

Mojave National Preserve

National Park Service

U.S. Department of the Interior



ENVIRONMENTAL ASSESSMENT for RESTORATION OF WEST POND AS MOHAVE TUI CHUB HABITAT IN MOJAVE NATIONAL PRESERVE, SAN BERNARDINO COUNTY, CALIFORNIA

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Summary

West Pond in Mojave National Preserve likely originated as a mining prospect during the Curtis Howe Springer era (1944-1974), during which time it was named Three Bats Pond. It is a shallow excavation fed by groundwater on the western edge of Soda Springs, also known as Zzyzx. In the late 1970s or early 1980s, the Bureau of Land Management enlarged West Pond to provide habitat for Mohave tui chub (*Siphateles bicolor mohavensis*), but this effort eventually failed when the population died off. Factors that likely contributed to the poor water quality in West Pond included proximity of a septic field, a high evaporation rate, and slow seepage through fine sediments. The latter causes groundwater exposed on the ground surface to concentrate into brine. The septic field was moved to the eastern edge of Zzyzx after the 1985 die off of Mohave tui chub in West Pond.

The National Park Service proposes to improve water quality by pumping fresh water into the pond from the nearby well. Raising the pond level will reverse the groundwater flow gradient from West Pond to the aquifer. This action will overcome the evaporative concentration of the pond water, which should improve water quality in West Pond over time. Approximately 50 feet of pipe will be constructed to extend from an existing waterline to the pond's edge. Once water quality has sufficiently improved, native vegetation will be planted around the edge. The long-term objective is to rehabilitate West Pond to the point where it can sustain populations of Mohave tui chub, a desert fish species listed as endangered under both the Endangered Species Act and the California Endangered Species Act; and Western pond turtle (*Actinemys marmorata*), an aquatic reptile classified as a California Species of Special Concern and being reviewed for listing under the Endangered Species Act.

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I. PURPOSE AND NEED

1.1 Introduction

Mohave tui chub

The Mohave tui chub (*Siphateles bicolor mohavensis*) was once found extensively in the Mojave River and its tributaries in southern California. It is the only native fish known to the Mojave River drainage system (Hubbs and Miller, 1943). Pure strains of this species have steadily declined since about 1938, when a non-native species of coastal California arroyo chub (*Gila orcutti*) was introduced into the watershed. Mohave tui chub had been eliminated in the Mojave River proper by 1969 (Miller 1969). Habitat modifications, including damming the headwaters and withdrawals of the river's underflow, were major causes for the decline of the species along with the introduction of non-native fish species. Because of these threats and others, the USFWS listed the species as endangered in 1970 under the Endangered Species Act. California Department of Fish and Wildlife (CDFW) followed suit in 1971, under the California Endangered Species Act. There are currently five known genetically pure Mohave tui chub populations: Lark Seep, China Lake Naval Air Weapons Station (NAWS) near Ridgecrest (Department of the Navy); Desert Studies Center at Zzyzx, near Soda Spring and Soda Lake (National Park Service, Mojave National Preserve); Morning Star Mine (National Park Service, Mojave National Preserve); Camp Cady, east of Barstow (CDFW); and the Academy for Academic Excellence in Apple Valley. Each site is home to an isolated population of Mohave tui chub in manmade habitats in the Mojave Desert of California. The Soda Spring population actually consists of two isolated sub-populations: one in a small, groundwater-fed spring (MC Spring), another in an artificial pond (Lake Tuendae) maintained by periodic filling from the Desert Studies Center supply well. They are jointly considered to be one population due to geographical proximity.

In 1984, the USFWS issued a Recovery Plan for the Mohave Tui Chub (Recovery Plan) that provided a step-down outline of management actions, several of which would be implemented in the proposed action. West Pond, then known as Three Bats Pond, was inhabited by a small population of Mohave tui chub. The Recovery Plan noted water quality characteristics in Three Bats Pond were more extreme than Lake Tuendae. The population in Three Bats Pond (West Pond) died off by 90% in November 1981, likely due to high pH, low dissolved oxygen (DO) and ammonia toxicity (Taylor and McGriff, 1985). About two weeks prior to this population crash, the aquatic ditchgrass (*Ruppia maritima*) had died off. By 1985, the remaining Mohave tui chub had been killed off, after which the pond became unsuitable habitat. This was due to poor water quality, partially attributed to the proximity of a septic leach field. The leach field has subsequently been relocated farther to the east near Soda Lake. Three Bats Pond is identified in the Recovery Plan for preservation and enhancement; in particular, the pool needs to be deepened to maintain sufficient water quality and quantity.

If water quality metrics obtained with the Hach meter, Aqua TROLL, and laboratory analyses indicate habitat suitability, indicating water quality in West Pond has stabilized, the NPS would take a separate action to stock West Pond with young of the year MTC from Lark Seep at the Naval Air Weapons Station at China Lake, plus an equal number of MTC from Lake Tuendae, to optimize genetic diversity. Lark Seep, Lake Tuendae, and West Pond are all located in the Mojave River drainage basin and isolated man-made waters in the Mojave Desert in California. These actions would support the Recovery Plan goal to conserve the Mohave tui chub, and would meet one of the criteria for downlisting the species from endangered to threatened.

Western Pond Turtle

The Western pond turtle (*Actinemys marmorata*) is the only semi-aquatic turtle native to the west coast of the United States. This medium-sized turtle (up to 8 inches in carapace length) inhabits streams, slow-moving sections of rivers, freshwater ponds and marshes. It is often observed basking on rocks and logs. Loss of habitat and lack of hatchling recruitment in some areas (possibly due to predation by introduced bullfrogs, *Rana catesbeiana*) have been cited as potential causes of decline. The western pond turtle often leaves the stream or pond and aestivates terrestrially for extended periods in nearby riparian habitat. Adequate natural terrestrial vegetation is required for appropriate buffering of ground temperatures and moisture during this period.

The western pond turtle has been classified into two poorly defined sub-species, with *A. m. marmorata* ranging from southern Washington State south to the San Francisco Bay region of California, and *A. m. pallida* occurring south of San Francisco and into Baja California. By state, pond turtles are listed as Endangered in Washington State, as a Sensitive Species in Oregon, and as a Species of Special Concern in California. The southern sub-species of western pond turtle (*A. m. pallida*), extending from south of San Francisco to Baja California, is under serious decline, with few remaining viable populations. The Mojave River population, in the Mojave Desert, is isolated and highly threatened. Lovich and Myer (2002) assert: "Given the tenuous status and small size of *C. marmorata* [now classified as *A. m. pallida*] populations in the Mojave River, immediate conservation action is suggested. Establishment of satellite populations should be considered as a hedge against extirpation of these relict populations." In 2014, the Center for Biological Diversity petitioned the USFWS for federal protection of the western pond turtle under the Endangered Species Act.

1.2 Project Background

West Pond, formerly known as Three Bats Pond, is one of two excavated surface water features at Soda Springs, also referred to as Zzyzx. Mohave tui chub are believed to have survived at Soda Springs as its sole refuge after being extirpated from its native habitat in the Mojave River. In 1984 when the Recovery Plan for Mohave tui chub was written, three bodies of water at Soda Springs were considered Mohave tui chub habitat: Lake Tuendae, MC Spring, and West Pond. Due to persistent water quality problems, Mohave tui chub in West Pond had completely died off by 1985. West Pond had been previously managed as chub habitat by dredging, excavation, and widening efforts.

The Recovery Plan asserts establishment of additional populations of Mohave tui chub within the Mojave Desert in California would minimize considerably the risk of species extinction from random, catastrophic events (e.g., floods), or other threats (e.g., predation, disease, etc.). Establishment of multiple populations of Mohave tui chub within the Mojave Desert in California would significantly reduce the risk of species extinction. West Pond is located within the former range of the Mohave tui chub in the Mojave River basin. If a population of Mohave tui chub can be established in West Pond, it would further the Recovery Plan goal to conserve the Mohave tui chub, and would meet one of the criteria for downlisting the species from endangered to threatened.

1.3 Background of Mojave National Preserve

Mojave National Preserve is a 1.6 million-acre unit of the National Park Service. It was established on October 31, 1994 by enactment of the California Desert Protection Act. The Preserve is a vast expanse of desert lands that represents a combination of Great Basin, Sonoran, and Mojave Desert ecosystems. This combination allows a visitor to experience a wide variety of desert plant life in combinations that exist nowhere else in the United States in such proximity. Mojave National Preserve is located in southern California, mostly bounded to the north and south by interstate highways I-15 and I-40, and to the east by the Nevada-California state line. It is a four-hour drive from Los Angeles, and a 90-minute drive from Las Vegas. Other national park units within proximity to Mojave National Preserve include Death Valley National Park to the north, Joshua Tree National Park to the south, and Lake Mead National Recreation Area to the east.

The Preserve is immediately surrounded by public lands managed by the Bureau of Land Management (BLM). The BLM also manages two nearby sites: Amboy Crater National Natural Landmark and Afton Canyon Natural Area. Within the Preserve's boundaries, the State of California owns and administers Providence Mountain State Recreation Area, which includes Mitchell Caverns. The University of California's Reserve System operates Sweeney Granite Mountains Desert Research Center and owns a portion of lands within the reserve. California State University operates the Desert Studies Center (DSC) at Zzyzx. DSC uses lands and facilities administered by the

National Park Service for educational and research purposes.

It is believed the first European to pass Soda Springs was Father Francisco Garces in 1776, as he traveled along the Mojave trail. Explorer Jedediah Smith visited Soda Springs in 1826 and 1827, followed by expeditions which included Kit Carson and Lt. John C. Fremont. Skirmishes between soldiers and native peoples prompted establishment of a permanent post at Soda Springs in 1864. The early 20th century brought mining and various minerals were collected in the vicinity of Soda Springs, including gold and salt. The Tonopah-Tidewater Railroad, which eventually stretched from Ludlow, California, to Gold Center, Nevada, was built in 1905-1906 to service mines throughout this desert area. Tracks were laid through Soda Springs in 1906, and the railroad was heavily used until about 1917. Service was eventually terminated as ridership declined, and the tracks were removed as scrap for the war effort in 1943. The railroad bed is north of Lake Tuendae.

Between 1944 and 1974, Curtis Howe Springer utilized the Soda Springs area as part of his health resort and spa facility, naming the area “Zzyzx”. Over time, Springer constructed several buildings, swimming pools, and mineral bath areas to accommodate guests; he also converted a portion of the old railroad bed into a landing strip. In addition to planting rows of athel trees and other ornamental plant species, he excavated Lake Tuendae and Three Bats Pond, now referred to as West Pond. The BLM evicted Springer in 1974, after it was determined he was illegally occupying the site. The Desert Studies Consortium, an affiliate of the California State University, Fullerton began rehabilitation of the buildings in 1977. To date, the Desert Studies Center hosts various educational seminars and meetings specific to desert-related topics, as well as post-graduate and doctoral studies.

1.4 Purpose and Need of the Project

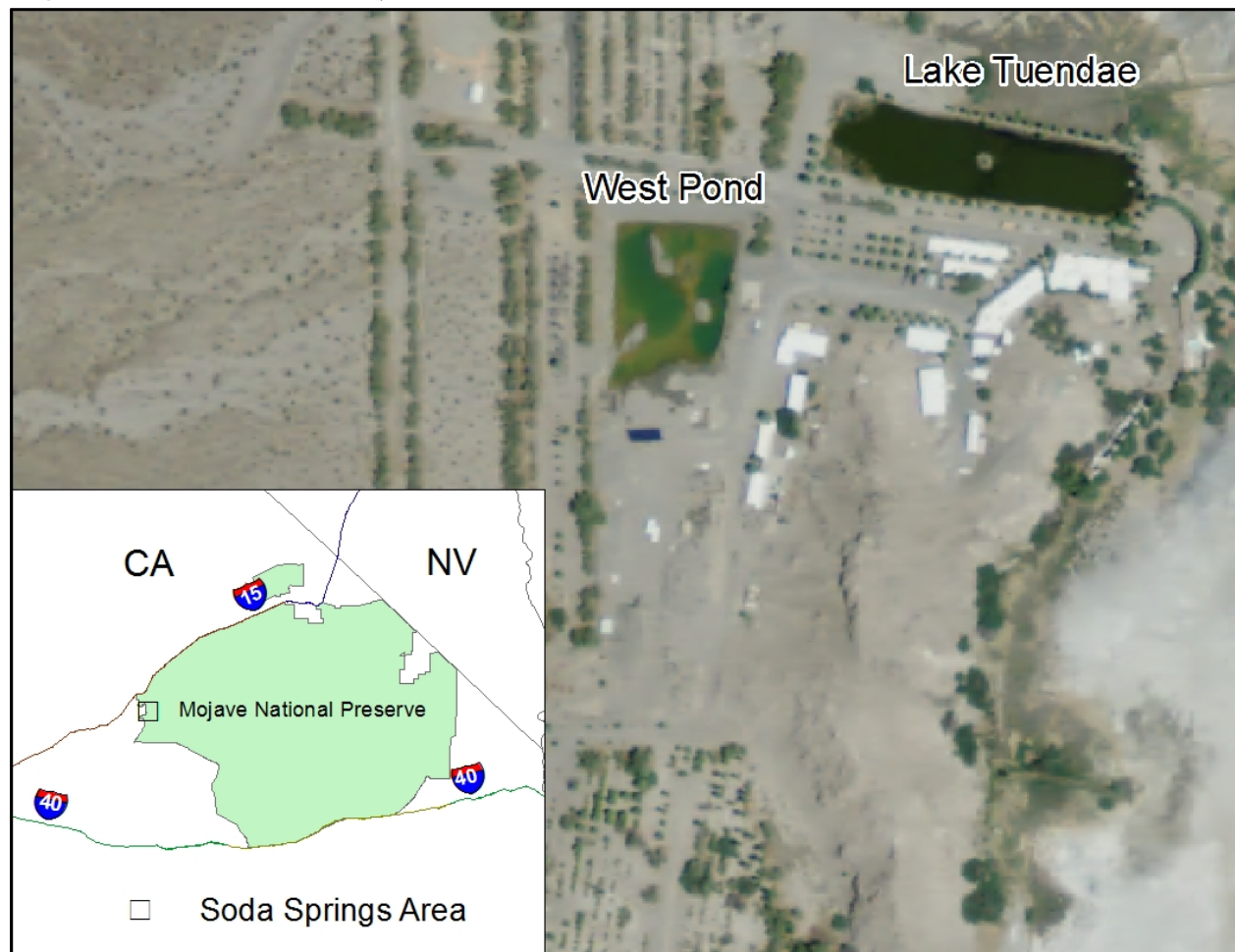
The purpose and need of this proposal is to assess options at Zzyzx in Mojave National Preserve that would contribute towards increased stabilization and survival of Mohave tui chub, an endangered desert fish. The National Park Service has been working with the US Fish & Wildlife Service and California Department of Fish & Wildlife for several years to improve the Mohave tui chub’s chances for long-term viability. There is wide recognition within the scientific community that the chub’s native habitat, the Mojave River ecosystem, is no longer suitable for reintroduction due to the persistent presence of Arroyo chub (Recovery Plan for Mohave Tui Chub). To increase species protection and survivability, the Mohave tui chub recovery plan supports the establishment of new populations in man-made habitats. When the recovery plan was written, Three Bats Pond was part of the Soda Springs habitat for – and held a population of – Mohave tui chub. It had experienced a die-off of chub in 1983. By 1985, after the recovery plan was completed, the remaining chub had died. Due to high rates of evaporation, Three Bats pond – now known as West Pond – was determined to be too saline to hold fish.

This EA analyzes the potential to restore water quality and quantity in West Pond and to monitor its status towards the goal of reintroducing Mohave tui chub, as well as western pond turtle, if possible. The USFWS, CDFW, and NPS jointly support the position that a population of Mohave tui chub in West Pond will improve the stability, genetic diversity, and resilience of the Soda Springs population and improve the overall status of the species. This position is based on the best information currently available and includes consultation with species experts and relevant resource and land management agencies. An additional population of Mohave tui chub would reduce the likelihood of extinction from stochastic events and climate change, thereby ensuring the long-term conservation of the species.

1.5 Project Area Location

The project area is located at Soda Springs, also known as Zzyzx, in Mojave National Preserve, San Bernardino County, California. California State University, Fullerton operates the Desert Studies Center at this site. MC Spring, Lake Tuendae, and West Pond are all located within the Soda Springs/Zzyzx complex.

Figure 1: Location of Project Area



1.6 Scope of Environmental Assessment

This EA analyzes the No Action Alternative and two Action Alternatives, and their impacts on the human and natural environment. It fully describes project alternatives, existing conditions in the project area, and equally analyzes the effects of each project alternative on the environment.

This EA was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 USC 4341 et seq.), as amended in 1975 by Public Laws 94-52 and 94-83. Additional guidance includes NPS Director's Order 12 (NPS, 2001a) which implements Section 102(2) of NEPA and the regulations established by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508). The project must comply with requirements of NEPA as well as other legislation that governs land use, natural resource protection, and other policy issues within the park.

1.7 Related Laws, REGULATIONS, and Management Guidelines

Regulations and executive orders are typically addressed in NEPA documents. Following is a summary of several relevant guidance documents and regulations and a description of their relationship to Mojave National Preserve. Other applicable regulations, plans, and standards that were taken into consideration in the development of this EA and the analysis of the impacts are located in Chapter 3.

National Park Service Organic Act

The NPS Organic Act directs the NPS to manage units “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner as will leave them unimpaired for the enjoyment of future generations.” (16 U.S.C. § 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.” (16 U.S.C. § 1 a-1). The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts. An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources and values.” (Management Policies 1.4.3)

National Parks and Recreation Act of 1978

Public Law 95-625, the National Parks and Recreation Act of 1978, requires the preparation and timely revision of general management plans for each unit of the National Park System. The NPS Management Policies (U.S. Department of the Interior 2001) calls for each GMP to “... set forth a management concept for the park [and] establish a role for the unit within the context of regional trends and plans for conservation, recreation, transportation, economic development, and other regional

issues ... " Congress also specifically directed (16 USC 1a-7[b][4]) the NPS to consider, as part of the planning process, what modifications of external boundaries might be necessary to carry out park purposes.

General Authorities Act of 1970

This act defines the National Park System as including " ... any area of land and water now or hereafter administered by the Secretary of the Interior through the NPS for park, monument, historic, parkway, recreational, or other purposes ... " (16 USC 1c[a]). It states that " ... each area within the national park system shall be administered in accordance with the provisions of any statute made specifically applicable to that area ... " (16 USC 1c[b]) and in addition with the various authorities relating generally to NPS areas, as long as the general legislation does not conflict with specific provisions.

Management Policies 2006

NPS Management Policies (2006) include direction for preserving and protecting cultural resources, natural resources, processes, systems, and values (NPS 2006). Although management policies are not applicable to non-NPS lands, it is the goal of the NPS to avoid or minimize potential impacts to resources to the greatest extent practicable consistent with the management policies.

California Desert Protection Act of 1994

The California Desert Protection Act of 1994 (PL 103-433) is the enabling legislation for Mojave National Preserve. It set aside 1.6 million acres for the Preserve and, within it, the Mojave Wilderness of approximately 695,000 acres. The intent of Congress, in creating the Preserve, Death Valley National Park, and Joshua Tree National Park was multi-fold, to:

- (a) preserve unrivaled scenic, geologic, and wildlife values associated with these unique natural landscapes;
- (b) perpetuate in their natural state significant and diverse ecosystems of the California desert;
- (c) protect and preserve historical and cultural values of the California desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching and railroading history of the Old West;
- (d) provide opportunities for compatible outdoor public recreation, protect and interpret ecological and geological features and historic, paleontological, and archeological sites, maintain wilderness resource values, and promote public understanding and appreciation of the California desert; and
- (e) retain and enhance opportunities for scientific research in undisturbed ecosystems.

(PL 103-433 §2(1)(a-e))

General Management Plan

The General Management Plan is an overall management strategy for Mojave National Preserve. This plan focuses on the park's purposes, significant attributes and mission in

relation to the overall mission of the National Park Service. It provides guidelines for visitor use and development of facilities for visitor enjoyment and administration of the Preserve, and serves as the overall umbrella guidance under which more detailed activity or implementation plans are prepared. This plan envisions Mojave National Preserve as a natural environment and a cultural landscape where the protection of native desert ecosystems, natural processes, and historic resources is assured for future generations. The protection and perpetuation of native species in a self-sustaining environment is a primary long-term goal. The plan seeks to manage the Preserve to perpetuate the sense of discovery, solitude and adventure that currently exists.

The plan also seeks to provide the public, consistent with the NPS mission, with maximum opportunities for roadside camping, backcountry camping and access to the Preserve by existing roads. The plan would seek funding for the complete rehabilitation of the historic Kelso Depot and its use as a museum and interpretive facility. The goal of this plan is to determine how to best manage this park unit to meet the Congressional intent and the mission of the National Park Service. The California Desert Protection Act also requires the plan to place emphasis on the historical and cultural sites and ecological and wilderness values in the Preserve. It calls for the evaluation of the feasibility of using the Kelso Depot and the existing railroad corridor to provide public access to and a facility for special interpretive, educational, and scientific programs. It specifies that the plan address the needs of individuals with disabilities in the design of services, programs, accommodations, and facilities.

Purpose and Significance of Mojave National Preserve: Mojave National Preserve protects a diverse mosaic of desert ecological communities and functions, and evidence of a 10,000-year history of human connection with the desert. By offering extensive opportunities to experience a wide variety of desert landscapes, the preserve promotes understanding and appreciation for the increasingly threatened resources of the Mojave Desert, and encourages a sense of discovery and connection to wild places.

- Mojave National Preserve protects a large, relatively intact ecosystem of the eastern Mojave Desert from continuing threats associated with expanding development and provides connectivity between other protected natural areas within the larger Mojave Desert ecoregion.
- Mojave National Preserve offers exceptional access to remote, wild places and provides a unique sense of discovery for visitors throughout its 1.6 million acres.
- The preserve encompasses a wide variety of classic desert landforms, including mesas, bajadas, dry lakes, sand dunes, and cinder cones. These exposed geologic features exemplify the rugged beauty of the West.
- Mojave National Preserve provides opportunities for solitude, exemplified by natural sounds and dark night skies, functioning as an increasingly rare refuge from nearby urban areas.
- Mojave National Preserve has a long, robust history as a well-traveled corridor across a harsh and foreboding desert, linking the Southwest with the coast of

California from ancient times to the present.

- Mojave National Preserve protects a continuous record and remnant sites of the resilient people who have adapted to and manipulated the desert through evolving relationships with the landscape—shaped by cultural values that are both ancient and contemporary.

The National Park Service prepared a Foundation Document for Mojave National Preserve in 2013. This document further explains the Preserve's purpose and significance.

National Historic Preservation Act of 1966

The National Historic Preservation Act (NHPA) of 1966 (as amended) requires that proposals and alternatives relating to actions that could affect cultural resources both directly and indirectly, and the potential effects of those actions, be provided for review and comment by the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), and the Advisory Council on Historic Preservation. Therefore, the document will be submitted to the appropriate offices for review and comment according to the procedures in 36 CFR Part 800 and delineated in the 1995 Programmatic Agreement signed by the NPS, the National Conference of State Historic Officers, and the Advisory Council on Historic Preservation.

Clean Water Act

The Clean Water Act (33 U.S.C. §1251 et seq. (1972)) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. In the State of California, the Water Resources Control Board oversees compliance with the CWA. During public scoping, the Lahontan Regional Water Quality Control Board (LRWQCB) submitted input for consideration regarding disturbance to natural drainage patterns; storm water management; beneficial uses, no net loss of function or value; vegetation clearing; topsoil retention; consultation with the LRWQCB and Army Corps of Engineers (ACOE); and water quality.

1.8 Issues and Impact Topics

Scoping

Mojave National Preserve completed multiple levels of project scoping, to identify issues and develop an action proposal. Internal scoping involved an interdisciplinary team of Preserve staff and inter-agency representatives who determined potential issues and impact topics. An environmental review was initiated September 5, 2014; its conclusion coincided with the completion of public scoping.

Agency scoping was initiated June 6, 2014 with representatives from the National Park Service/Mojave National Preserve, California State University, Fullerton/Desert Studies

Center, California Department of Fish & Wildlife, and US Fish and Wildlife Service. CDDFW and USFWS biologists provided additional input to the project during the internal scoping period.

Public scoping was conducted twice to ensure broad and thorough notification to Mojave National Preserve's constituent public: September 3 through October 3, 2014 and October 28 to November 28, 2014. A notice was posted on the park website and on the NPS Planning, Environment and Public Comment (PEPC) website. No comments were received either during or after this period.

During scoping, the following issues and concerns were expressed about the project:

- NPS, CDFW, and USFWS agreed that new, man-made habitats need to be established to increase populations of Mohave tui chub and secure species survival. The 2011 programmatic EA and FONSI to establish new Mohave tui chub populations did not identify West Pond/Three Bats Pond as potential new habitat but authorities from all three agencies agreed it would be suitable to re-establish Mohave tui chub if water quality conditions can be corrected and stabilized.

1.9 Issues and Impact Topics Identified for Further Analysis

Table 1. Justifications for Topics Retained to Analyze Potential Impacts	
Impact Topic	Reasons for Retaining Impact Topic
Cultural Resources	Zzyzx is nominated for the National Register of Historic Places. The Springer Pump House on the edge of the pond is a contributing feature. Archaeological sites were found in the vicinity of West Pond in a 1982 investigation for the BLM. Further analysis is required of project impacts to these non-renewable resources.
Natural Resources	Both action alternatives would affect aquifer water quality and quantity, wildlife residents in the Soda Springs area, and vegetation around West Pond could be affected by the proposed project in addition to effects on wildlife and plant species. Further analysis is required.

Table 1. Justifications for Topics Retained to Analyze Potential Impacts	
Impact Topic	Reasons for Retaining Impact Topic
Visitor Use and Recreation	While the LRWQCB identified Soda Lake and Soda Springs as water sources for water contact recreation, The NPS does not allow these waters to be used for swimming, wading, water-skiing, skin or scuba diving, surfing, white water activities, fishing, or use of natural hot springs. The Desert Studies Center at Zzyzx is an education facility. The site is frequently used by visitors to the Preserve. Soda Lake and Soda Springs are sources of non-contact water recreation, as identified by the LRWQC B. For these latter reasons, further analysis is required.
Geology, Soils, and Geohazards	Trenching and earthwork would be required for new construction. Further analysis is required.
Traffic and Circulation	From interstate highway 15, Zzyzx Road brings visitors to Soda Springs. Visitors look directly at West Pond across the Boulevard of Dreams as they arrive. One of the options for rehabilitating West Pond would impact the entrance road and associated traffic flow. Further analysis is required of these impacts.
Park Operations, Facilities, and Infrastructure	Implementing a management action would require utilization of existing infrastructure and could have impacts on both NPS and Desert Studies Center operations. Rehabilitation and maintenance of Mojave National Preserve would increase workloads of both the Science & Resource Stewardship and the Maintenance Divisions. Its location at Zzyzx would also impact the Desert Studies Center's programs and activities. Further analysis is required.

Table 1. Justifications for Topics Retained to Analyze Potential Impacts	
Impact Topic	Reasons for Retaining Impact Topic
Human Health, Safety and the Environment	High levels of metals and cations could be encountered in the pond sediments. If hazardous materials are detected, their removal will require regulatory compliance to secure human health and safety. Further analysis is required.
Water Resources	A supply of water would be needed to fill West Pond. Water sources at Soda Springs could be impacted by both the action and no action alternatives. The LRWQCB identified Soda Lake and Soda Springs as sources for groundwater recharge, municipal water supply, warm freshwater habitat, and wildlife habitat. For these reasons, further analysis is required.
Water Quality	Soda Lake is also identified by the LRWQCB as providing water quality enhancement. The LRWQCB established water quality standards in its Water Quality Control Plan for the Lahontan Basin (Basin Plan). The NPS will use these thresholds in evaluating significance. Where there are differences between the National Environmental Policy Act and California Environmental Protection Act, the NPS will defer to NEPA guidance.
Wetlands	Common to both action alternatives, the edges of West Pond would be planted with emergent vegetation to improve West Pond as a wetland habitat. Harvesting plants for this effort will have an effect on other wetlands in the Preserve. Impacts to both source and destination require further analysis.
Air Quality	Use of heavy equipment with diesel-engines for trenching and other construction could cause short-term impacts to air quality. Further analysis is required.

1.10 Impact Topics Considered but Dismissed

Rationale for dismissing specific topics from further consideration is given below.

Prime and Unique Farmlands

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, none of the soils in the project area are classified as prime and unique farmlands.

The LRWQCB identified both Zzyzx Spring and Soda Lake as agricultural water sources. Soda Lake is the terminus of the Mojave River Basin; it and Zzyzx Spring (i.e., Soda Springs) do not distribute water to points beyond Mojave National Preserve boundaries. Within the Preserve, although livestock is grazed further east and west of Soda Lake in the Clark Mountain, Round Valley, Gold Valley, and Colton Hills allotments, the waters of Soda Lake and Soda Springs are not used for farming, horticulture, or ranching.

The topic of prime and unique farmlands was dismissed as an impact topic in this document.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low income populations and communities. The actions proposed in this analysis would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998).

Wilderness

There is no designated Wilderness within the project area. The wilderness boundary starts 280 m from the project site and would not be impacted by either action alternative. Visitors to the wilderness in this area of the Preserve are visually and physically separated from West Pond. Between West Pond and Soda Lake is the cultural landscape of Zzyzx including a row of Athel tamarisk along the western edge of Zzyzx Road, Lake Tuendae and a row of palm trees at a 90° angle from the tamarisk, the Boulevard of Dreams, and a series of buildings occupied and utilized by the Desert Studies Center (Figure 1). Neither the wilderness or Preserve visitors in the wilderness will be impacted by the actions proposed for West Pond.

Aesthetics and Visual Resources

Aesthetics and Visual Resources are addressed under Cultural Landscapes. This project will not affect the lightscape of the project area. No further analysis is necessary.

Energy Resources

Energy resources will not be impacted from the action alternatives, so are not further analyzed.

Floodplains

Soda Lake is a dry playa that periodically fills for temporary periods. Its surface footprint does not extend to West Pond. Under either action alternative, the brine in West Pond would be drained off to an area separated from the rest of Soda Lake by a row of Athel tamarisk. This will not change the dimensions or nature of Soda Lake. Floodplains have, therefore, been dismissed from further analysis.

In response to comments from the LRWQCB, The existing condition of Zzyzx and West Pond effectively treats storm water runoff; this configuration will not be modified. West Pond is not a collection point for runoff. The EA proposes no changes that would increase that potential. Vegetation will be planted around the mode and maintain to decrease the potential for collection of storm water runoff and increase the potential for groundwater recharge.

Land Use

Land use, including occupancy, income, values, ownership, or other types of use, will not be changed under either action alternative.

The LRWQCB identified Soda Lake and Soda Spring as water sources for commercial and sportfishing. The NPS refutes this designation. There is no commercial or recreational collection of fish or other organisms at Soda Lake or Soda Spring for consumptive use.

Socioeconomics

Socioeconomics will not be impacted by the action alternatives and are, therefore, not further analyzed.

Noise

Short-term impacts from construction can be avoided or minimized by incorporating best management practices into the project schedule. Current noise levels from planes, trains, and highway sounds are substantial and would not be greatly increased from project construction. Noise is further addressed under visitor resources but does not require separate analysis.

II. ALTERNATIVES

2.1 Introduction

NEPA requires federal agencies to conduct a careful, complete and analytic study of the impacts of proposals that have the potential to affect the environment and consider alternatives to that proposal, well before any decisions are made. Federal agencies are also required to involve interested or affected members of the public in the NEPA process. The EA assists the NPS in decision-making and in the determination that the potential for significant effect does not exist and the preparation of an environmental impact statement is not required. All alternatives are consistent with the legal requirements, established standards and guidelines for the management of natural and historic resources in accordance with the mission of the NPS.

Action alternatives were developed in consultation with California Department of Fish and Wildlife, US Fish and Wildlife Service, and California State University at Fullerton, Desert Studies Center. The National Park Service has been working with these agencies for over 12 years to increase the species' chances of survival. This collaboration has resulted habitat maintenance at Lake Tuendae and MC Spring; new Mohave tui chub populations being established at Morning Star Mine pond in the Preserve, and at the Academy for Academic Excellence in Apple Valley, California; and population surveys of MTC in Mojave National Preserve.

Strategies from the 1984 Mohave Tui Chub Recovery Plan include preserving and enhancing Three Bats/West Pond as MTC habitat. The Bureau of Land Management deepened West Pond by excavating in 1979, 1982, and 1992 to a maximum depth of 1.86 m, which also included widening in 1979 and 1992 (Archbold, 1996). Excavation did not improve water quality; the pond level is an expression of the groundwater table, therefore, water flows into the pond as a consequence of evaporative flux from the pond surface. Inflow historically drew effluent from the leach field into the pond and evaporative flux concentrates salts, deteriorating water quality. Excavations in 1979 and 1982 were followed by a complete die-off of Mohave tui chub in 1985. Further dredging or excavation has been abandoned in light of these developments, dredging costs, and environmental concerns regarding disposition of spoils.

Lake Tuendae sustains a healthy population of Mohave tui chub; the pond surface is elevated with respect to the groundwater table by frequent refilling from the water supply well. This sustains a good water quality level by allowing a reversed groundwater flow gradient. Leach field effluent and other contaminants cannot flow into the pond. Addition of well water and seepage through pond bottom and sides results in stable water quality in an acceptable range. The alternatives developed consist in raising the water level in West Pond to reverse the gradient, which is common to all alternatives except No Action. The difference between the two action alternatives exists in the disposition of flow. In one alternative we consider outflow exclusively through the unlined walls and bottom of the pond; in the other, water would drain to the lake bed via a constructed outflow drain.

2.2 Description of Alternatives

2.2.1 Alternative A– No Action

The No Action Alternative maintains the status quo. Mohave tui chub would continue to inhabit MC Spring and Lake Tuendae at Soda Springs, with no additional populations to strengthen long-term chances of species survival. West Pond would be left in its existing, uninhabitable condition. Low water depth is attributed to eolian and fluvial sedimentation; moreover, a low-permeability layer impedes exchange with the groundwater table. A subsequent high evaporation potential of approximately 2.2 m/y (Barthel, 1995) has contributed further degradation of water quality; total dissolved solids (TDS) are in the range of 35 g/l. Apart for occasional shorebirds using West Pond, it is devoid of vertebrate life but maintains a rich microorganism component. The visual aspect that a visitor first sees upon entering the historic area is an unsightly excavation containing brackish water. The No Action Alternative would not meet the purpose and need of this project; neither would it achieve any of the project goals.

2.2.2 Features Common to Action Alternatives

The National Park Service (NPS) proposes to improve water quality in West Pond, an excavation that intercepts shallow groundwater, located at Soda Springs (Zzyzx), Mojave National Preserve. West Pond was formerly one of three habitats areas containing the state and federally listed Mohave tui chub. This fish species is lacustrine in nature and is dependent upon deep pools and slow-water slough conditions for survival. Gradual sedimentation in West Pond has resulted in reduced connectivity with groundwater and, combined with a high evaporation rate, has led to a condition of high TDS, high pH, and low DO. Management actions to restore and maintain this habitat are outlined a Habitat Management Plan for Mohave Tui Chub at Fort Soda (Soltz- BLM, 1978) and in the Recovery Plan for the species (USFWS 1984). Maintaining sufficient water quantity and quality at West Pond is included in Recovery Goal 1. Filling the pond with water pumped from the Desert Studies Center supply well should accomplish this goal. Water depth would increase from approximately one foot to two to three feet. Water quality parameters should stabilize in the vicinity of the well water, which is acceptable for species survival.

1. Remove brine from West Pond

The NPS proposes to pump out the majority of existing brine at the bottom of West Pond. By use of a portable pump, an intake hose will be suspended on a floating boom, with the hose end about one foot below the pond surface to drain brine out to the dry playa. The hose will extend from West Pond across the Boulevard of Dreams to the playa west of Zzyzx Road. To minimize traffic disruptions, drainage activities should be scheduled during August and December, periods of low visitation. Once most of the brine is removed, the pond will be ready for fresh water. There is a possibility of the aquifer infiltrating the pond as the brine is removed, initiating the process of filling West Pond with fresh water.

2. Rehabilitate West Pond as MTC Habitat with Water from the Desert Studies Center Supply Well

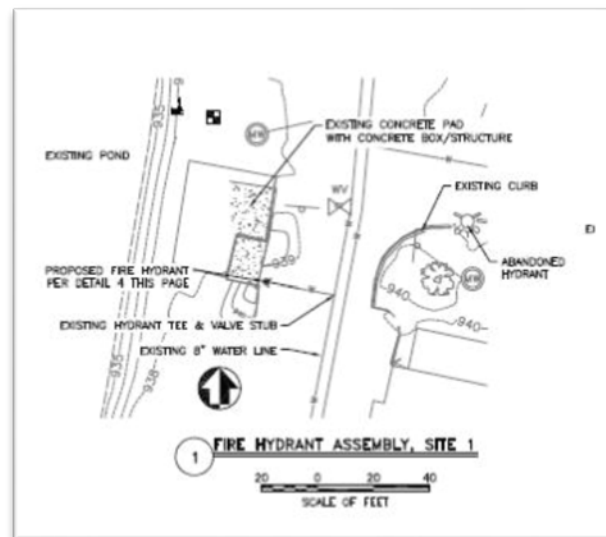
The NPS proposes to fill West Pond with water from the DSC supply well. A pipeline would be constructed from an existing eight-inch water line that connects the DSC water supply well to Lake Tuendae. The water line would extend approximately 50 feet to the edge of West Pond. Pond level elevation is approximately 934 feet; the lowest ground surface lies at 937 feet. Therefore, water depth in the pond might increase up to three feet. Water quality would be monitored periodically before, during, and after filling, up to one year using a handheld Hach meter with temperature (T), pH, electrical conductivity (EC), dissolved oxygen (DO), chloride (Cl), and nitrate (NO_3^-) and an In-Situ Aqua TROLL 100 EC and T logger. Water levels will be monitored in the pond and nearby monitoring wells using staff gauges and pressure transducer data loggers. West Pond would be topped off, as needed, from the well through the new waterline.

Installation of pipe connected to an existing 8" water line will be done by excavating a trench approximately 50' from the existing 8" waterline to the edge of West Pond. Figure shows existing 8" waterline and existing pond.

Monitoring of West Pond water level and water quality began in the summer of 2014. Total dissolved solids are high (35 g/l) but pH (9.4), DO (8 mg/l), and nitrate (34 mg/l) are in the range of previous analyses when Mohave tui chub lived in the pond. A pressure transducer will be installed in the pond to record water levels hourly. Data will be periodically downloaded as the logger memory reaches capacity. Water quality parameters (conductivity, temperature, pH, dissolved oxygen, chloride, and nitrate) will be monitored weekly. Water and sediments samples will be collected and sent for laboratory analyses including major ions and metals. Dilution calculations will be used to predict the composition of the pond after filling. Nearby monitoring wells will be monitored for changing water level due to seepage from the pond.

The pond will be filled as quickly as possible and allowed to re-equilibrate to its natural level over time. The declining water level will be monitored using a pressure transducer. Water level change over time will be used to estimate the conductivity of the pond subsurface, connectivity with the underlying aquifer, and estimate the quantity and frequency of refilling that will be required to maintain the full pond

Figure 2: Existing Infrastructure at West Pond



level. Based on the hydraulic and water quality data, estimates will be made for the time required for the water quality conditions to stabilize.

3. Restore Vegetation along the West Pond Bank

Once water levels and water quality stabilize and the pond bank becomes moist, aquatic and riparian vegetation obtained from around Lake Tuendae will be transplanted along the edge of West Pond. Three-square bulrush (*Schoenoplectus americanus*) sourced from existing plants growing near Lake Tuendae will be planted around the pond edge. Other aquatic vegetation, such as ruppia (*Ruppia* sp.), will also be planted. Existing vegetation and topsoil will remain in place. Rehabilitation of the pond edges will be designed to stabilize the water quality of West Pond and to provide suitable habitat to support western pond turtle.

4. Implement Best Management Practices

Per recommendations from the LRWQCB and according to NPS Management Policies 2006, project staging areas will be established outside of stream channels and floodplains; buffer areas will be identified and exclusion fencing erected to protect West Pond and prevent unauthorized vehicles or equipment from disturbing surface waters at Soda Springs. The project does not include vegetation clearing; planting will be carried out strategically to mitigate stormwater runoff and improve wildlife habitat. Topsoil will be retained on site.

2.2.3 Alternative B: Reverse the Groundwater Flow Gradient Away from West Pond

Alternative B proposes to construct a new waterline tapping in to an existing 8" steel waterline that conveys well water to Lake Tuendae. PVC pipe can be adapted to an existing riser on the 8" steel pipe and extended to the shoreline, buried in a backhoe-excavated trench. The end of the new waterline would be equipped with a gate valve and spray nozzle to control discharge into the pond. Water would be periodically pumped into the pond to raise the pond level and maintain pond water quality within an acceptable range for Mohave tui chub.

Under Alternative B, the Preferred Alternative, the groundwater flow gradient would be reversed, forcing water flow away from the pond. This would, in turn, reverse the buildup of salts by evaporation. An elevated pond level will result in infiltration of pond water into the pond banks and seepage back to the groundwater table. When West Pond is first filled, the water would dilute the existing brine; the pond would be further diluted by repeated refilling or topping off of the pond level as water is pumped into the pond from the supply well. Pond water that infiltrates back to the water table would flow east towards the dry lake bed and away from the supply well, in the general direction of groundwater flow.

2.2.4 Alternative C: Install Overflow Drain to Dry Lake Bed

Alternative C is prefaced by the assumption that seepage from West Pond and return flow to the water table would be insufficient to dilute the existing brine. To sustain a continuous flow, an outflow channel would be required. A theodolite survey conducted in 2014 indicated a slope of 0.014 from the level of West Pond after filling northward toward the lakebed over a horizontal distance of 545 feet. Alternative C proposes to install a drain pipe immediately below ground surface from the northern edge of West Pond across the Boulevard of Dreams, then northward between Lake Tuendae and the rows of Athel tamarisk to a low point in the lakebed of Soda Dry Lake immediately to the west of the historic Tonopah Tidewater railroad bed. Excess water would be pumped into West Pond and allowed to flow out the drain to the dry lake bed. Saline water exiting through the drain pipe would either result in water quality reaching a stable equilibrium suitable for wildlife habitat more rapidly than under Alternative B, or achieve a more suitable water quality than would be possible with no outflow.

Figure 3: Alternative C—Proposed Placement of Overflow Drain



2.2.5 MITIGATION

Mitigation measures to protect cultural resources, water quality, and other values, as described in Table 2, would apply to the Preferred Alternative.

Table 2. Proposed Mitigations for the Preferred Alternative		
Resources Area	Mitigation	Responsible Party
Cultural Resources	Analyses of cultural resources have been completed for West Pond (Cameron 1982) and the nomination for the national register. Potential impacts to cultural resources (the Spring pump house) will be avoided by maintaining the pond water level below the structure and mitigated by periodic inspection of the base of the structure. Impacts to other cultural resources will be avoided by requiring continuous monitoring of construction activity by an archaeologist.	NPS
Visitor Use and Recreation	Potential impacts to visitor use will be mitigated by constructing the waterline during the visitor use off-season.	NPS
Geology, Soils, and Geohazards	Any trenching will be done abiding by regulations and safety standards. All soils will be replaced and surface disturbance restored.	NPS
Traffic and Circulation	Traffic warning signs and barricades will be used during construction.	NPS
Park Operations, Facilities, and Infrastructure	Pond filling will be done only when it will not interfere with water needs for the DSC or fire control.	NPS
Human Health, Safety and the Environment	Pond sediments will be analyzed for metals and contaminants. If high levels are encountered, contact will be avoided.	NPS
Water Resources	Water quality will be monitored in the supply well, monitoring wells, and the pond. Hydrogeologic modeling will be done to predict subsurface movement of water containing high levels of total dissolved solids (TDS).	NPS
Air Quality	Construction and fugitive dust management will be done according to best management practices.	NPS

2.2.6 ALTERNATIVES AND ACTIONS CONSIDERED BUT DISMISSED

Pond Dredging –Whereas dredging in 1990 and 2001 resulted in improved habitat conditions for Lake Tuendae, it was found to be ineffective for West Pond. The Bureau of Land Management dredged West Pond at least three times – in 1979, 1982, and 1992 (Archbold, 1996). These efforts resulted in no improvement to water quality; they did not counter-balance the high levels of salinity due to evaporation. Moreover, the 1982 dredging was followed by a complete die-off of Mohave tui chub three years later. The high costs associated with dredging, lack of success, and environmental concerns related to the disposition of spoils from West Pond, leads to a conclusion to dismiss this action from further consideration.

Construction of New Habitat at Soda Springs – Soda Springs, also referred to as Zzyzx, and is a cultural landscape nominated as a historic district for the National Register of Historic Places because of its significance in US and native American history. The National Park Service administers National Register nominations equally to its management of National Register properties and districts. For this reason, construction of new habitat would not occur at Soda Spring. Analysis of potential new habitats outside of Soda Spring is outside the scope of this environmental assessment.

2.2.7 HOW ALTERNATIVES MEET PROJECT OBJECTIVES

Both action alternatives (Alternatives B and C) selected for analysis meet all objectives to a large degree. Both address the stated purpose of taking action and resolve the need for action. Alternatives that did not meet the plan objectives were dismissed from further analysis (see the *Alternatives Considered but Dismissed* section above). Both action alternatives would meet all objectives to a large degree and address the project's stated purpose and need.

2.2.8 COMPARISON OF ALTERNATIVES

A comparison of the alternatives follows below.

Table 3. Comparison of Alternatives			
Proposed Action	Alternative A, No Action	Alternative B, Preferred	Alternative C
Water quality monitoring	Water quality of West Pond was monitored in 2014. It would not be further monitored under No Action, unless required for a future, separate action.	Water quality would be monitored before and after pond filling.	Water quality would be monitored before and after pond filling.
Installation of plumbing to add water to fill West Pond	No plumbing would be installed.	A pipe to West Pond would be connected to the existing 8-inch water line.	A pipe to West Pond would be connected to the existing 8-inch water line.
Filling and frequent topping off of water in West Pond	No water would be added to West Pond.	West Pond would be filled and maintained at a full level.	West Pond would be filled and maintained at a full level.
Flushing saline water to the dry lake bed	No saline water would be flushed to the dry lake bed.	All water in West Pond would remain contained; i.e., water in West Pond with elevated saline rates would not be drained away.	Excess water would be pumped into West Pond and allowed to drain to the dry lake bed, flushing saline water out of West Pond.
Vegetation of pond edges	No vegetation would be transplanted and the edge of West Pond would remain barren gravel.	Native vegetation would be transplanted to the edges of West Pond.	Native vegetation would be transplanted to the edges of West Pond.

Table 3. Comparison of Alternatives			
Proposed Action	Alternative A, No Action	Alternative B, Preferred	Alternative C
Stocking West Pond with Mohave tui chub	West Pond would not be stocked with Mohave tui chub.	West Pond would be stocked with Mohave tui chub once water quality and habitat conditions were deemed suitable.	West Pond would be stocked with Mohave tui chub once water quality and habitat conditions were deemed suitable.

2.2.9 PREFERRED & ENVIRONMENTALLY PREFERRED ALTERNATIVE

Preferred Alternative

The National Park Service prefers Alternative B. Compared with No Action and Alternative C, this option will achieve the purpose and need of the project with the least impacts to the Zzyzx Historic District and associated cultural resources.

Environmentally Preferred Alternative

The CEQ Regulations implementing NEPA and the NPS NEPA guidelines require that “the alternative or alternatives which were considered to be environmentally preferable” be identified (Council on Environmental Quality Regulations, Section 1505.2). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

The Council on Environmental Quality defines the environmentally preferred alternative as “...the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act’s §101.” Section 101 of the National Environmental Policy Act states that “... it is the continuing responsibility of the Federal Government to ... (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

The National Park Service has determined that the environmentally preferred alternative for this project is Alternative B. Alternative B would achieve the stated purpose and need while avoiding potential impacts to cultural and historical resources. Alternative C would impact the Boulevard of Dreams by installation of a drain pipe, could potentially impact the historic Tonopah Tidewater railroad bed through ponding of flushed saline water, and could potentially impact the historic Athel tamarisk trees through addition of saline water at the root zone. Alternative B would avoid these potential impacts to cultural and historic resources. In addition, it would enhance habitat for wildlife in the Soda Spring area. No Action would not increase suitable wildlife habitat or improve the cultural landscape.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

In order to have a more concise, streamlined, and user-friendly document, this chapter provides a description of the Affected Environment for a resource followed by an evaluation of the Environmental Consequences of the alternatives. It is organized by impact topics, which allows a standardized comparison among alternatives, based on issues.

The Affected Environment section describes the resources within the Soda Springs and Zzyzx area that could be affected as a result of implementation of the proposed action alternatives.

The resource descriptions provided in this chapter serve as a baseline with which to compare the potential effects of the management actions considered in this EA. The Environmental Consequences portion of each impact topic analyzes both beneficial and adverse impacts that could result from implementing any of the alternatives described in Chapter 2: Alternatives.

The analysis includes a summary of laws and policies relevant to each impact topic, definitions of impact thresholds (negligible, minor, moderate, and major), methods used to analyze impacts, and the analysis methods used for determining cumulative effects. As required by the CEQ, a summary of the environmental consequences of each alternative is provided in Table 4 in Chapter 2: Alternatives.

3.2 GENERAL METHODS FOR ANALYZING IMPACTS

The NPS based the impact analyses and conclusions on scientific literature; information and insights provided by NPS experts, other agencies, and the public; and best professional judgment.

For each impact topic, impacts are defined in terms of thresholds of effect, context, intensity, duration, and timing. Impacts and cumulative effects are discussed in each impact topic. Definitions of intensity levels vary by impact topic. Where it is not specifically stated otherwise under each impact topic, the following definitions apply.

Under each impact topic is a brief description of relevant components of existing conditions and information for determining the effects of implementing each alternative. The effects based on the following factors:

- Type:* Whether the impact would be beneficial or adverse.
- Intensity:* Identify the intensity of the effect as negligible, minor, moderate, or major. Intensity is defined individually for each impact topic.
- Duration:* Duration of impact is analyzed independently for each resource. Depending on the resource, impacts may last for the construction period, a single year, or other time period. For purposes of this analysis, impact duration is described as short- or long-term as defined for each resource.
- *Short-term* impacts are temporary, transitional, or construction-related impacts associated with project activities.
 - *Long-term* impacts are typically those effects that would last several years or more or would be permanent.
- Context:* Context is the setting within which an impact would occur.
- *Local impacts* would generally occur within the immediate vicinity of the proposed project.
 - *Regional impacts* would occur on surrounding lands and/or in adjacent communities.
- Impact:* The following types of impact must be considered and examined for any park proposal and alternatives.
- *Direct Impact:* effects are caused by an action and occur at the same time and place as the action.
 - *Indirect Impacts:* effects are caused by the action and occur later or farther away, but are still reasonably foreseeable.
 - *Cumulative Impacts:* effects of the alternatives in conjunction with past, present, or reasonably foreseeable future actions.

3.3 THRESHOLDS FOR IMPACT ANALYSIS

The intensity and duration of effects vary by resource; therefore, the definitions for each impact topic are described separately before each impact topic. These definitions were formulated through the review of existing laws, policies, and guidelines; and with assistance from park, region, and Denver Service Center NPS staff, and other resource

specialists.

Table 4. Summary of Impacts Across Alternatives			
Impact Topic	Alternative A, No Action	Alternative B, Preferred	Alternative C
Cultural Resources	West Pond would continue to be an unsightly brine pond at the entrance to a historic site nominated for the National Register. No impacts to the Springer pump house or the Boulevard of Dreams, the T&T railroad bed, or the salt works	The water level in the pond would be raised to just under the bottom concrete of the Springer pump house. Increased soil moisture at the base of the pump house could lead to evaporative salt build up over time. An improved appearance of the pond would no longer detract from the historical scene. There would be no change to the Boulevard of Dreams, the T&T railroad bed, or the salt works.	Impacts to the historical scene and the Springer pump house would be the same as Alternative A. A drain pipe would be installed across the Boulevard of Dreams in an excavated trench, potentially impacting the historic concrete curb. Drainage from the pond could accumulate near the T&T railroad bed and salt works, leading to evaporative salt buildup over time.
Natural Resources	West Pond would continue to be largely devoid of flora and fauna and would likely get worse over time.	An influx of freshwater over time would slowly improve water quality which in turn would improve habitat features for invertebrates, native vegetation and wildlife allowing, for the most part, their natural establishment.	An influx of freshwater and intermittent flushing of West Pond would improve water quality sooner than under Alt. B. This in turn would improve habitat features for invertebrates, native vegetation and wildlife allowing, for the most part, their natural establishment.

Table 4. Summary of Impacts Across Alternatives			
Impact Topic	Alternative A, No Action	Alternative B, Preferred	Alternative C
Visitor Use and Recreation	Visitors would continue to avoid West Pond and it would continue to be an unattractive feature.	An improvement in water quality and habitat is expected to increase wildlife usage of the pond, potentially providing more visitor enjoyment.	The impacts would be the same as Alternative A.
Geology, Soils, and Geohazards	No effect	There would be a potential increase in soil moisture along the pond banks.	Along with increased soil moisture around the pond, trenching to install the drain would disturb soil.
Traffic and Circulation	No effect	This alternative would have no effect on traffic and circulation.	Trench excavation and drain pipe installation would temporarily block the main entrance to the DSC.
Park Operations, Facilities, and Infrastructure	Impacts would be unchanged.	A pipe would be installed to tie into an existing 8-inch waterline connected to the fire suppression system. The pipe would be used occasionally to fill the pond. There would be no impact to fire suppression capacity since the valve would remain off most of the time.	The impacts would be the same as Alternative A except for the addition of a drain pipe, which would not cause any changes in park operations or facilities.
Human Health, Safety and the Environment	No effect	No effect	No effect

Table 4. Summary of Impacts Across Alternatives			
Impact Topic	Alternative A, No Action	Alternative B, Preferred	Alternative C
Water Resources	The existing situation likely degrades aquifer water quality as evaporative loss from the pond concentrates salts into a brine that slowly seeps into the underlying aquifer.	Reversing the gradient by filling the pond to a higher level could result in temporarily increased seepage of brine from the pond into the aquifer.	Same as Alternative A.
Wetlands	Under the status quo, there would be no changes to West Pond. It does not have wetlands emergent vegetation on the pond edges, the water is a highly concentrated brine, and other freshwater sources at Soda Springs are readily available to wildlife.	The Preferred Alternative would improve the water quality of West Pond, rehabilitate the pond edges with emergent vegetation, and improve the condition of West Pond wetland habitat for wildlife.	Same as Alternative B.
Air Quality	No effect	Some dust could be generated during construction of the water pipeline.	Same as Alternative A.

3.4 CUMULATIVE IMPACTS ANALYSIS

The Council on Environmental Quality (CEQ) regulations for implementing NEPA requires the assessment of cumulative impacts in the decision-making process for federal actions. A cumulative impact is described in the Council on Environmental Quality, Regulation 1508.7, as follows:

A “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or

non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts are considered for both the No Action and Action alternatives. Cumulative impacts were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions with the effects of the alternatives. The following table lists of actions that could result in cumulative impacts.

Table 5. Actions with Potential Cumulative Impacts		
Action	Description	Affected Resources
Recent Projects		
Zzxyz Fire Suppression System Upgrade	This project upgraded the capacity of the fire suppression system at the Desert Studies Center by placing a storage tank on Limestone Hill and installing fire hydrants.	Soils were disturbed to excavate trenches for fire hydrant installation in the areas of the DSC adjacent to West Pond.
Installation of solar panels	Solar panels were installed to the south of West Pond on a previously disturbed, graded surface.	The visual character of the pond and area around the historic site was slightly altered.
Current Projects		
Restore Mohave tui chub habitat in West Pond	The project described in this EA would add water to West Pond to reverse the evaporation-induced gradient and improve water quality in the pond.	Soils would be disturbed to excavate one trench in Alternative A and two trenches in Alternative B. Raising the water level would bring the pond up to near the base of a cultural resource.
Future Projects		
Repair concrete curb along the Boulevard of Dreams	The concrete that forms the curb of Boulevard of Dreams is cracked and degraded. The curb needs to be stabilized and restored.	Likely to have no significant effects.

Table 5. Actions with Potential Cumulative Impacts		
Action	Description	Affected Resources
Mohave tui chub habitat maintenance and enhancement	Cut back cattails on edges of Lake Tuendae and Morning Star Mine Pond. Plant bulrush and three square to reduce cattail regrowth and invasion. Removed vegetation will be piled and burned, as allowed under Mojave National Preserve's Fire Management Plan.	Disposing of vegetative material removed from Lake Tuendae by burning would result in temporary degradation of air quality.

3.5 GEOGRAPHIC ANALYSIS AREA

The geographic area for the analysis of impact related to restoring Mohave tui chub habitat in West Pond encompasses West Pond and its immediate surroundings (Figure 1).

3.6 CULTURAL RESOURCES

3.6.1 Regulatory Framework

Section 106 of the *National Historic Preservation Act of 1966* requires federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places. All actions affecting the park's cultural resources must comply with this legislation.

Archeological Resources Protection Act of 1979. This act (PL 96-95, 93 Stat. 712, 16 USC Section 470aa et seq. and 43 CFR 7, subparts A and B, 36 CFR) secures the protection of archeological resources on public or Indian lands and fosters increased cooperation and exchange of information between private, government, and the professional community in order to facilitate the enforcement and education of present and future generations. It regulates excavation and collection on public and Indian lands. It requires notification of Indian tribes who may consider a site of religious or cultural importance prior to issuing a permit.

The cultural resource management policies of the National Park Service are derived from a suite of historic preservation, environmental, and other laws, proclamations, executive orders, and regulations. A comprehensive list can be found in the Cultural Resource Management Handbook issued pursuant to Director's Order #28. Taken collectively, this guidance provides the Service with the authority and responsibility for managing cultural resources in every unit of the national park system so that those

resources may be preserved unimpaired for future generations. Cultural resource management will be carried out in a manner that is consistent with these legislative and regulatory provisions and with implementing policies and procedures such as the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register (FR) 44716-740), and Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act (63 FR 20495-508).

3.6.2 Affected Environment

Cultural Landscapes

The National Park Service prepared a Cultural Landscape Inventory of the Soda Springs Historic District (NPS 2007) in preparation for a nomination to the National Register of Historic Places. The Soda Springs Historic District is located on the western edge of Soda Lake approximately 12 south of Baker, California entirely within Mojave National Preserve. It's periods of significance extend from soda mining (1907-1914) to operation of a health resort (1944-1960).



Historic Structures

The Springer Pump House is a concrete block structure built into the bank on the south side of West Pond. It was apparently built in a failed attempt to dewater a mining excavation. The Bureau of Land Management (BLM) widened and deepened the pond in the 1980s, creating what is now called West Pond. The Springer Pump House was found to be a character-defining feature (ID LCS Number 330142, NPS 2007).

Archeological Resources

The Soda Springs/Zzyzx area was officially registered as CA-SBr-363 in 1964. West Pond is SBr-363c. In April, 1980 the BLM requested an archaeological inspection be done by California State University, Fullerton, which uncovered prehistoric cultural deposits and a burial feature. A total of 539 pieces of debitage and 43 tools were recovered during this investigation (Cameron 1982).

Ethnographic Resources

Soda Springs and the Zzyzx area contain prehistoric and historic resources but are not identified as ethnographic resources.

Museum Collections

No collections or impacts to museum collections will occur as a consequence of this proposed project.

3.6.3 Environmental Consequences

Impact Criteria and Thresholds

Historic Structures

Negligible: Effect is at the lowest levels of detection with no perceptible consequences. The determination of effect for Section 106 would be *no historic properties affected*.

Minor: Alteration of a feature(s) would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be *no adverse effect*.

Moderate: The action would alter one of more character-defining features of the structure, building, district, or landscape. While the overall integrity of the resource would be diminished, the property would retain its National Register eligibility. For purposes of Section 106, the determination would be *adverse effect*.

Major: The action would alter character-defining features of a structure, building, district, or landscape, seriously diminishing the overall integrity of the resource to the point where its National Register eligibility may be in question. For purposes of Section 106, the determination would be *adverse effect*.

Archeological Resources

Negligible: Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: Beneficial impact: Preservation of a site(s) in its natural state. For purposes of Section 106, the determination of effect would be no adverse effect.

Adverse impact: Disturbance of a site(s) results in little loss of integrity or important information potential, and the qualities of the site(s) (the material aspects that provide a connection to the past and to the land that are important to the Vanyume, Mohave and Chemehuevi) are retained. For purposes of Section 106, the determination of effect would be no adverse effect.

Major: Beneficial impact: Active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be no adverse effect. Adverse impact: Disturbance of a site(s) results in loss of most or all site integrity and its potential to yield important information related to the site's significance, or its importance to the Vanyume, Mohave and Chemehuevi. For purposes of Section 106, the determination of effect would be adverse effect. A memorandum of agreement is executed between the NPS and applicable State or Tribal Historic Preservation Officer and, if necessary, the ACHP in accordance with 36 CFR 800.6(b).

Cultural Landscapes

Negligible: The impact is at the lowest levels of detection or barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: Beneficial impact: Character-defining features would be preserved in accordance with the *Secretary of the Interior's Standard for the Treatment of Historic Properties*, therefore maintaining the integrity of the cultural landscape. For purposes of Section 106, the determination of effect would be no adverse effect.

Adverse impact: The impact would not notably affect the character-defining features of a cultural landscape listed on or eligible for the National Register of Historic Places. For purposes of Section 106, the determination of effect would be no adverse effect.

Area of Potential Affect

In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106, the "area of potential effects" is determined as the geographic area within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties (36 CFR 800.16(d)). For analysis of effects to cultural resources for restoration of West Pond the area of potential effects is defined as the Soda Springs Historic District.

Alternative A – No Action

Under the status quo, with no changes to West Pond, the cultural resources of the Zzyzx Historic District, including the pump house and the Boulevard of Dreams, will remain intact. The concentrated brine in West Pond will not be removed or treated. All cultural resources at Zzyzx will be left unaffected – a consequence of No Impact.

Alternative B – Preferred

Excavation of a shallow trench to lay the pipe to the pond would result in temporary soil disturbance. The excavation would be monitored continuously by an archaeologist to prevent impacts to cultural resources. Upon completion of the pipe the disturbance would be restored and the site would return to the same appearance as prior. Water would then be pumped into the pond to raise its level by approximately 1.5 feet (to just below the base of the pump house). Cleaner water in the pond, and a raised pond elevation, would be a minor beneficial impact to the Cultural Landscape and visual appearance. The potential impact to the Historic Structure of the pump house would be long term but likely negligible or minor as the pond level would remain below the structure but evaporated minerals might build up on the pump house over time. There would be no impacts to Ethnographic Resources or Museum Collections.

Cumulative Impacts

Installation of the fire suppression system and solar panels both degraded the visual character of the Cultural Landscape. The solar panels obviously do not fit into the historical character and a tank was placed on Limestone Hill for the fire suppression

system. In contrast, the minor beneficial impact of adding water to the pond would improve the visual character slightly.

Conclusion

Raising the pond level would have a long term minor beneficial impact to the Cultural Landscape and a potentially minor impact to the pump house historical structure. For purposes of Section 106, the determination would be *no adverse effect*.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Impacts would be similar to those of Alternative B. There would be less potential for mineral deposits to form on the pump house, as the overflow drain would periodically remove the highest concentrations of minerals from the pond water.

3.7 NATURAL RESOURCES

3.7.1 Regulatory Framework

1916 Organic Act & 1978 Redwoods Act Amendment

The Organic Act of 1916 established the National Park Service and provided its mission:

“The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified, except such as are under the jurisdiction of the Secretary of the Army, as provided by law, by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” (16 USC Chapter 1, Subchapter I, §1)

This law was further clarified with the 1978 Redwoods Act, which amended the National Park Service’s General Authorities Act of 1970 and the Organic Act of 1916. It reiterated provisions of the Organic Act, made equal all areas of the National Park System no matter the designation, and provided equal protection from impairment or derogation of resources to all areas of the National Park System.

California Desert Protection Act of 1994 (PL 103-433)

Mojave National Preserve was established by Congress with the signing of the California Desert Protection Act of 1994 (CDPA). This law is the Preserve’s enabling legislation. It addresses existing uses, designates wilderness, and defines the outstanding values and opportunities that make the Preserve worthy of protection as a unit of the National Park System. The outstanding values of Mojave National Preserve are reiterated in park significance statements described in the park’s General Management Plan.

National Park Service Mandates and Policies

NPS Management Policies 2006 provides standards and guidelines by which the NPS operates in accordance with higher authorities and delegations of authority. Management Policies consolidate Service-wide policy decisions, or respond to new laws and technologies, new understandings of park resources and the factors that affect them, or changes in American society.

Director's orders and reference manuals further elaborate on Management Policies but focus on specific subject areas. For example, Director's Order 77 and Reference Manual 77 provide comprehensive guidance on natural resources management. Director's Order 12 and Reference Manual 12 address the implementation of conservation planning and environmental compliance – in particular, compliance with the National Environmental Policy Act (NEPA).

3.7.2 Affected Environment

The environment potentially impacted by the proposed project is limited to the pond itself (~0.7 acres), a small area around the pond periphery, its underlying aquifer, and a 50 feet trench needed to install a new pipe onto an existing waterline that provides a source of water. Water quality in the underlying aquifer is poor and requires treatment prior to human consumption. Water quality in the pond exposed to evaporation is close to that of a brine, on the order of 35 g/l TDS.

Some invertebrates are capable of surviving in the existing brine, providing prey for occasional wading shore birds. Aquatic native vegetation is minimal except for some short sections where brine is diluted, most likely due to ground water seepage into the pond, to within species tolerance levels. Small sand islands exist above the water surface at the current pond level.

3.7.2 Environmental Consequences

Alternative A – No Action

No changes to West Pond would occur. It would remain uninhabitable, water depths would decrease due to Aeolian deposits over time, the low permeability layer would persist and continue to impede exchange between surface and subsurface waters, and high evaporation potential would continue. Over time, water quality would likely decline even further, excluding even the most salt tolerant invertebrates and plants.

Alternative B – Preferred

The trench required to install the new waterline occurs entirely on an existing roadway and the heavily disturbed western edge of the West Pond. Impacts to Natural Resources are negligible and short term.

After installation of the water line, the water level will be raised with fresh water up to

three feet in depth. This reverses the flow of water from the pond to the aquifer along the pond's perimeter and should reduce evaporative concentration and improve water quality in the pond. The water quality of the groundwater aquifer immediately under and adjacent to the pond could be temporarily degraded by seepage of brine. The excess salts would be transported in the direction of the groundwater gradient towards the dry lake bed and away from the water supply well and other facilities. The existing brine will first be diluted by the addition of fresh water from the well. Then seepage into the aquifer will transport dissolved solids via subsurface flow towards the dry lake bed, ultimately mixing with the poorer quality water underlying the dry lake bed surface.

Improved water quality by addition of fresh water and flow reversal into the underlying aquifer would change the micro-ecosystem currently in the pond. As water quality improves brine-tolerant invertebrates would be replaced by fresh water invertebrates. Due to the close proximity of Lake Tuendae and other natural springs and the free movement of animals such as birds between water bodies, establishment by these invertebrates in West Pond would occur naturally as soon as water quality and habitat features improve. There should be no need to translocate any species.

Native vegetation would begin to establish passively and through transplants. Saltgrass (*Distichlis spicata*), Cooper's rush (*Juncus cooperi*), three-square bulrush (*Scirpus americana*), wigeongrass (*Ruppia maritima*), and cattails (*Typha domingensis*) would be the primary native species to passively establish in the area. However, cattails would present a problem as they invade open water up to 1.5 meters deep, rapidly reducing open water and filling it with their detritus. To control the cattails, bulrush and Cooper's rush will be actively transplanted as a means to proactively control cattails. Prior work has shown that bulrush and Cooper's rush tends to out compete cattails and prevent their spread and establishment. Cattails will also be actively controlled as needed by manual cutting using handtools. Saltcedar tamarisk (*Tamarix ramosissima*), a non-native invasive tree species, will invade the pond area as water quality improves. The MOJA maintains an active control program for saltcedar, so it would be removed as it occurs.¹

As freshwater invertebrates and emergent vegetation become established, birds will increase use of the pond, including aquatic and terrestrial species. Mammals will also increase their use of the pond area as natural vegetation cover increases. In particular, desert bighorn sheep (*Ovis canadensis nelsoni*) will be able to obtain drinking water. Reduction and/or loss of the small sand islands combined with a deeper pond would result in habitat more suitable for water birds while maintaining suitable areas for wading shore birds. West Pond could become habitat for both Mohave tui chub and western pond turtle (*Actinemys marmorata*). This project was initially intended to establish a new population of Mohave tui chub, to further secure the species from stochastic events. Another population will contribute towards downlisting the species

¹ Saltcedar (*T. ramosissima*) differs from Athel tamarisk (*T. aphylla*), which is a contributing element of the historic district and is not invasive. Both species occur at West Pond.

from endangered to threatened. A second, similarly important outcome would be the establishment of western pond turtles at West Pond. Western pond turtles are native to the Mojave River drainage and are the only freshwater turtle species native to southern California. Their population has been declining in southern California for more than five decades due to habitat loss and the introduction of non-native turtles, bass, and bullfrogs. Western pond turtles are considered “vulnerable” by the International Union for Conservation of Nature (IUCN), and are included in multi-species conservation plans throughout southern California. Both West Pond and Lake Tuendae have been identified as potential translocation sites due to protections afforded by Mojave National Preserve and the National Park Service. Any species translocation would occur separately from this project, therefore the beneficial impacts of rehabilitating West Pond to Mohave tui chub and Western pond turtle are, at best, indirect.

Cumulative Impacts

The cumulative impact of this project and the proposed Mohave tui chub habitat maintenance plan would be an overall improvement in endangered species and wildlife habitat. There are unlikely to be other significant interactions with previous or planned projects and the natural resources.

Conclusion

Overall, the impact would have major beneficial effects on natural resources. These impacts would be direct and indirect and of long duration with localized effects. Impacts would not extend beyond West Pond.

Alternative C – Install Overflow Drain to Dry Lake Bed

In addition to a 50-foot trench to install a new pipeline, a second trench 545 feet in length would be installed as an overflow drain. The drainage pipe would also be installed in an existing roadway for up to 100 feet and then cross further disturbed areas onto the dry lake bed. Impacts would be temporary and negligible due to the active roadway and extensive historical disturbance of the area.

Impacts to Natural Resources would be identical to Alternative B, except that water quality may improve more rapidly. Nonetheless, the capacity of the water well is not limited such that inflow and outflow would not be continuous. Enough water could be poured into the pond so that outflow would occur for several minutes on an intermittent basis. Compared with the other action alternative, Alternative C could allow greater dilution of the existing water column and flush it more quickly than allowing for ground seepage alone under Alternative B. Some ground seepage would still occur under Alternative C.

Establishment of flora and fauna would also occur on a faster timeline as water quality improves more quickly.

Cumulative Impacts

The cumulative impact of this project and the proposed Mohave tui chub habitat maintenance plan would be an overall improvement in endangered species and wildlife habitat. The water quality of West Pond would be improved enough to be habitable by both Mohave tui chub and Western pond turtle. There are unlikely to be other significant interactions with previous or planned projects and the natural resources.

Conclusion

Impacts to natural resources under Alternative C are beneficial and will be the same as those under Alternative B.

3.8 VISITOR USE AND RECREATION

3.8.1 Regulatory Framework

NPS Management Policies (Chapter 8.6) state that “The National Park Service will make reasonable efforts to provide for the protection, safety, and security of park visitors, employees, concessionaires, and public and private property and to protect the natural and cultural resources entrusted to its care”.

3.8.2 Affected Environment

The springs and historical features at Zzyzx are popular with visitors. Combined with educational activities at the Desert Studies Center, Zzyzx is a heavily visited location in the preserve. West Pond lies to the south of and adjacent to the Boulevard of Dreams. The Desert Studies Center hosts upwards of 2,500 students and researchers each year; parking for DSC visitors lies south of the Boulevard of Dreams, east of Zzyzx Road across from West Pond. Park visitors – between 1,000 and 2,000 annually – are provided parking north and west of Zzyzx Road and the Boulevard of Dreams. (email communication 06/22/2015, Rob Fulton to Danette Woo)

3.8.3 Environmental Consequences

Alternative A – No Action

Visitor use and recreation will remain unchanged under No Action.

Alternative B- Preferred

Visitors may experience some temporary inconvenience during pipe installation but this is expected to be negligible as the construction footprint would be small and located away from the popular attractions. The long-term impact to the visitor experience would be positive as the pond will become wildlife habitat for visitor enjoyment.

Cumulative Impacts

The cumulative impacts to visitor experience from the previous and future projects listed in Table 5 are expected to be negligible to slightly positive as habitat for endangered species is improved.

Conclusion

Negligible short term inconvenience during pipe construction could occur but the long-term impacts will be an improved visitor experience.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

The impacts of Alternative C are the same as those of Alternative B.

3.9 GEOLOGY, SOILS, AND GEOHAZARDS

3.9.1 Regulatory Framework

NPS Management Policies 2001 state, “The Park Service will preserve and protect geologic resources as integral components of park natural systems. As used here, the term “geologic resources” includes both geologic features and geologic processes. The Service will (1) assess the impacts of natural processes and human- related events on geologic resources; (2) maintain and restore the integrity of existing geologic resources; (3) integrate geologic resource management into Service operations and planning; and (4) interpret geologic resources for park visitors.”

3.9.2 Affected Environment

Humans have occupied or traversed the ground surface at Zzyzx for millennia. More recently, the site hosted mining operations starting in the early 1900s. Blasting and excavation was done during the Springer era (1940s to 1970s) after which the Bureau of Land Management further excavated and left extensive ground disturbance. According to Cameron (1982), “[t]he entire area had been grossly disturbed within the last decade ... [l]arge residue piles of earth from heavy excavation equipment remain around the pond.”

3.9.3 Environmental Consequences

Alternative A – No Action

The geology and soils of the Soda Springs area would remain unchanged under No Action.

Alternative B- Preferred

Alternative B includes draining the brine from West Pond onto Soda Lake playa. The brine may affect the soils of Soda Lake; further analysis and monitoring are to be considered. The edges of West Pond will be vegetated with riparian plants from Lake Tuendae. Soils impacts need to be further analyzed; geohazards are not a concern in this

area.

Cumulative Impacts

Installation of the fire suppression system and solar panels both involved surface disturbance and trenching. The cumulative impact from these and the proposed project will be a small amount of additional disturbance in an area that had been previously “grossly disturbed.”

Conclusion

Short duration trenching will be a negligible impact on already highly disturbed soils.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Alternative C will have the same impacts as Alternative B. In addition, this alternative would see a trench dug for a drainage pipe leading from the northern edge of West Pond across the Boulevard of Dreams to Soda Lake. The pipe will drain off overflow from West Pond to prevent saline concentrations resulting from evaporation. Soils impacts need to be further analyzed; geohazards are not a concern in this area.

3.10 TRAFFIC AND CIRCULATION

3.10.1 Affected Environment

West Pond lies to the south of and adjacent to the Boulevard of Dreams. The Desert Studies Center hosts upwards of 2,500 students and researchers each year; parking for DSC visitors lies south of the Boulevard of Dreams, east of Zzyzx Road across from West Pond. Park visitors – between 1,000 and 2,000 annually – are provided parking north and west of Zzyzx Road and the Boulevard of Dreams. (email communication, 06/22/2015, Rob Fulton to Danette Woo)

3.10.2 Environmental Consequences

Alternative A – No Action

Traffic and circulation at Zzyzx and the Desert Studies Center will not change under No Action.

Alternative B – Preferred Alternative

Temporary impacts might occur from placing a hose across the Boulevard of Dreams to drain off the brine, but this would not affect traffic flow.

Cumulative Impacts

There are not cumulative impacts from this project and the list in Table 5.

Conclusion

Impacts to traffic and circulation would be negligible.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Same as Alternative B. Also, the installation of an overflow drain pipe from West Pond to Soda Lake would traverse the Boulevard of Dreams and, potentially, Zzyzx Road. Traffic and circulation would be limited during construction, but should return to pre-construction levels once the pipe is installed and buried.

Cumulative Impacts

There are no cumulative impacts from Alternative C.

Conclusion

Impacts to traffic and circulation would be minor and temporary.

3.11 PARK OPERATIONS AND FACILITIES

3.11.1 Regulatory Framework

The enabling legislation for the Preserve, the 1994 California Desert Protection Act (PL 103-433 Title V), establishes the Preserve's unique mandate on which the General Management Plan (2001) is based. Mojave National Preserve operations follow the policies established in the GMP.

3.11.2 Affected Environment

The National Park Service owns and manages the historic buildings and land at Zzyzx. The proposed water pipe would tie into the existing waterline that is part of the fire suppression system and is used to fill Lake Tuendae.

3.11.3 Environmental Consequences

Alternative A – No Action

Under the status quo, West Pond would remain unchanged, containing a highly concentrated saline brine unsuitable for wildlife. Neither the NPS nor the Desert Studies Center would actively manage West Pond. It would remain a blemish on the landscape of the Zzyzx Historic District.

Alternative B – Preferred

The pipe, once installed, would be used infrequently and for short periods of time to refill West Pond. This refilling would be done during off hours by DSC staff with the water coming directly from the well. Impacts to park operations and facilities would be negligible.

Cumulative Impacts

This project would not contribute to cumulative impacts to park operations or facilities.

Conclusion

Impacts to park operations and facilities would be negligible.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Alternative C will have the same impacts as Alternative B.

3.12 HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

3.12.1 Regulatory Framework

NPS Management Policies (Chapter 8.2) state that “The National Park Service will make reasonable efforts to provide for the protection, safety, and security of park visitors, employees, concessionaires, and public and private property and to protect the natural and cultural resources entrusted to its care.”

3.12.2 Affected Environment

West Pond poses a human safety hazard with the risk of drowning in 18” water.

3.12.3 Environmental Consequences

Alternative A – No Action

West Pond does not currently pose risks to human health, safety or the environment. This will not change under No Action.

Alternative B – Preferred

Under Alternative B, West Pond will be filled to just below the pump house. The water level would double from approximately 18” to 36” at its deepest point. The risk of drowning would increase slightly. The water in West Pond could also be a

Cumulative Impacts

Cumulative impacts to health and safety are likely overall beneficial with the improved ability to suppress structural fires. Any increased drowning risk could reduce the cumulative safety risk by a likely negligible factor.

Conclusion

Increased water depth in West Pond could pose a minor safety risk from drowning.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Impacts of Alternative C would be the same as those of Alternative B.

3.13 WETLANDS

3.13.1 Regulatory Framework

NPS Management Policies (Chapter 4.6.5) indicates: “When practicable, the Service will not simply protect but will seek to enhance natural wetland values by using them for educational, recreational, scientific, and similar purposes that do not disrupt natural wetland functions.” Chapter 4.4.2.3 states the NPS will “manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species.

3.13.2 Affected Environment

West Pond is a man-made impoundment, rather than a natural wetland. Because the Recovery Plan for Mohave Tui Chub recommends the establishment of populations in man-made habitats, West Pond is being considered here as a potential recovery area.

3.13.3 Environmental Consequences

Alternative A – No Action

The marginal function of West Pond as a wetland remains unaffected under Alternative A. It is not habitable for desert fish or reptiles, and it not used by desert bighorn sheep that prefer other available sources of freshwater at Soda Springs.

Alternative B – Preferred

Alternative B will improve the wetland function of West Pond by improving the water quality, planting emergent vegetation, and making it habitable for Mohave tui chub and Western pond turtle.

Cumulative Impacts

Alternative B would provide another freshwater source for desert bighorn sheep and other wildlife in the area, in addition to Lake Tuendae and Soda Springs that are already inhabited by Mohave tui chub (MC Spring) and/or used by desert bighorn sheep.

Conclusion

Rehabilitating West Pond will increase wetlands values and available recovery areas for desert aquatic species that rely on wetlands habitat.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Impacts of Alternative C would be the same as those of Alternative B.

3.14 WATER QUALITY

3.14.1 Regulatory Framework

NPS Management Policies (Chapter 4.6.3) state that “The Service will determine the quality of park surface and groundwater resources and avoid, whenever possible, the pollution of park waters by human activities occurring within and outside the parks.”

3.14.2 Affected Environment

The water quality of West Pond is known to have had low dissolved oxygen and ammonia toxicity when the Mohave tui chub population died off in 1985. No efforts have been made to date to improve West Pond to re-establish this endangered species. Current conditions indicate a saline environment, with total dissolved solids (TDS) at 35 g/l. Water quality analyses indicate under-saturation of NaCl.

3.14.3 Environmental Consequences

Alternative A – No Action

Water quality would not change under Alternative A.

Alternative B – Preferred

Alternative B proposes a series of actions to improve the water quality and wetland habitat of West Pond. The existing brine would be drained off, then the pond filled with fresh water from the underground aquifer and the public supply well up to a depth of three feet. The pond will be actively managed to maintain the quality of fresh water suitable for habitation by Mojave tui chub and Western pond turtle, and use by other local wildlife.

Cumulative Impacts

Improvements in water quality at West Pond may provide valuable information for future Mohave tui chub habitat. If chub are successfully introduced and thrive in West Pond, the survival of this endangered desert fish species will improve and contribute towards potential downlisting to threatened under the Endangered Species Act. This project may lead to other locations being similarly rehabilitated.

Conclusion

Alternative B, the Preferred Alternative, will improve water quality of West Pond.

Alternative C – Install Overflow Drain to T&T Railbed on Soda Lake Playa

Impacts of Alternative C would be the same as those of Alternative B, if not better. An overflow drain would potentially improve water quality in West Pond if it is fed strictly from the water supply well, without consistent circulation. If West Pond is, instead fed by an underground aquifer, as is suspected, water will circulate without the need for an overflow drain to maintain water quality levels for wildlife use.

IV. CONSULTATION AND COORDINATION

4.1 SCOPING

Internal and Inter-Agency Scoping

Action alternatives were developed in consultation with California Department of Fish and Wildlife (CDFW), US Fish and Wildlife Service-Ventura Field Office (USFWS), and California State University at Fullerton, Desert Studies Center (DSC). The National Park Service has been working with these agencies for over 12 years to increase the species' chances of survival. This collaboration has resulted in improvements to MTC habitat at MC Spring and Lake Tuendae, population surveys and a programmatic Environmental Assessment (EA) and Findings of No Significant Impact (FONSI) to establish new MTC populations, resulting in two new populations, at Morning Star Mine pond in the Preserve and at the Academy for Academic Excellence in Apple Valley, California. An inter-agency scoping conference call was conducted June 6, 2014 that included staff from the Desert Studies Center, NPS, USFWS, and CDFW. USFWS provided additional input to the action alternatives (09/23/2014 email, Hohman). An interdisciplinary team at Mojave National Preserve reviewed the project proposal (09/03/2014 to 10/03/2014, and 04/23/2015 to 05/07/2015).

Public Involvement

A public scoping period was conducted for 60 days, from September 3 through October 3, 2014 and again October 28 through November 28, 2014. News releases (469) were issued either by post or email to media outlets, libraries, newspapers, federal, state and local government agencies, and other interested parties. Two native America tribes received news releases.

No comments were received.

4.2 REGULATORY COMPLIANCE

Compliance with major federal laws and associated state regulations is summarized below.

California State Historic Preservation Officer

The National Park Service consults with the California State Historic Preservation Officer as required under Section 106 of the National Historic Preservation Act (NHPA). The pump house at West Pond, but not the pond itself, is a contributing feature to the Zzyzx Historic District. Alternatives B and C have been carefully designed to avoid impacts to the pump house; nonetheless, the NPS will consult with the California SHPO as a professional courtesy.

Tribes

The National Park Service consults primarily with the Fort Mohave and Chemehuevi tribes with regard to management actions in Mojave National Preserve that may impact resources of interest to these two tribes. During the public scoping period (October 28-November 28, 2014),

U.S. Fish and Wildlife Service

The project derives from an environmental assessment for the Establishment of Additional Populations of the Federally Endangered Mohave Tui Chub in the Mojave Desert, Kern, Los Angeles, and San Bernardino Counties, California (2011). The US Fish & Wildlife Service is assisting the National Park Service to develop and implement this project. In addition to ongoing discussions with Preserve staff, written input to the project description was received September 23, 2014 (email, Hohman).

Army Corps of Engineers

The waters in Mojave National Preserve lie east/northeast of the Mojave River; they are isolated dry lake systems not regulated by the Army Corps of Engineers (email communication: Shannon Pankratz, ACOE to Jason Roth, Federal Highways Administration and Clifford Harvey, California State Water Board, June 8, 2015).

California Department of Fish & Wildlife

The Mojave tui chub is listed as endangered under the California Endangered Species Act. The California Department of Fish & Wildlife has led efforts to maintain MC Spring and Lake Tuendae for over 20 years. The Department is assisting the National Park Service to develop and implement this project.

Lahontan Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board provided comments on the project during public scoping in 2014. A Clean Water Act, Section 401 water quality certification will be required if fill or dredged materials are discharged into Soda Lake or Soda Springs. Section 401 permits are also required for projects impacting wetlands, special aquatic sites and headwaters, and for the protection of special status species and impacts from hydromodification. West Pond is a man-made depression that is not currently home to any special status species. It has the potential as an additional water source for the desert bighorn sheep herd that inhabits Soda Mountains but does not currently serve this purpose.

A CWA, Section 402(p) storm water permit is required to address discharge and runoff of storm water or other pollutants into surface waters. This project will not involve storm water or pollutant runoff into any surface waters of Soda Springs, including West Pond.

An NPDES General Permit, Limited Threat Discharges to Surface Waters, Board Order R6T-2014-0049, or General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality, WQO-2003-0003 would be required for storm water

discharges from municipalities, industries and construction sites with land disturbances of five acres or more. The NPS is working with the Lahontan Water Quality Regional Control Board to obtain a wastewater discharge permit for draining the brine from West Pond.

4.3 LIST OF PREPARERS AND CONTRIBUTORS

Preparers

Debra Hughson, Mojave National Preserve

Danette Woo, Mojave National Preserve

Contributors

Judy Hohman, US Fish & Wildlife Service, Palm Springs Field Office

Steve Parmenter, California Department of Fish & Wildlife, Inland Deserts Region

4.4 LIST OF RECIPIENTS AND REVIEW OF EA

A notice of availability will be sent out, in the form of a news release, to media outlets, libraries, newspapers, federal, state and local government agencies, native American tribes, and other interested parties. Copies of the environmental assessment will be made available upon request. A complete list of names has been placed in the project file, and is available upon request.

No public meetings are scheduled. The EA will be available for review and comment for 30 days.

Federal Agencies

US Fish & Wildlife Service

Elected Officials

Senator Dianne Feinstein, US Senate

Senator Barbara Boxer, US Senate

US Representative Paul Cook, US House of Representatives

Supervisor Robert Lovingood, San Bernardino County Board of Supervisors, District 1

State Agencies

California Department of Fish & Wildlife

California Department of Water Resources

California State Water Resources Control Board, Lahontan Region (6)

Regional, County, and Municipal Agencies

San Bernardino County Department of Public Works

Organizations

Academy for Academic Excellence, Attention: Matthew Huffine

California State University, Fullerton, Desert Studies Center, Attention: Dr. William Presch

Center for Biological Diversity, Attention: Ilene Anderson

Mojave Desert Land Trust

National Parks Conservation Association, Attention: David Lamfrom

Water for Wildlife

Libraries

Library Services Manager, San Bernardino County Library Administration

There will be a 30-day comment period on the EA. Comments may be submitted online at: <http://parkplanning.nps.gov/moja->, or in writing to the following address:

Mojave National Preserve
Reference: West Pond EA Comments
2701 Barstow Road
Barstow, CA 92311

4.5 REFERENCES

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