatchery; the US Fish and Wildlife Service Willow Beach Fish Hatchery; the Bureau of Reclamation management of water and power deliveries, associated mitigation activities, and the operations of Hoover and Davis Dams; the Southern Nevada Water Authority and Basic Management Industries intakes, treatment facilities, and distribution lines; Mohave County's Davis Camp; and Clark County's Laughlin Heritage Trail and Park.
- **Lack of park recognition and identity:** Lake Mead NRA is not recognized by many visitors and local residents as a part of the National Park Service and does not receive the same level of recognition as other units in the national park system. Effective use of the NPS brand and a related communication strategy has not been developed.
- **Coordination of widely dispersed gateway communities:** As a park with multiple accesses in dispersed locations, gateway community interest and involvement is an ongoing coordination issue offering both opportunities and challenges. Gateway communities in Nevada include Mesquite, Henderson, Las Vegas, North Las Vegas, Moapa Valley (including Overton and Logandale), Boulder City, Searchlight, and Laughlin. In Arizona, gateway communities include Fredonia, Meadview, Kingman, and Bullhead City. Utah gateway communities include St. George and Kanab.
- **Tribal relationships and coordination:** Eighteen tribes claim an affiliation with Lake Mead NRA. Nevada's first traditional cultural property, Spirit Mountain, is located largely within Lake Mead NRA. The Gold Strike Canyon/Sugar Loaf Mountain Traditional Cultural Property has also been established. Archeological and culturally significant sites exist throughout the park. In 2013 and 2014, the tribes were involved in the park's wilderness planning effort, particularly as it relates to bolted climbing in the Spirit Mountain and Bridge Canyon Wilderness Areas.

Grand Canyon National Park, Lake Mead National Recreation Area, and the Hualapai Tribe formed a "core team" and were involved in ongoing consultations for a number of years relative to the management of the Colorado River along common boundaries. These discussions were particularly sensitive due to a disagreement over the exact location of the Hualapai boundary. The parties agreed to put the boundary issue aside and to work cooperatively on issues of mutual concern. However, there has been a notable pause in discussions, and there has not been a meeting of the core team in several years. There are still significant issues including Hualapai access and use of the Pearce Ferry takeout that warrant further discussions. More recently, the Hualapai Tribe has moved forward with planning for a Grand Canyon West waterline, including the assessment of a Lake Mead-South Cove withdrawal point and transmission line corridor from Lake Mead NRA to Grand Canyon West. The park will continue to work with the tribe on this project as well as other issues of mutual concern.

- **Potential threats from private inholdings, and mineral interests and other boundary encroachment:** The park has identified a number of areas in need of boundary adjustments to facilitate park protection and management efficiencies, including areas near Cottonwood Cove, Bullhead City, Meadview, and Overton. Creating agreements on Bureau of Reclamation withdrawn lands, a Basic Management Industries right-of-way, and Nevada State Fish Hatchery land transfer are also outstanding issues.





Privately owned lands and mineral interests continue to exist and threaten park purposes. Of particular concern are the Santa Fe Railway mineral interest in the southern end of the park with potential decorative rock market value, along with other subsurface mineral interests held by Santa Fe Railway, and the private holdings in the rapidly developing areas around Meadview and Hualapai Wash. Acquisition funding is not available to acquire and protect these interests.

The Hoover Dam Lodge (formerly the Hacienda) is a hotel casino located on a private inholding that once was a mining claim. The property is entirely within the boundary of Lake Mead NRA. Management is challenged with ensuring that this property is managed consistent with the purposes for which the park was established. There was a long-standing agreement with past owners of the property regarding shared parking and design and color scheme agreements. Park managers are working with the new owners to develop new agreements.

Natural Resources

- **Water quality:** The entire Las Vegas Valley drains into Lake Mead through the Las Vegas Wash. In addition, 160 million gallons per day of treated effluent are discharged into Lake Mead, projected to grow to 250 million gallons per day. Growth and development in St. George and

Mesquite are resulting in additional discharge into the Virgin River, which drains into Lake Mead. With continued growth and development pressures an increase in runoff and treated effluents being discharged into Lake Mead is expected. Climate change models for the Colorado River watershed also predict greater potential for summer flash floods, which could potentially degrade water quality. Additionally, the invasive quagga mussel may alter water quality and food web dynamics. Lower lake levels create conditions favorable for the growth of noxious algae. In the spring of 2015, microcystis (blue-green) algae was present across both Lake Mead and Lake Mohave in sufficient quantity to necessitate public health advisories for swimming and water recreation, and enhanced monitoring to inform public information and park management throughout the event. The National Park Service and many stakeholders are concerned about Lake Mead's water quality. The issue of water quality is highly political and complex and requires that the National Park Service interface with numerous entities. However, Lake Mead NRA has no base-funded staff to interface with the wide array of stakeholders. (See the "Riverine and Reservoir Ecosystems" FRV table in appendix D for greater detail on threats and opportunities associated with water quality.)

- **Quagga mussels:** This invasive species is a threat to water bodies throughout the west. Since 2007, when quagga mussels were first found at Lakes Mead and Mohave, Lake Mead NRA has worked to contain the species and to mitigate the spread through a variety of efforts including monitoring, research, boat inspections, wash stations, and public education. Lake Mead NRA has limited base funding and unsustainable soft funding to address this issue. Prior to 2013, Lake Mead NRA was committing approximately \$1 million per year of soft funding in response to the quagga mussel issue. This soft funding was not available beginning in 2014. However, in 2014, a base increase of \$530,000 was received by the park for containment, education, and enforcement related to the spread of quagga mussels. This base increase only partially covers the quagga mussel management needs. Concession operators participate in aquatic invasive species removal at some park locations as does the Nevada Department of Wildlife. The effects of quagga mussels on park infrastructure are a growing problem with high and unfunded mitigation costs. It is estimated a comprehensive program of maintenance, mitigation, and education would cost \$2 million to \$3 million annually. (See the "Riverine and Reservoir Ecosystems" FRV table in appendix D for more detail on threats and opportunities associated with quagga mussels.)

- **Management of grazing in the park:** Lake Mead NRA is one of only a handful of NPS units that manages grazing. Management of grazing is complicated by a biological opinion related to the effects of cattle grazing on the desert tortoise, multiple court actions, and various management actions. As of 2014, one rancher had cattle in trespass for more than two decades. There was in excess of 1,000 head spread over 700,000 acres of NPS and adjacent BLM lands. This rancher claimed that the land belongs to the state or county and therefore there is no federal jurisdiction over grazing allotments. This situation resulted in a highly publicized court-supported impoundment action in 2014 that was terminated to protect public and employee safety. There are approximately 130 miles of park boundary adjacent to BLM active and legal grazing allotments with approximately 40 miles of fence separating NPS and BLM lands. The park has no appropriated funding for fence maintenance and repair.
- **Cooperative management of wild horse and burros:** Burros within Lake Mead NRA are managed within the guidelines of the 1995 Lake Mead NRA burro management plan. That plan recognizes that while the park desires zero burro use on park lands, that objective is not practical due to active BLM burro herd adjacent to many areas of the park. Under the burro management plan, Lake Mead NRA works cooperatively with three adjacent BLM districts to manage overall regional numbers in such a manner that incidental use of the park by burros will not impair park resources. Management is complicated by the involvement of three different BLM district offices, two different BLM state offices, and a lack of funding for census and capture activities essential for the maintenance of authorized herd sizes on BLM lands and the threshold action levels of use on NPS lands.

Visitor Use and Experience

- **Shifting visitor uses:** More park visitors are beginning to seek land-based recreation; therefore, cooler season uses such as biking and hiking are increasing. New water-based recreation experiences such as paddleboarding are becoming more popular. While many such opportunities are provided, gaps in promotion, development, and planning for these experiences exist. Additionally, the park continues to receive commercial requests for unique activities as they are introduced in the marketplace. Without adequate planning for trails and other facilities, as well as the establishment of effective carrying capacities in areas not previously used, resource and visitor experience impacts can be expected.
- **Accessibility:** Funding challenges have caused the park's efforts to improve accessibility for handicapped visitors to stagnate. The park has identified needed facility and programmatic accessibility improvements. Progress has been made, particularly at select campgrounds and picnic areas, as a part of general rehabilitation projects, but more work is necessary to make the park accessible.
- **Conflicts and impacts at high use coves:** Lake Mead has more than 20 high-use destination coves that have seen a significant and unmanageable increase in use. Traditionally, these coves have provided for visitor access and use in an open and uncontrolled environment. Rangers and maintenance support has been provided from developed areas in the general region. With budget erosion and a decrease in staffing, the park has seen a decrease in NPS presence and an increase in conflicts and problems associated with these undeveloped access points around the lake. With increased visitation, impacts from litter, graffiti, and illegal off-highway vehicle use have increased, as has concern about water quality in these coves. There is a growing need for a comprehensive look at the future management of these areas.



- **Threats to wilderness values:** The Clark County Conservation and Resource Protection Act of 2002 designated 185,080 acres of wilderness in nine separate wilderness areas within Lake Mead NRA. Some of these lands are within 30 minutes of the Las Vegas Valley with approximately two million residents in 2014. A joint wilderness management plan with BLM has been completed for one of these areas and the planning document for the other eight wilderness areas was being developed in 2014. Another 373,000 additional acres of proposed, eligible, and potential wilderness exists in the park. The region’s rapid growth and inappropriate uses are threatening the wilderness values of these lands. The park’s ability to implement wilderness stewardship, monitoring, and management plans will be greatly hampered by lack of staff/funding. See “Lands with Wilderness Character in appendix D.”
- **Backcountry visitor use impacts:** Littering and dumping, illegal off-highway vehicle use, improper disposal of human waste, graffiti and tagging of facilities and resources, illegal firewood harvesting, cactus poaching, and large group parties can all threaten the quality of backcountry settings or the opportunity to experience them in a low-key way. In addition, visitor safety can be threatened by violent crimes and crimes of opportunity. Thresholds established in the lake management plan could sometimes be exceeded due to the popularity of shore launching of some watercraft and the reduced surface area and facility capacity as a result of low lake levels on Lake Mead. Other carrying capacity thresholds have not been set by the park. Also, Lake Mead NRA is seeing an expansion of the park’s trails primarily by social use. These are sometimes documented on social media and advertised by external groups, turning social paths into established trails.
- **Obsolete recreational zoning:** Lowering water levels have caused recreational zoning in some areas to become obsolete. For example, the Bonelli Bay semi-primitive use area has been largely lost due to lowering water levels, resulting in reduced availability of protected waters for paddlecraft and low-wake watercraft use. Also, temporal zoning restrictions and lack of staff to proactively patrol in the upper Black Canyon reach of Lake Mohave for primitive recreation are frequently violated by motorboat users.



**Pacific West Region Foundation Document Recommendation
Lake Mead National Recreation Area**

August 2015

This Foundation Document has been prepared as a collaborative effort between park and regional staff and is recommended for approval by the Pacific West Regional Director.

Patrick Gubbins

August 24, 2015

RECOMMENDED

Patrick Gubbins, Acting Superintendent, Lake Mead National Recreation Area

Date

Martha J. Lee

September 3, 2015

APPROVED

Martha J. Lee, Acting Regional Director, Pacific West Region

Date

for



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

LAKE 602/128742

September 2015

Foundation Document • Lake Mead National Recreation Area

