



Salt Creek Boardwalk Replacement Project Environmental Assessment

May 2024



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CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

This environmental assessment analyzes the impacts of the proposed action to repair and reconstruct the Salt Creek boardwalk facilities, including the access road, parking lot, vault toilet, and boardwalk, which were all severely damaged in flood events in August 2022 and August 2023. The project area is within Death Valley National Park. This environmental assessment has been prepared consistent with the National Environmental Policy Act (NEPA) and provides compliance for project implementation on federal lands.

Death Valley National Park is located in the Mojave Desert in eastern California, along the Nevada border, and includes a portion of western Nevada (Figure 1). The park is the hottest, driest, and lowest national park in the United States. The main east-west route through the park is California Highway 190, which is approximately 110 miles west of the center of Las Vegas.

PROJECT BACKGROUND

On August 5, 2022, unprecedented rains caused severe flash floods across the park, which destroyed the Salt Creek boardwalk and associated infrastructure (Figures 1–3). The floods swept away the boardwalk leaving pieces of it scattered downstream, altered the overall topography of the area and changed the course of Salt Creek. The floods also damaged the parking lot, access road, vault toilet, and interpretive waysides. The road and trail have been closed since this event. From August 19 to 21, 2023, for the second year in a row, extreme flooding associated with the remnants of Hurricane Hilary again severely flooded Salt Creek, further altering the stream channel.

Salt Creek is the only location in the world where the Salt Creek pupfish (*Cyprinodon salinus salinus*) occurs. This subspecies of pupfish is listed as “high concern” by the State of California (Moyle et al. 2015). Providing accessible viewing, interpretive, and educational opportunities while simultaneously protecting the species and its habitat requires infrastructure. Without appropriate infrastructure, visitors create social trails by walking around the creek. These trails disturb the fish’s habitat and life cycle, as well as that of other wildlife that use the creek, and they harden soil, damage vegetation, increase sedimentation, and limit suitable soil conditions for healthy vegetation, especially salt grass (*Distichlis spicata*) and pickleweed (*Allenrolfea occidentalis*). Loss of vegetation decreases shading along the creek, which is a critical component of the pupfish’s habitat.



Project Vicinity Map

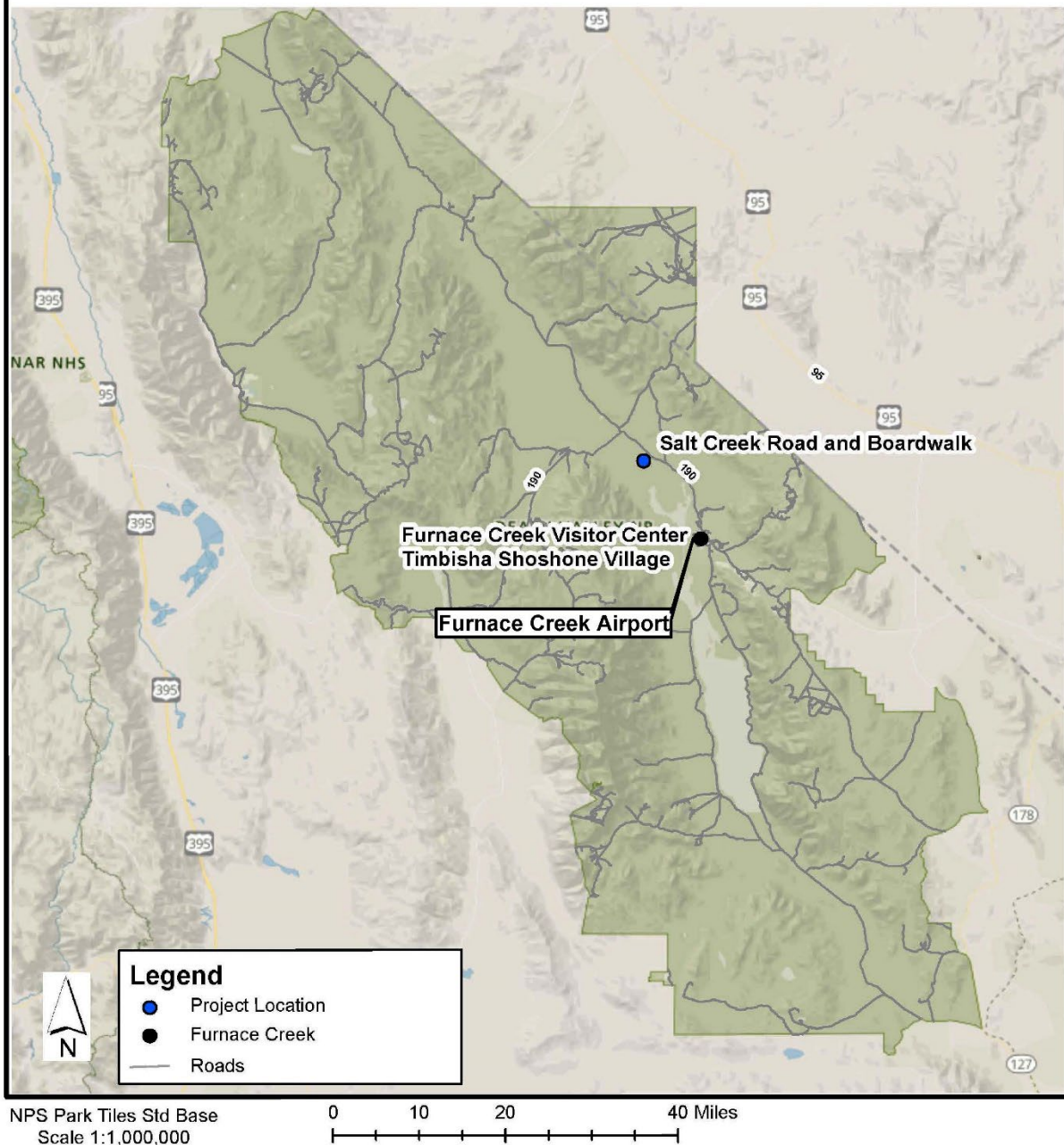


FIGURE 1. PROJECT VICINITY MAP

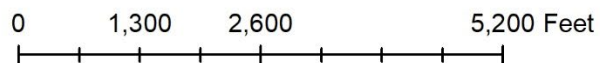




FIGURE 3. FLOOD-DAMAGED BOARDWALK

Visitation to the park has increased, more than doubling in a 10-year period from 2009 (828,574 visitors) to 2019 (1,740,945 visitors) (NPS 2023a). The park’s mission includes education and interpretation. The Salt Creek boardwalk is a key facility the park uses to fulfill that mission. The site is used to host school field trips and other interpretive events (e.g., the 2016 NPS Centennial Bioblitz). Prior to its destruction in the 2022 flood, the boardwalk was the only Architectural Barriers Act (ABA)–compliant accessible location in the park that allows visitors with physical disabilities, such as those requiring the use of a wheelchair, to closely experience an outdoor recreation trail. The boardwalk was originally installed in 1976, replaced around 1997, and resurfaced in 2011.

Although no infrastructure would have completely withstood the 2022 and 2023 floods, which were 500-year events parkwide, creek-side infrastructure needs to be resilient to flooding potential because it is within the 25-year flood zone.

PURPOSE OF AND NEED FOR ACTION

Purpose of the Action

The purpose of the project is to restore viewing, interpretive, and educational opportunities for visitors, including those with limited mobility, to see and learn about the Salt Creek

pupfish (*Cyprinodon salinus* ssp. *salinus*) and Salt Creek itself while protecting the species and its fragile habitat and maintaining the integrity of the surrounding wilderness area.

Need for the Action

The project is needed because a flash flood on August 5, 2022, destroyed the 0.5-mile boardwalk and damaged the access road, parking lot, and vault toilet. On August 19–21, 2023, the remnants of Hurricane Hillary hit the park with another massive rainfall event, and the resulting flooding further damaged the Salt Creek area. The initial flood left broken pieces of infrastructure 0.4 miles downstream of the eastern end of the boardwalk, in designated wilderness, negatively impacting wilderness character. There are no longer accessible viewing, interpretive, nor educational opportunities at Salt Creek. The lack of infrastructure, previously present, leaves the pupfish and their sensitive habitat vulnerable to damage caused by visitors walking and creating informal trails around the area. In addition, the Salt Creek boardwalk was Death Valley’s only ABA-compliant interpretive site, and there is a need to restore this accessible opportunity for visitors to closely interact with the park’s landscape and natural features.

ISSUES AND IMPACT TOPICS

Issues Retained for Detailed Analysis

In the context of NEPA reviews, issues can be problems, concerns, conflicts, obstacles, or benefits that would result if the Proposed Action or alternatives are implemented. Issues were identified from past NPS planning efforts and agency and public input during the civic engagement process. Issues have been retained for detailed analysis because (a) they are central to the proposal or of critical importance, (b) analyzing them is necessary to make a reasoned choice between alternatives, or (c) the environmental effects associated with them are a big point of contention.

Table 1 includes two columns. The pivotal issues are discussed briefly in the first column. The second column includes one or more impact topics, which are headings used to organize content in Chapter 3.

Table 1. Issues and Impact Topics Retained for Detailed Analysis

Issue	Impact Topic(s)
Without infrastructure in place to limit visitors to the boardwalk, sensitive resource damage in the floodplain has occurred and would continue to occur from visitors walking on creekbanks, causing soil compaction and associated loss of vegetation, wildlife habitat and the species dependent on the habitat, and Salt Creek pupfish habitat. Collection or incidental damage of paleontological resources could occur. This issue is central to the proposal, and it is necessary to make a reasoned choice between alternatives. Therefore, these impact topics are carried forward for detailed analysis.	Wetlands, vegetation, wildlife, Salt Creek pupfish, paleontological resources

Issue	Impact Topic(s)
The presence of a road, parking lot, and boardwalk in a floodplain disrupts hydrologic and sedimentologic processes. This issue is necessary to consider in order to make a reasoned choice between alternatives. Therefore, this impact topic is carried forward for detailed analysis.	Floodplains
Road repairs, boardwalk and parking lot construction, and removal of debris could damage wetlands, vegetation, wildlife and pupfish habitat, paleontological resources, and wilderness character. This issue is necessary to consider in order to make a reasoned choice between alternatives. Therefore, these impact topics are carried forward for detailed analysis.	Wetlands, vegetation, wildlife, special status species—pupfish, paleontological resources, wilderness character
NPS <i>Management Policies 2006</i> state that paleontological resources (i.e., fossils), “including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific research” (NPS 2006). Ground disturbance associated with the project may affect paleontological resources located near the parking area and boardwalk. The project area contains and is surrounded by moderately to very highly fossiliferous strata (i.e., layers of fossil-containing rock) and is underlain by the Furnace Creek Formation, including multiple layers of thinly bedded sandstone that contain important ichnofossils from the Pliocene (Bonde 2024). This issue is necessary to consider in order to make a reasoned choice between alternatives. Therefore, this impact topic is carried forward for detailed analysis.	Paleontological resources
Construction and visitor presence could disturb wildlife and Salt Creek pupfish. This issue is central to the proposal, and it is necessary to consider in order to make a reasoned choice between alternatives. Therefore, these impact topics are carried forward for detailed analysis.	Wildlife, Salt Creek pupfish
Visitor access is currently limited to pedestrian access from State Route 190, which is a 1.2-mile walk on uneven terrain and soft surfaces. The boardwalk was the only ABA-compliant accessible facility that facilitated a wilderness-like experience for visitors. This issue is central to the proposal, and it is necessary to consider in order to make a reasoned choice between alternatives. Therefore, this impact topic is carried forward for detailed analysis.	Visitor use and experience

Issues Dismissed from Detailed Analysis

Issues and their associated impact topics that have been dismissed from detailed analysis because they don’t meet the criteria described above are presented in Table 2.

Table 2. Impact Topics Considered but Dismissed from Detailed Analysis

Impact Topic	Reason for Dismissal
Air quality	The park is in a nonattainment area for ozone. The proposal includes construction, which may result in an increase in emissions from construction-related vehicles and equipment. The proposed action would result in the temporary discharge of greenhouse gas emissions and dust into the atmosphere from construction activities associated with the use of heavy equipment and vehicle operations. The air emissions from construction activities, while quantifiable at a site-specific level, would not be appreciable. As a result, there would be short-term, temporary impacts during the construction period. However, these impacts would only occur

Impact Topic	Reason for Dismissal
	while construction equipment is in use. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. Therefore, air quality is dismissed from further analysis.
Water quality	Potential exists for temporary sediment runoff into Salt Creek during construction due to ground disturbance, grading, etc. This potential will be greatly minimized through the use of best management practices and a spill prevention, control, and countermeasure (SPCC) plan. Should sediments reach the creek, they are primarily sandy/cobbly material that settles out quickly, which would make any turbidity close to undetectable. Construction equipment would be required to be inspected each day and be free of leaks and have containment kits on board each vehicle in the event of a spill. Applying such mitigation measures reduces the potential for adverse effects on the creek to such a degree that any sediment discharge into the creek would be close to undetectable.. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. Therefore, water quality is dismissed from further analysis.
Biological—nonnative or exotic species	Construction contractors would follow all stipulations and best management practices (see Chapter 2, “Stipulations and Mitigations”) to minimize the potential for invasive species to be introduced to the project area, including the park’s invasive species inspection procedures. High temperatures and water salinity would minimize the potential survival of many nonnative or exotic species. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, nonnative or exotic species are dismissed from further analysis.
Biological—species listed as threatened or endangered under the US Endangered Species Act	Twenty-five federal threatened and endangered species and species that are candidates for listing could occur in Inyo County (US Fish and Wildlife Service [USFWS] 2023). In the vicinity of the park, two endangered species (southwestern willow flycatcher [<i>Empidonax traillii extimus</i>] and Devils hole pupfish [<i>Cyprinodon diabolis</i>]) and one candidate for listing (monarch butterfly [<i>Danaus plexippus</i>]) could occur or have historically occurred (USFWS 2023). Southwestern willow flycatchers require riparian habitat with woody shrubs. No woody shrubs are present at Salt Creek. Devils hole pupfish occur in a single limestone cave in the park that is not hydrologically connected to Salt Creek, approximately 40 miles from Salt Creek, and nowhere else in the world. Western populations of monarch butterflies breed on milkweed and winter along the California coast. No milkweed is present at or close to Salt Creek, and the park is not close to the coast. These species are dismissed from further analysis because none of these habitats exist in or close to the project area.
Biological—plant species of special concern	<p>A record of golden carpet (<i>Gilmania luteola</i>) in the general vicinity of the project area exists from 1939, but the specific location is not known. The species has been documented more recently in canyon habitat in the Golden Canyon area, approximately 14 miles from Salt Creek. The species was not found in a recent plant survey at Salt Creek (NPS 2023b). For these reasons, golden carpet is dismissed from further analysis. No other special status plant species are believed to have potential to occur at Salt Creek based on habitat and recent plant surveys (NPS 2023b).</p> <p>In April of 2018, Coville’s purple mat (<i>Nama demissa</i> var. <i>covillei</i>) was documented in the project area but was not relocated during surveys in February 2023 after flooding. Coville’s purple mat is a small annual plant that occurs in dry, sandy flats and slopes. Coville’s purple mat is ranked as a 1B.3 by the California Native Plant Society, which indicates the species is rare, threatened, or endangered outside California but not very threatened in California. There are 28 known occurrences of Coville’s purple mat in California; 21 of them occur in the park.</p>
Cultural—archeological resources	To evaluate the cultural resources in the project area, archival research and an archeological survey (Jagelman 2009; PanGIS 2024a) were conducted in June 2023

Impact Topic	Reason for Dismissal
	<p>along the access road, parking lot, and proposed boardwalk area. One minor discovery (a historical, isolated artifact on a rise on the north side of the creek) was made. The entire area is extensively disturbed due to flooding. A lot of boardwalk debris is scattered downstream and outside the survey area. Because of the extensive disturbance in this area, particularly the extensive thick deposition of recent flood sediments, the potential for archeological sites to be present is very low. All materials and equipment staging would occur in extensively disturbed areas along the entrance road, damaged parking area, and boardwalk alignment, or paved or graveled surfaces at the Furnace Creek Airport. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, archeological resources are dismissed from further analysis.</p>
Cultural—ethnographic resources	<p>The Timbisha Shoshone people have lived in and around Death Valley since prehistoric times. During the late 1920s and early 1930s, members of the Tribe lived in four different locations in the Furnace Creek area. In 1936, the Bureau of Indian Affairs and the National Park Service agreed on a site of approximately 40 acres for a permanent residential area south of Furnace Creek Ranch. This site became known as the Timbisha Shoshone Village (NPS 2002). The Timbisha Shoshone Homeland Act of November 1, 2000 (16 USC 410aaa, PL 106-423) provided that a Timbisha Shoshone Natural and Cultural Preservation Area would be designated within the park and would encompass areas of cultural and traditional importance to the Tribe (US Nuclear Regulatory Commission 2008). This area is commonly referred to as the Timbisha Shoshone Co-Management Area. Both the National Park Service and the Timbisha Shoshone have co-management obligations. The project area is not in the Timbisha Shoshone Natural and Cultural Preservation Area nor the cooperative management areas. Tribal consultation has occurred throughout project development, including requests for the Tribes to share, if they would like to, in identifying any historic properties of traditional religious and cultural significance, including ethnographic resources. The Tribes have identified Salt Creek as a place that was visited and tended to historically, and they have expressed interest in reducing disturbance to the fish, water, and vegetation in the area. The Tribes have not identified any historic properties of traditional religious and cultural significance. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. Therefore, ethnographic resources are dismissed from further analysis.</p>
Cultural—prehistoric/historic structures	<p>The access road and a narrow parking area were constructed in 1960 (PanGIS 2024b). The parking lot was widened and reconfigured and a tubular steel gate added in 1976. The roadbed has been continually regraded since construction, though the original route has been maintained. The National Park Service recommends Salt Creek Road be considered not eligible for the National Register of Historic Places (NRHP). While it retains integrity of location, design, setting, and feeling, it does not retain integrity of materials and workmanship, and has no association with important historic events or persons. The boardwalk and vault toilet were originally installed in 1976. The boardwalk was replaced around 1997 and resurfaced in 2011 (PanGIS 2024b). Thus, it lacks integrity for eligibility on the NRHP. Archeological survey and consultation with Tribes traditionally associated with the park in 2023 have not identified any prehistoric structures in the project area. Historic archeological sites in the park are largely associated with transportation corridors, water sources, and mining and ranching operations of the late 19th and early 20th centuries (NPS 2002). State Route 190 between PM INY 42.5 and PM INY 124.3 was evaluated for eligibility for the NRHP in September 2023. State Route 190 is considered eligible at the national level under Criterion A for ties to New Deal Era programs, as well as at the state level under Criterion A for ties to the development of transportation and tourism in the California deserts (NPS 2023c). However, no ground disturbance on State Route 190 would be conducted as part of this project. The repairs to the road and replacement infrastructure in the Salt Creek area would not diminish the integrity of the road, and the viewshed would not change compared to what was present prior to the</p>

Impact Topic	Reason for Dismissal
	proposed action. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, prehistoric/historic structures are dismissed from further analysis.
Lightscapes	The Salt Creek project area would not include any lighting and is only open during daylight hours; no construction would occur after dark. Therefore, lightscapes are dismissed from further analysis.
Human health and safety	The Salt Creek project area would be closed to all visitor use during construction. Construction contractors would be required to follow all safety requirements, as described in Chapter 2. The boardwalk design would follow all safety requirements to be ABA-compliant, including appropriately located and sized bumpers and railings and maximum slopes. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, human health and safety are dismissed from further analysis.
Socioeconomics	Any commercial use of the site would be restored by the Proposed Action. Because very little if any commercial use is currently occurring or would occur under the No-Action Alternative due to flood damage and the road closure, implementing the Proposed Action would only improve commercial use of the site. Economic impacts of this relatively small visitor use facility are too minor to be detectable. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, socioeconomics are dismissed from further analysis.
Soundscapes	Short-term construction noise is anticipated, primarily from the use of power tools and vehicles. However, the project area is a considerable distance from any location frequented by visitors, and noise impacts would be temporary and not contribute significantly to the median sound levels of the area. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. Therefore, soundscapes are dismissed from further analysis.
Viewsheds	The installation of a boardwalk along Salt Creek would be very visible, and it would impact the view of the natural landscape. However, a boardwalk has been in place along Salt Creek for decades, and through new design, it would largely blend in rather than detract from the view. The boardwalk would only have been absent for approximately two years, with few people seeing the site during this period. The viewshed is currently altered from a natural state by remnants of boardwalk debris in the wash. The boardwalk would be slightly higher than the previous one but very similar. Analyzing these impacts is not necessary to make a reasoned choice between alternatives. For these reasons, viewsheds are dismissed from further analysis.

CHAPTER 2: PRELIMINARY ALTERNATIVES

This chapter describes actions that would take place under each alternative for the Salt Creek boardwalk replacement project. Council on Environmental Quality (CEQ) regulations for implementing the NEPA call for the alternatives considered in a document to include a No-Action Alternative (1502.14[c]). This document evaluates two alternatives: the No-Action Alternative and the Proposed Action Alternative. The elements of these alternatives are described in the following sections. Other alternatives and actions that were considered but eliminated from detailed analysis are described at the end of this chapter.

ALTERNATIVE A: NO ACTION

Under Alternative A, the No-Action Alternative, the National Park Service would not reconstruct flood-damaged facilities at Salt Creek. The road, parking lot, vault toilet, and boardwalk would not be reconstructed and would remain in a flood-damaged condition, which is unsafe for visitor use. The National Park Service would not take any action to revegetate the site and would not remove damaged infrastructure in the creek channel, including wilderness. Maintenance of the road would continue at a level sufficient only for administrative use. No visitor vehicle access would be allowed, and no infrastructure would be present to prevent visitors from walking on the creek bank.

ALTERNATIVE B: PROPOSED ACTION

Summary

Under Alternative B, the Proposed Action Alternative, the National Park Service would reconstruct facilities at Salt Creek, which were severely damaged in floods in 2022 and 2023 (Figures 1–6). Design and construction of the project would be conducted by the Federal Highway Administration (FHWA), Central Federal Lands Highway Division, which is a cooperating agency in the NEPA process. The road, parking lot, vault toilet, and boardwalk would be reconstructed. The National Park Service would also take steps to revegetate the site if necessary and would remove damaged infrastructure from the creek channel, including wilderness. Visitor vehicle access would be restored to the site. The boardwalk, vault toilet, and two parking spaces would be ABA-compliant.

The site, which is currently closed to vehicle access due to the damage, would also be closed to pedestrian access during construction, which is estimated to occur from approximately fall 2024 through spring 2025.

Road

Under Alternative B, the National Park Service would restore the road to its pre-flood condition—a dirt road accessible by low-clearance, two-wheel drive vehicles. The 1.2-mile-long road would follow the previous alignment, with minor adjustments at the end to connect to a new parking lot location (Figure 4). The road would be 24 feet wide with 1-foot shoulders. Rock embankment, rip-rap, or gabion baskets would be used to armor a newly

formed reach of the creek that now abuts the road. Local materials would be used to the extent practicable.

The road surface would continue to consist of local, native materials of sand, soil, small rocks, and gravel. If any fill material is needed, it would be sourced from within the park. The road work would require use of a grader and an excavator within the limits of the road area, a roller for compaction, and dump trucks for moving material. An on-site water tank would be placed in the parking lot area during construction, to be used for dust suppression.

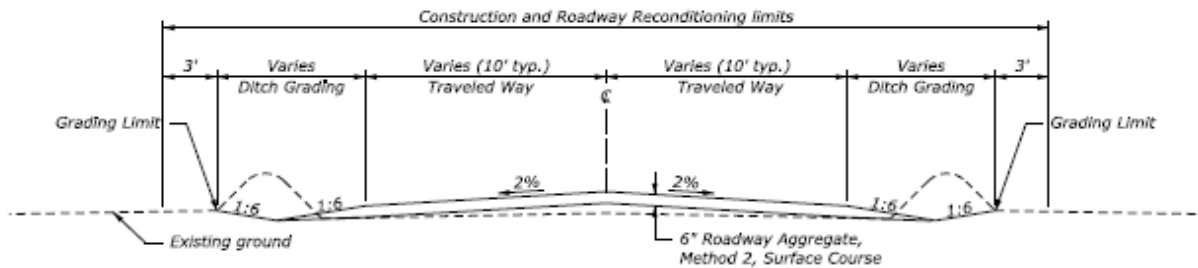


FIGURE 4. ROAD TYPICAL SECTION

Parking Lot

Under Alternative B, the National Park Service would reconstruct the parking lot to a similar capacity as the previous lot, though in a different location farther east due to the migration of the creek channel (Figure 5). The parking lot would consist of the same type of materials as the road described above. Although parking spots would not be delineated, capacity would be approximately 30 vehicles, including two designated ABA spots. Parking would be perpendicular to the flow of traffic on either side of a rectangular lot with a loop at the end of the lot to facilitate buses turning around. Buses would park along the entrance road. Adjacent to the ABA parking spots would be a concrete curb and ABA-compliant sidewalk that would connect to the vault toilet and the boardwalk. Concrete sitting areas with picnic tables would be located at the transition from the sidewalk to the boardwalk. A 4-foot-high wood-post-and-steel-cable fence would encircle the area. The parking lot would be constructed with heavy equipment to level it, including a grader and other equipment as needed. Exposed bedrock would be covered with native materials via grading.

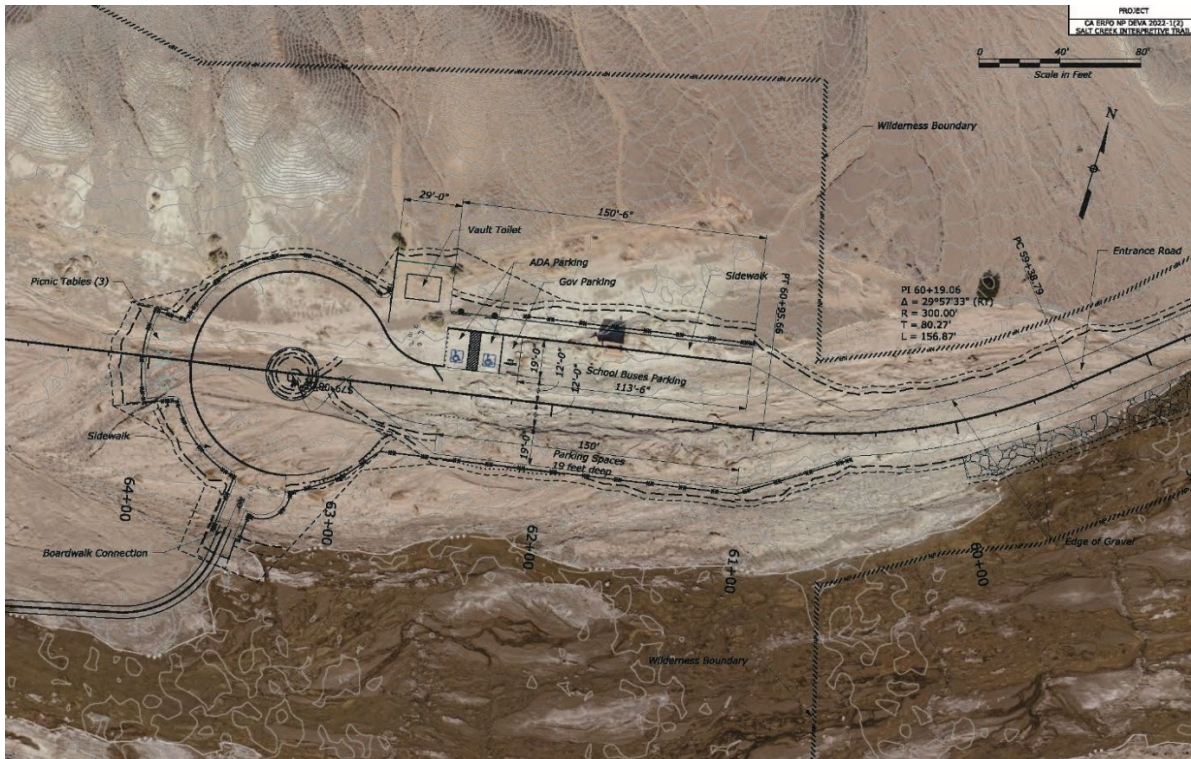


FIGURE 5. PARKING LOT CONCEPTUAL DESIGN

Vault Toilet

Under Alternative B, the National Park Service would install an ABA-compliant double vault toilet adjacent to the parking lot (Figure 5). The unit would be prefabricated, approximately 14 feet wide by 9 feet deep by 10 feet tall, with a pitched roof and an underground 12-foot-deep vault. The building would be textured with aggregate and finished in a color to blend into the surroundings. The hole for the vault would be excavated with a backhoe or similar equipment at least 100 feet from the ordinary high-water mark and in an area of low paleontological sensitivity to the extent practicable. The unit would be lowered into place with a crane.

Boardwalk

Under Alternative B, the National Park Service would construct a boardwalk in a footprint similar to the original boardwalk location, with the proposed alignment sited based on the current creek channel alignment, elevations, and sensitive resources (Figure 6). The general alignment would be a spine-and-loop layout with wider “bump-outs” and benches at select viewing locations. The alignment would cross the creek and other sensitive resources at right angles to the extent practicable to minimize the crossing distance and associated disturbance. The boardwalk would be located and designed to provide multiple opportunities to see pupfish and learn about them, including varied interpretive signs and waysides. The boardwalk would be approximately 6 feet wide, 18 to 36 inches high, half a mile long, and ABA-compliant (Figures 6–9). The bump-out viewing areas would vary from approximately 6 to 9 feet wider than the rest of the boardwalk. Railings would be included in locations

as necessary for safety and resource protection. The deck would be thermally modified wood without any chemical treatments. The support structure and railings would be primarily wood with metal connecting hardware. The boardwalk would be anchored predominately with steel helical piles drilled into the substrate (Figure 9). Individual piles would be sited to minimize sensitive resource damage, supplemented with floating piles, which sit on the surface of bedrock, where necessary and practicable.



FIGURE 6. BOARDWALK CONCEPTUAL ALIGNMENT

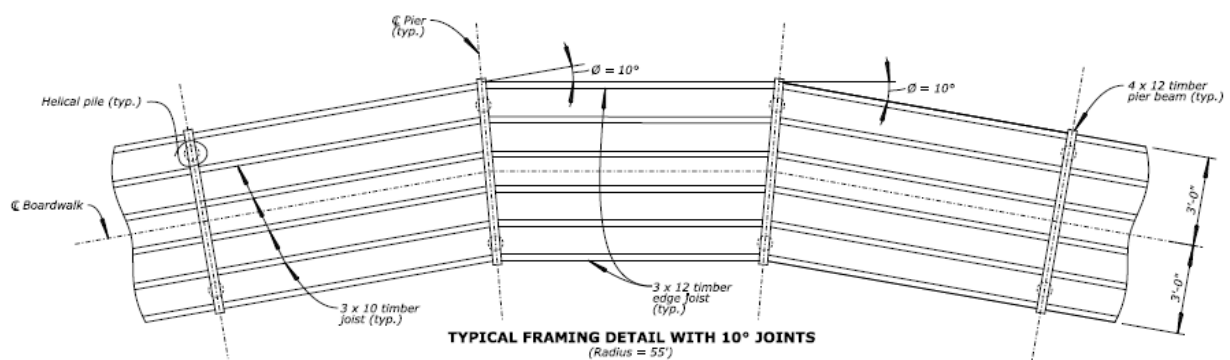
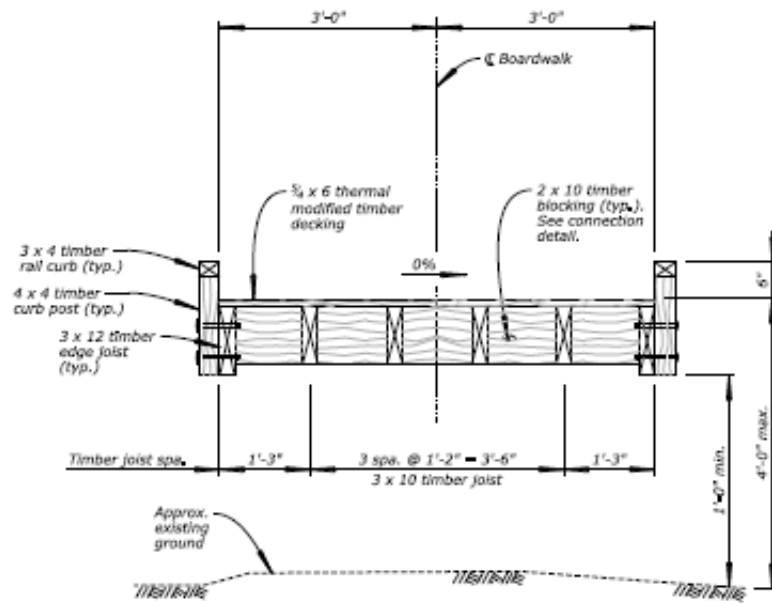
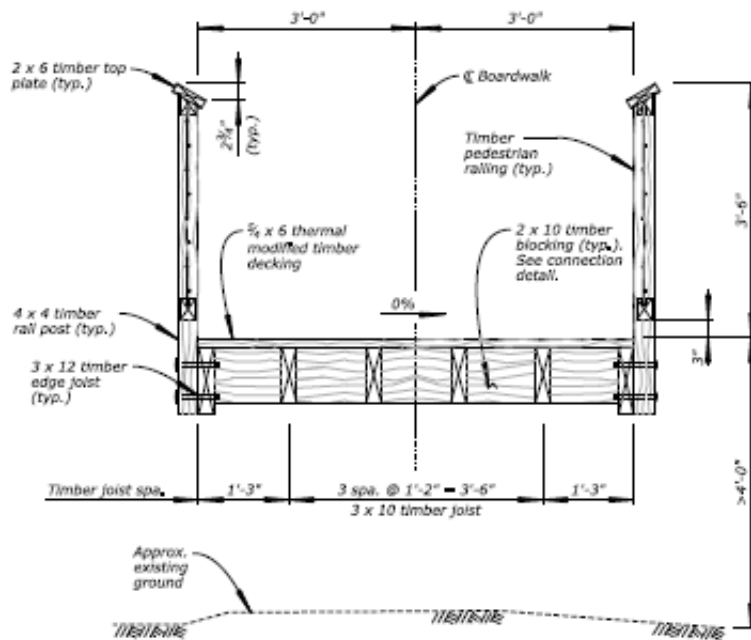


FIGURE 7. BOARDWALK CONCEPTUAL TYPICAL DECK FRAMING



TYPICAL SECTION WITH RAIL CURB



TYPICAL SECTION WITH PEDESTRIAN RAILING

FIGURE 8. BOARDWALK TYPICAL SECTIONS

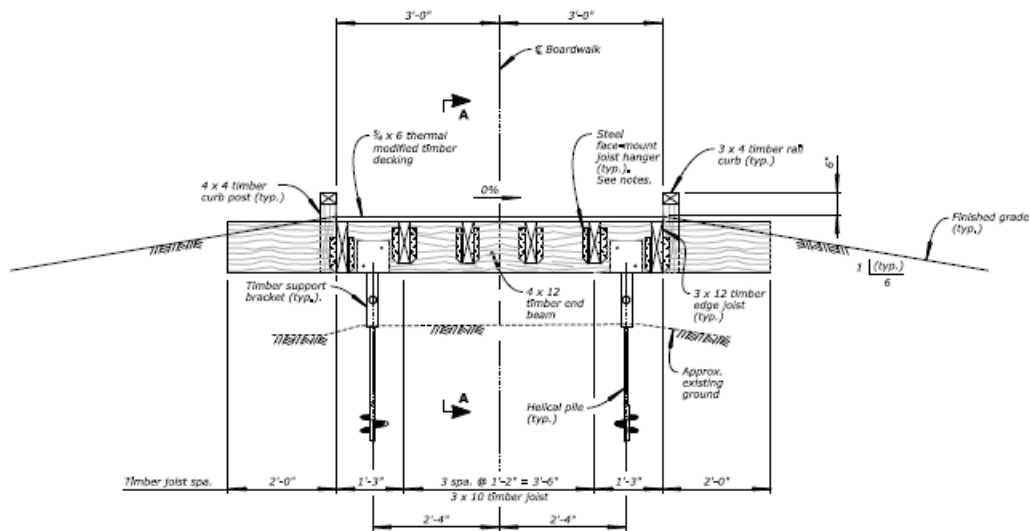


FIGURE 9. BOARDWALK CONCEPTUAL ABUTMENTS

Although no boardwalk that would fully withstand the floods of 2022 and 2023 could be feasibly constructed, the proposed boardwalk would be constructed to be resilient to smaller flooding events. For example, the proposed helical piles are less likely to be compromised by flooding than the previous concrete supports. Helical piles are also quicker to install and disturb less soil than concrete supports.

The boardwalk would be constructed during daylight hours using a variety of heavy equipment (e.g., skid steer) and hand and power tools (e.g., saws and drills). Heavy equipment would be restricted to the minimum size needed to complete the work and operated in a manner to traverse the minimum amount of area as few times as possible, reducing potential soil and vegetation impacts to the extent possible.

Revegetation

Under Alternative B, the National Park Service would qualitatively monitor the progress of plant regrowth following the floods and construction with a focus on bank-stabilizing vegetation. If banks are substantially eroding to an extent that would adversely impact pupfish, the park could implement a revegetation plan to replace vegetation. Steps could include monitoring; invasive plant control; seed collection, purchase, cleaning, and storage; plant salvage and plant grow-out in a nursery; planting; watering; and monitoring. Key species would include pickleweed (*Allenrolfea occidentalis*) and salt grass (*Distichlis spicata*).

Debris Removal

Under Alternative B, the National Park Service or FHWA would remove large, visible, easily removed pieces of infrastructure debris from the creek channel and floodplain at and downstream from the site with the minimum motorized equipment necessary, consistent with the authorizing minimum requirements analysis (MRA) (Figure 10) (Appendix A). Most buried debris would be left in place to minimize resource damage associated with extracting it. Materials to be extracted include primarily wood, metal, and concrete. Smaller,

lightweight debris would be removed by hand. Larger, heavier debris would be removed with the least-damaging methods and equipment practicable, including the use of helicopters. Helicopters would facilitate removal of debris where needed to prevent heavy equipment from traversing the surface of the creek channel and floodplain. Helicopters would likely take off from the Furnace Creek Airport and would drop debris either at a construction staging area on the site's flood-damaged former parking lot or at the airport.

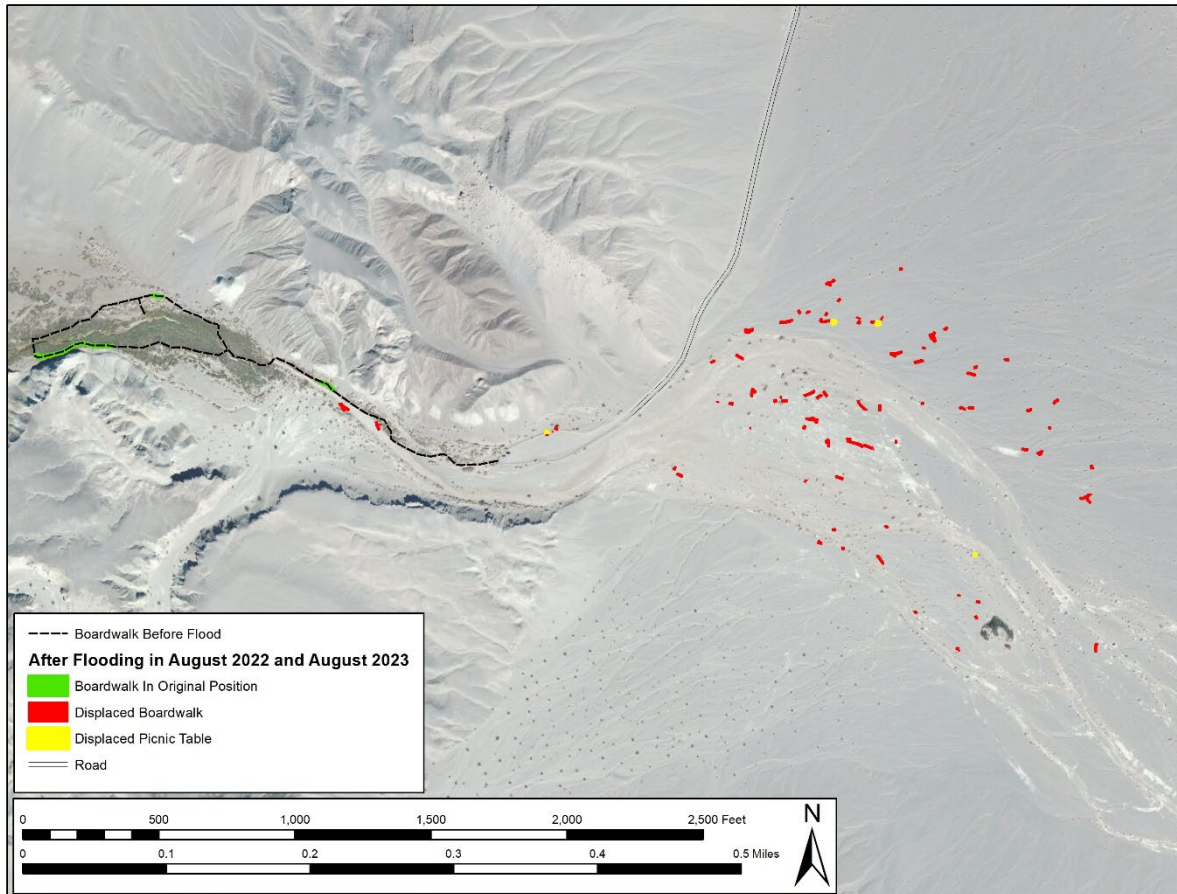


FIGURE 10. SALT CREEK BOARDWALK DEBRIS FIELD, OCTOBER 2023

Approximately 399 linear feet (2,699 square feet), in three segments, remain in the original pre-flood alignment. Approximately 49% of the original 2,892-linear-foot boardwalk is displaced and visible in aerial photography (Figure 10). The majority of the visible displaced material is in wilderness. Most of this material is partially buried. The rest of the material is likely buried.

Stipulations and Mitigations

The National Park Service places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the park would implement the following measures as part of the Action Alternative.

General Construction Best Management Practices. The following best management practices would be implemented:

- Construction, in and adjacent to the creek, would be limited to October through March to minimize work during pupfish spawning periods. Construction boundaries would be established based on pupfish activity.
- All work would be conducted in compliance with the park's Heat Stress Management Policy (NPS 2016a).
- To minimize the introduction of foreign material into the sensitive Salt Creek environment, all materials would be cut in a centralized location away from the water with erosion control measures in place. If materials need to be cut along the boardwalk, a physical barrier must be used to catch any sawdust or debris that could enter the watercourse.
- Construction zones would be identified and flagged with construction tape, silt fencing, or a similar material prior to any construction activity. Flagging would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the construction zone, defined by construction zone fencing and flagging.
- The FHWA inspection staff would be responsible for ensuring the project remains within the construction area limits.
- Fugitive dust generated by construction would be controlled by water spraying at the construction site, if necessary. Any water used for dust control would be taken from a source approved by the park and applied at a rate that prevents soil erosion.
- To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks. A spill kit would be always kept on-site.
- Fuel would be stored in fuel trucks or aboveground storage tanks, and all fuel storage would be in staging areas. NPS-approved containment best management practices would be established in case of a spill.
- Tools, equipment, barricades, signs, demolition debris, and rubbish would be removed from the project work limits upon project completion.

Soils. The following measures would be implemented:

- Soil conservation measures would be employed. Soil would be replaced where present and affected to enhance revegetation following the construction phase.
- Disturbed soils are more susceptible to erosion, and until revegetation takes place, standard erosion control measures such as silt fences and/or sandbags would be used to minimize any potential soil erosion.

Vegetation. The following measures would be implemented:

- Disturbance to existing vegetation would be avoided to the greatest extent possible.
- During construction, native vegetation would be flagged for avoidance to the greatest extent possible.
- Vehicles, equipment, and storage and staging for materials would occur within the project footprint.
- Equipment used would be cleaned prior to arrival on-site to reduce the introduction of nonnative plant species.
- Sources of borrowed materials (e.g., dirt and rock) for use in construction would be assessed and cleared for potential introduction of noxious weeds.
- All equipment and materials would be staged on hardened surfaces, such as roadways and parking areas, to avoid damage to vegetation.
- Pre- and post-construction invasive species surveys and treatment would be conducted as needed to eradicate new infestations of invasive species or to limit the spread of existing infestations due to construction activities.

Wildlife and Species of Special Concern. The following measures would be implemented:

- Construction along the stream channel would be limited to October through March to minimize work during pupfish spawning and breeding season for most birds. Any construction conducted during the nesting season (February 15 to September 30) that could affect vegetation would be preceded by a survey for active bird nests conducted by a qualified biologist. Any active bird nests located would be protected with the establishment of a buffer, the size of which would be species-specific and determined by a qualified biologist.
- If southwestern willow flycatcher, or any other threatened or endangered species, were discovered in the project area, all construction activities would cease while park staff reevaluates the situation and consults with the US Fish and Wildlife Service. This would allow modification of the project for any protection measures determined necessary to protect the species.
- If an active bird nest were discovered in the project area, construction activities would cease in close proximity, in consultation with park staff. This would allow modification of the project for any protection measures determined necessary to protect the species.

Paleontology. The following measures would be implemented:

- The Paleontological Resources Preservation Act (PRPA) directs the National Park Service to manage and protect paleontological resources on their land using “scientific principles and expertise” (Section 6302), including plans for inventory, monitoring, and the scientific and educational use of paleontological resources. In

compliance with the PRPA, the contractor would furnish a qualified paleontological monitor subject to approval by the National Park Service. The monitor would have demonstrated expertise in paleontological field and monitoring techniques during construction, specifically for areas of medium and high paleontological sensitivity. The lead paleontologist overseeing and/or conducting the work would have a graduate degree (e.g., MS, MA, or PhD) with an emphasis in paleontology in combination with a minimum of one year of paleontological mitigation experience in California, Nevada, or a geological province similar to the project area. If the lead paleontologist cannot complete field monitoring, it may be completed by a paleontological technician, who will have an academic degree (e.g., BS, BA, or MA) with an emphasis in paleontology. The paleontological technician must have experience in laboratory preparation and curation and monitoring experience from project initiation to completion, including field work with fossil salvage and treatment. Paleontological resource monitors must be properly equipped with tools and supplies to properly document fossil discoveries and geological context and possibly remove specimens. Monitors must demonstrate proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques. Removal of specimens would not take place before park resource managers have been briefed on the discovery and have approved any collection.

- The paleontological monitor would obtain a paleontological resources research permit with the park and fully comply with all requirements outlined in that permit.
- The paleontological monitor would provide the National Park Service with a Paleontological Resources Mitigation Plan specific to the project area and in general is expected to follow standard provisions in mitigation paleontology (e.g., Murphey et al. 2019). The National Park Service would review the plan prior to construction and ensure any comments are addressed.
- The paleontological monitor would hold a preconstruction on-site meeting with construction crews to educate crews on fossil resources, the geology and bedrock in which fossils are preserved, the sensitivity of the information, and monitoring and mitigation techniques if fossils are identified during construction. The paleontological monitor would communicate that crews are not to collect, move, vandalize, or otherwise disturb fossils, nor share information about their location.
- Contractors would avoid construction that would disturb known fossils.
- A preconstruction paleontological resource inventory survey has designated areas of high paleontological sensitivity (Bonde 2024). In these areas, bedrock disturbance would be avoided to the greatest extent possible. Where disturbance could not be avoided, an on-site paleontological monitor would be required during disturbance activities.
- A preconstruction paleontological resource inventory survey has designated areas of medium paleontological sensitivity (Bonde 2024). In these areas, bedrock disturbance would be avoided to the highest extent possible. Where disturbance could not be

avoided, an on-site paleontological monitor would be required during disturbance activities.

- A preconstruction paleontological resource inventory survey has designated areas of low paleontological sensitivity (Bonde 2024). In these areas, grading, excavation, and debris removal could be conducted up to 3 feet deep, without an on-site paleontological monitor present.
- A paleontological monitor would identify the presence or absence of tracks where boardwalk footings would be placed. If tracks were found, the contractor would select and clear a new footer location to the extent practicable.
- Paleontological monitoring during construction would include a final report of findings.
- If fossils are encountered, construction would cease, and a paleontological monitor would clear the site of fossil resources before activity resumes. Construction could continue in low-sensitivity areas or other locations where fossils have not been identified.
- If fossils are encountered and cannot be avoided, construction would cease in that area until the paleontological monitor communicates the discovery to the National Park Service and the bureau approves the collection of the fossil(s). All paleontological resources would be managed appropriately before loss takes place due to disturbance activities.
- During construction, the paleontological monitor would collect data in the form of photographs, observational notes, geospatial coordinates for any fossil discoveries, a fossil discovery form for any fossil discoveries, and geological contextual data for any fossil discoveries. The paleontological monitor would use this information for their final report and would communicate with the National Park Service should new fossils be found during construction.
- The contractor would use flexible, durable, and load-resistant portable mats to cover paleontologically sensitive areas from disturbance from equipment travel. The National Park Service would recommend the contractor use equipment with rubber tires in areas of high paleontological sensitivity. The contractor may transport removed sediment from footing excavations to other areas within the work area to thicken the alluvium to the 12-inch minimum for driving heavy equipment.
- The vault toilet would be constructed in an area of low sensitivity for paleontological resources.
- The contractor may not create a borrow area to generate sand, gravel, or alluvium for use in the work site.
- The contractor may not collect, move, vandalize, or disturb fossils.

- The park would conduct long-term paleontological monitoring to focus on addressing significant new exposures of bedrock in areas of high paleontological sensitivity as stream sediments shift and currently obscured bedrock surfaces are exposed.

Visitor Use and Experience. The following measures would be implemented:

- During construction, the site would be closed to motorized, non-motorized, and foot traffic.
- The public would be notified in advance of pending site closure as well as throughout the duration of the closure for construction.
- The boardwalk would be designed to maximize accessibility and provide multiple opportunities to see pupfish and learn about them. This could entail a variety of media including interpretive signage and online materials.

Cultural Resources. The following measures would be implemented:

- Sources of borrowed materials (e.g., dirt and rock) would be assessed for the potential to contain archeological materials and cleared for use in construction.
- If previously unknown archeological or other cultural resources are discovered during construction, the superintendent would be notified, and all work in the immediate vicinity (100 feet) of the discovery would be halted until the resources are assessed by an archeologist meeting NPS Professional Qualifications Standards or the Secretary of the Interior's Professional Qualifications Standards.
- In the unlikely event human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 and NPS Director's Order 28: *Cultural Resource Management* would be followed.
- The National Park Service would ensure that all contractors and subcontractors would be informed of the penalties for illegally collecting artifacts or intentionally damaging unknown archeological sites or other historic properties. Contractors and subcontractors would also be instructed on procedures to follow, should previously unknown archeological resources be uncovered during construction.

Soundscapes, Air Quality, Night Skies. The following measures would be implemented:

- Construction activity would only be permitted during daylight hours to minimize noise and dark sky impacts.
- To reduce noise and emissions, construction equipment would not be permitted to idle for more than 10 minutes while not in use based on 36 Code of Federal Regulations (CFR) 5.13 "Nuisances."
- Appropriate dust mitigation suppression controls, such as water spraying soils at the construction site and covering loaded trucks, would be implemented if needed.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

Alternatives that were considered but ultimately dismissed from further analysis were dismissed for one or more of the following reasons:

- The alternative presents technical or economic infeasibility, meaning it could not be implemented if selected or it would be unreasonably expensive.
- The alternative is unable to resolve the purpose and need for taking action, to a large degree.
- The alternative duplicates other, less environmentally damaging or less expensive alternatives.
- The alternative conflicts with an up-to-date and valid park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would be needed.
- The alternative would require a major change to a law, regulation, or policy.
- The alternative presents too great an environmental impact.
- The alternative addresses issues beyond the scope of the NEPA review.

These alternatives are described in Table 3.

Table 3. Alternatives Considered but Dismissed from Further Review

Alternatives or Elements Considered	Reason(s) for Dismissal
Close site to visitor access	The purpose of and need for the project include restoring accessible viewing, interpretive, and educational opportunities. Therefore, this alternative would clearly not meet the purpose and need. It would also be infeasible to enforce this closure, as there are no barriers to pedestrian access from multiple directions. Unauthorized visitor access to the creek in the absence of a boardwalk would cause resource damage in the form of social trails that result in compacted soils, which would limit vegetation growth and potentially adversely impact the pupfish.
Implement a shuttle to the site	The National Park Service considered the potential benefits of a shuttle system. These benefits would include a reduction in the infrastructure and car traffic in this area and more (e.g., visual, auditory, pollution / climate change benefits). However, the National Park Service determined the construction of supporting infrastructure would produce associated potential impacts in other areas of the park.
Construct alternate boardwalk alignments	The National Park Service considered a variety of boardwalk alignments within the approximate previous footprint of the boardwalk, which was already sited in an appropriate location and layout for viewing opportunities and resource protection. An out-and-back alignment without a loop was considered, but it would need to be wider to accommodate additional occurrences of visitors passing each other in opposite directions and, with all visitors confined to a smaller area, would diminish the immersive wilderness feel of the boardwalk. Therefore, a spine-and-loop combination similar to the previous design

Alternatives or Elements Considered	Reason(s) for Dismissal
	was chosen. An infinite number of alignment details could be constructed, but they are duplicative of the proposed alignment and some pose greater resource impacts.
Construct a larger-capacity parking lot	The parking lot capacity would be sized to be similar to the previous parking lot to limit the potential maximum number of people visiting the boardwalk. A significantly larger number of people visiting would reduce the quality of the visitor experience to the site, which has an immersive wilderness feel, and more people may potentially increase resource impacts. The National Park Service also did not want to create infrastructure expansion that would potentially increase the level of use of adjacent wilderness areas or impact wilderness character.
Use alternate boardwalk materials including composite decking, fiberglass-covered decking, or a concrete trail	Other materials considered either reduced the visitor experience by deviating from an expected NPS identity, such as stone and wood materials, or would have greater resource impacts. Fiberglass degrades in the hot desert environment and would shed fibers that are not biodegradable and cause skin irritation.
Exclude access road and instead include parking lot along main road; visitors would walk to Salt Creek viewing area	Exclusion of the 1.2-mile access road would not meet the purpose and need of the project, which includes ABA-accessible access to view the creek.
Pave road and parking lot	As described above, potential increased access to the site would degrade the wilderness-like visitor experience and potentially increase resource damage. Similarly, paving the road and parking lot adjacent to wilderness would alter the visitor experience. Vehicle traffic to the site is not heavy enough to require pavement.
Construct an overlook instead of a boardwalk	An overlook would not meet the purpose and need and would result in more adverse impacts to sensitive resources than a boardwalk. Pupfish are small and would not be visible for the most part from an overlook, and visitors would not be able to fully experience the setting, which is the only place in the park that is ABA-compliant when a boardwalk is in place. Without the boardwalk, some visitors would traverse the creekbanks anyway, resulting in soil compaction and social trails.
Install steps off the boardwalk at the upper portion of Salt Creek	Visitors leaving the boardwalk to hike to the headwaters is a known concern at the site. There is no formal trail from the boardwalk area, so facilitating walking off the boardwalk would increase resource damage and create social trails.
Install a solar roof on the vault toilet to supply power for ventilation fans and pressurized low-volume water for hand washing	The feasibility of this feature would be difficult because it would require incorporating a water supply tank or an on-site well with simple filtration and an automated chlorine bleach injector. It would also increase the operation and maintenance costs of the site.
Include a water tank for drinking water and hand washing	As described above, the feasibility of supplying water would be difficult and increase the operation and maintenance costs of the site.
Construct shade structures	Constructing shade structures would have visual impacts. Added infrastructure would affect the feel of being in wilderness.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing conditions or baseline conditions) and analyzes the potential environmental consequences (effects or impacts) that would occur as a result of implementing the alternatives.

METHODOLOGIES IN DETERMINING IMPACTS

The National Park Service based the impact analyses and conclusions on the review of existing literature; park studies; information provided by experts in the park, other NPS personnel, and other agencies; professional judgment; and public input.

NEPA reviews must take a “hard look” at impacts that alternatives under consideration would have on the human environment if implemented. This means considering how the condition of a resource would change, either negatively or positively, as a result of implementing each alternative under consideration. The analysis is to focus on significant issues or those retained for detailed analysis.

The CEQ regulations that implement NEPA require the assessment of three types of effects in the decision-making process for federal projects—direct, indirect, and cumulative (1508.1(g)(1-3)). Direct and indirect impacts are considered together.

- **Direct impacts/effects** are those effects that happen in the same place and at the same time as the federal action.
- **Indirect impacts/effects** are those that happen later in time or are farther removed from the area of the federal action.
- **Cumulative impacts/effects** are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. “Incremental” refers to change happening gradually, in a series of small amounts.

CUMULATIVE IMPACT SCENARIO

Cumulative impacts are determined for each impact topic/resource by combining the impacts of the alternative being analyzed with other past, present, and reasonably foreseeable actions that would also result in beneficial or adverse impacts. Cumulative impacts analysis examines the effects of an agency action when they are added to or interact with the effects of other actions in the project area or areas adjacent to the project area that impact the same environmental resources. Cumulative impacts are considered for each alternative.

The NPS interdisciplinary team considered past, present, and reasonably foreseeable future projects or plans at the park and the surrounding area to define a cumulative impact scenario.

Because the Salt Creek project area is remote and the creek has no outflow (it dissipates downstream of the site without flowing into another body of water), the proposed action has little potential to contribute incremental impacts when combined with other projects and plans. NPS staff did not identify any past, present, or reasonably foreseeable future plans that are relevant to the cumulative impact scenario. Relevant projects identified are limited to the recent past and near future closing and reopening of flood-damaged roads and campgrounds at the park.

Attractions, facilities, and roads closed due to flood damage include Scotty's Castle, Bonnie Clare Road, the northern entrance of West Side Road, Lower Wildrose Road, Upper Wildrose Road, Lower Westside Road, Saline Valley Road, Darwin Falls, Titus Canyon Road, Texas Springs Campground, Thorndike and Mahogany Flat Primitive Campgrounds.

The geographic area of analysis for cumulative impacts varies, as described under each affected resource below. These analysis areas do not extend beyond the park boundaries for any resource.

VEGETATION

Affected Environment

Salt Creek is a relatively wide riparian corridor that represented an example of desert vegetation associated with alkali sinks (Figure 11). Pickleweed or iodine bush (*Allenrolfea occidentalis*) was the dominant vegetation, and it plays a key role in stabilizing the streambank, dissipating the energy of flood flow, and providing cover for aquatic fauna including Salt Creek pupfish. No trees or willows (*Salix* spp.) occurred before or after the floods. Pickleweed is sensitive to soil compaction (NPS 2023d). Park staff has documented substantial pickleweed die-off in areas with high foot traffic on creekbanks near the boardwalk (Figure 11). The impacts extend a considerable distance from the compaction in the form of large barren or browning areas. Aquatic vegetation consists of heavy growths of wiregrass (*Juncus* sp.), hornwort (*Ceratophyllum demersum*), and multiple algae species (NPS 2023d).



FIGURE 11. HIGHLY IMPACTED AREA WITH SOCIAL TRAILING IN THE FOREGROUND AND NATURAL PICKLEWEED COVERAGE IN THE BACKGROUND PRIOR TO AUGUST 2022 AND AUGUST 2023 FLOODING

Other plant species recently documented along Salt Creek include four-wing saltbush (*Atriplex canescens*), salt grass (*Distichlis spicata*), alkali sacaton (*Sporobolus aeroides*), chairmaker's bulrush (*Schoenoplectus americanus*), cattail (*Typha* sp.), smartweed (Polygonaceae), desert holly (*Atriplex hymenelytra*), devil's spineflower (*Chorizanthe rigida*), desert sunflower (*Geraea canescens*), and creosote bush (*Larrea tridentata*) (NPS 2023b).

Vegetation trends in the project area include gradually increasing social trailing resulting in loss of vegetation cover (Figure 11), especially of pickleweed, which is essential to the functioning of the riparian system and providing habitat for the Salt Creek pupfish. This was primarily occurring due to visitors walking off the boardwalk, which was possible with the previous boardwalk structure. Plant cover along the creek was reduced drastically from the 2022 flood and again by the 2023 flood (Figure 12).



FIGURE 12. SPARSE VEGETATIVE COVER AFTER AUGUST 2023 FLOOD AT NORTHWEST END OF PROJECT AREA

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, no infrastructure would be rebuilt, and debris would not be removed. Without a boardwalk in place, walk-in visitors would continue to trample bank vegetation and compact soils, which limits vegetation growth. No potential construction impacts on vegetation would occur. Flood damaged infrastructure would remain in place, which would not have any detectable impacts on vegetation.

Cumulative Impacts. The cumulative impacts analysis area for plants is the Salt Creek drainage basin. No past, present, or reasonably foreseeable future actions are planned in this analysis area. Therefore, no incremental contribution to cumulative impacts on plants would result from taking no action.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, the boardwalk, road, parking lot, vault toilet, and associated infrastructure would be rebuilt in the floodplain, and debris would be removed as described in Chapter 2, “Debris Removal” (Figure 10). The boardwalk would reduce the potential for visitors to walk along the creek banks by providing easily accessible viewing opportunities. Furthermore, the proposed boardwalk would be

higher than the previous boardwalk, and thus could better deter visitors from walking on creekbanks.

Construction activities would have the potential to compact soils and displace and trample vegetation, especially pickleweed, which is especially susceptible to trampling, by walking and moving heavy equipment along the creek. This potential would be minimized with measures described in Chapter 2, “Stipulations and Best Management Practices” section. These include staging equipment and vehicles in designated parking areas, limiting the size of equipment and where equipment can traverse, and using wetland mats. The park may implement a revegetation plan, as described in Chapter 2, depending on how well vegetation naturally reestablishes, which would potentially accelerate the recovery of vegetation at Salt Creek.

After construction, the boardwalk would provide limited shade, which could affect plant species distribution, decreasing sun-loving species and increasing those that grow better with shading, over a small area.

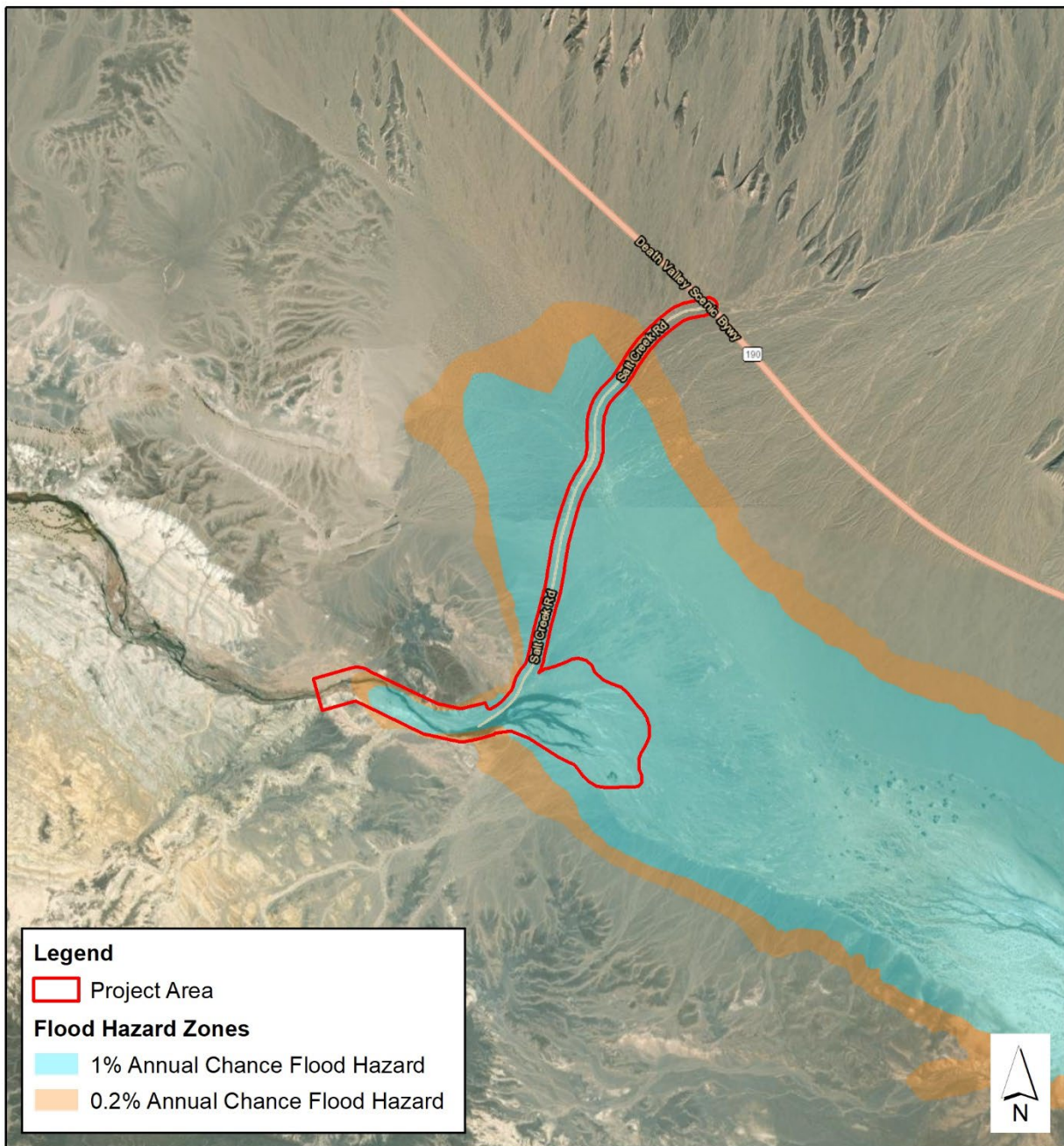
Cumulative Impacts. The cumulative impacts analysis area for plants is the Salt Creek drainage basin. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on plants would result from implementing the proposed action.

FLOODPLAINS AND WETLANDS

Affected Environment

Floodplains. The perennial flow of Salt Creek begins at McLean Springs. The creek flows within a broad floodplain with a meandering, braided channel. Salt Creek is a closed basin; it does not flow into another creek. It may flow for approximately 3.1 miles (5 km) in the winter, but it dries to approximately 0.9 miles (1.5 km) in summer (Moyle 2002). The past and proposed boardwalk, parking lot, and most of the access road are in the floodplain (Federal Emergency Management Agency [FEMA] Zone A; 2023) (Figure 13) (Appendix B). The floodplain geomorphology was altered considerably by the floods, resulting in different braiding patterns, eroding banks, and waterfalls in different locations. The creek moved closer to the former parking lot.

Wetlands. The creek channel was changed considerably by the 2022 flood and again by the 2023 flood. Wetlands were present in pockets along the creek where silty wetland soils and hydric vegetation were present (USFWS 2023). These wetlands were palustrine, emergent, persistent, and seasonally flooded, under the Cowardin et al. (1979) classification system (USFWS 2023). Plant species are described below under “Vegetation.”



Beatty Junction, CA
 USGS 7.5' Quadrangle
 Contour Interval = 40 feet
 Scale 1:24,000

0 1,300 2,600 5,200 Feet

FIGURE 13. FEMA NATIONAL FLOOD HAZARD LAYER FIRMETTE

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, no infrastructure would be rebuilt in the floodplain, and debris would not be removed. No minor interference in floodplain function from structures that would occur under the Proposed Action would occur, although some remaining debris from the destroyed boardwalk would remain. Without a boardwalk and related infrastructure in place, walk-in visitors could trample bank vegetation and compact soils. Remaining infrastructure in the floodplain would slightly alter flow patterns where it is not buried.

Soil compaction and loss of vegetation are known to lead to diminished floodplain function, which includes loss of flood energy dissipation, loss of shallow groundwater recharge, and loss of sediment and nutrient capture (NPS 2023d). Loss of these functions results in more rapid and energetic runoff responses and, coupled with the destabilizing impacts of the loss of vegetation, makes the area vulnerable to erosion.

No potential impacts on wetlands from construction equipment and activities would occur.

Cumulative Impacts. The cumulative impacts analysis area for floodplains and wetlands is the Salt Creek drainage basin. Salt Creek does not flow into another water body and is therefore a closed system hydrologically. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on floodplains or wetlands would result from taking no action.

The 2022 and 2023 floods scoured away these wetlands. The FHWA (2024) completed an aquatic resources delineation survey in December 2023 to document conditions after the second flooding event. Approximately 6 acres (4,768 linear feet) of potential Waters of the US, in the form of an intermittent stream, are currently present within the 16.20-acre project area, but no wetlands, according to US Army Corps of Engineers criteria and the wetland definition used for Section 404 of the Clean Water Act permitting (33 CFR 328.3), are currently present in the boardwalk area (FHWA 2024). The stream is riverine, intermittent, streambed, and seasonally flooded, under the Cowardin et al. (1979) classification (FHWA 2024; USFWS 2023) and is considered wetland by the National Park Service (NPS 2016b), which uses the Federal Geographic Data Committee (2013) definition. Wetland soils are likely to re-form in the project area over time.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, the boardwalk, road, parking lot, vault toilet, and associated infrastructure would be rebuilt in the floodplain, and debris would be removed. These structures' presence in the floodplain would result in minor interference in floodplain function by altering water flow slightly. However, park staff did not observe any changes to channel morphology near the previous boardwalk from small to moderate floods.

Building these features outside the floodplain to avoid interfering with floodplain function and potential flood damage would not address the purpose of and need for the project, which include providing accessible viewing, interpretive, and educational opportunities for seeing

and learning about the Salt Creek pupfish while protecting its habitat. Exposed debris from the previous boardwalks would be removed. Future smaller flood events would require maintenance, such as clearing debris and grading the road and parking lot. Although no design could withstand the 2022 and 2023 flood events, the proposed design elements would be more flood-resilient than the previous boardwalk due to the use of helical piles and increased height.

The proposed boardwalk and related infrastructure would reduce the potential for visitors to walk along the creekbanks by providing easily accessible viewing opportunities that reduce the incentive to get closer to the water. Thus, trampled bank vegetation, compacted soils, and wetland impacts would be less likely to occur than under the No-Action Alternative.

Construction activities would have the potential to impact wetlands, primarily from heavy equipment traversing the area. This potential would be minimized with measures described in Chapter 2, “Stipulations and Best Management Practices” section.

Cumulative Impacts. The cumulative impacts analysis area for floodplains and wetlands is the Salt Creek drainage basin. Salt Creek does not flow into another water body and is therefore a closed system hydrologically. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on floodplains or wetlands would result from implementing the proposed action.

WILDLIFE

Affected Environment

Wildlife habitats in the floodplain consist primarily of an alkali sink riparian area as described above in the “Vegetation,” “Floodplains,” and “Wetlands” sections. The quality of habitat and its ability to support wildlife have been severely diminished by the 2022 and 2023 floods (Figure 12). The number of species and diversity of wildlife using the Salt Creek area have likely been reduced due to the decrease in quantity and quality of habitat. Habitat and associated wildlife numbers are expected to improve over time.

Macroinvertebrates. A variety of macroinvertebrates (animals without a backbone that can be seen without magnification) occur in the creek including dragonflies and damselflies (Odonata), caddisflies (Trichoptera), water boatman (Hemiptera), diving beetle (Coleoptera), and snails (Gastropoda) (NPS 2023e). The species present are unique in that they can withstand high salinity.

Reptiles. No reptile surveys have been conducted in the project area. However, based on habitat, species present could include desert banded gecko (*Coleonyx variegatus variegatus*), zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), western brush lizard (*Urosaurus graciosus graciosus*), southern desert horned lizard (*Phrynosoma platyrhinos calidiarum*), desert glossy snake (*Arizona elegans eburnata*), Mojave shovel-nosed snake (*Chionactis occipitalis occipitalis*), and desert night snake (*Hypsiglena torquata*) (NPS 2021).

Amphibians. No amphibian surveys have been conducted in the project area. However, based on habitat, species present could include red-spotted toad (*Bufo punctatus*), western toad (*Bufo boreas*), Pacific tree frog (*Hyla regilla*), and bullfrog (*Rana catesbeiana*) (NPS 2021).

Birds. A variety of birds use Salt Creek, especially those more dependent on water. A recent late winter survey (NPS 2023b) documented several species of wading birds, shorebirds, and waterfowl including great blue heron (*Ardea herodias*), least sandpiper (*Calidris minutilla*), greater yellowlegs (*Tringa melanoleuca*), Wilson's snipe (*Gallinago delicata*), killdeer (*Charadrius vociferus*), and ruddy duck (*Oxyura jamaicensis*). Songbirds documented include Say's phoebe (*Sayornis saya*), violet-green swallow (*Tachycineta thalassina*), cliff swallow (*Petrochelidon pyrrhonota*), tree swallow (*Tachycineta bicolor*), white-throated swift (*Aeronautes saxatalis*), rock wren (*Salpinctes obsoletus*), American pipit (*Anthus rubescens*), and savannah sparrow (*Passerculus sandwichensis*). One raptor and one corvid were documented—prairie falcon (*Falco mexicanus*) and common raven (*Corvus corax*).

Mammals. Medium-sized carnivores that use the Salt Creek area likely include coyote (*Canis latrans*), desert kit fox (*Vulpes macrotis arsipus*), and ringtail (*Bassariscus astutus*) (NPS 2021). Small mammals likely include western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatis*), and desert woodrat (*Neotoma lepida*) (NPS 2021). Several bat species occur in Death Valley (NPS 2021), and those that roost in lower elevations could forage on insects at the creek.

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, no infrastructure would be rebuilt, and debris would not be removed. Without a boardwalk in place, walk-in visitors could adversely affect wetlands and vegetation as described above in the wetlands impacts discussion. Those same impacts would reduce the quantity and quality of riparian wildlife habitat in the floodplain, potentially reducing the numbers of some of the wildlife species described above by reducing available food and cover. No construction impacts would occur. Leaving flood-damaged infrastructure in place is unlikely to have any detectable impacts on wildlife.

Cumulative Impacts. The cumulative impacts analysis area for wildlife is the entire park for birds and large mammals and the Salt Creek drainage basin for macroinvertebrates, reptiles, amphibians, and small- and medium-sized mammals. Salt Creek does not flow into another water body and is therefore a closed system hydrologically. There are no past, present, or reasonably foreseeable future actions in the Salt Creek analysis area and no relevant actions in the park. Therefore, no incremental contribution to cumulative impacts on wildlife would result from taking no action.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, the boardwalk, road, parking lot, vault toilet, and associated infrastructure would be rebuilt in the floodplain, and debris would be removed. The proposed boardwalk would reduce the potential for visitors to walk along the creekbanks by providing easily accessible viewing opportunities. Thus, loss of

wildlife habitat from vegetation trampling and soil compaction would be less than under the No-Action Alternative. Vegetation regrowth may be enhanced with implementation of revegetation efforts, as described in the “Revegetation” section in Chapter 2.

Direct disturbance of wildlife from visitors walking along the creek would also be reduced. Although some effects on wildlife from human presence on the boardwalk are expected, including more people than under the No-Action Alternative, substantial long-term increases over visitation on the previous boardwalk are not expected because parking capacity would not be increased. The proposed boardwalk would be higher than the previous boardwalk and thus could better deter visitors from leaving the boardwalk than the previous version.

Construction activities would have the potential to affect wildlife habitat and would be minimized in the manner described above in “Vegetation.” Construction activities would temporarily displace wildlife from the project area from disturbance associated with the presence of workers, equipment, and noise. The potential to disturb breeding birds and their nests would be minimized by avoiding as much construction as possible during the breeding season. Any work conducted during the breeding season would be preceded by a survey for active bird nests as described in Chapter 2, “Stipulations and Mitigations.” Disturbance of any active bird nests found would be minimized with the establishment of a construction buffer zone. Most vegetation has been scoured from the site by the floods. The minimal vegetation present would be avoided to the extent possible, as described in Chapter 2, “Stipulations and Mitigations.” Any unavoidable construction impacts would slightly decrease available wildlife habitat until it recovers.

Cumulative Impacts. The cumulative impacts analysis area for wildlife is the entire park for birds and large mammals and the Salt Creek drainage basin for macroinvertebrates, reptiles, amphibians, and small- and medium-sized mammals. Salt Creek does not flow into another water body and is therefore a closed system hydrologically. There are no past, present, or reasonably foreseeable future actions in the Salt Creek analysis area and no relevant actions in the park. Therefore, no incremental contribution to cumulative impacts on wildlife would result from implementing the proposed action.

SPECIES OF SPECIAL CONCERN—SALT CREEK PUPFISH

Affected Environment

The Salt Creek pupfish is a small (less than 3 inches) killifish (Cyprinodontidae) that only occurs in Salt Creek in Death Valley. This subspecies of pupfish is listed as “high concern” by the State of California (Moyle et al. 2015).

Salt Creek pupfish habitat at Salt Creek is that of a meandering, mud-bottomed, braided, saline (salty) stream. Before flooding, the creek was deepest near the headwaters and shallowest in the lower drainage, where the water only flows seasonally, and it includes pools, runs, and marshes (Sada and Deacon 1994, 1995; Dzul et al. 2012). Salt grass, pickleweed, and saltbrush bordered the creek. Heavy growths of wiregrass, hornwort, and algae provide pupfish with in-stream cover. Since flooding, the stream is more channelized, and vegetation cover is substantially reduced.

The water salinity typically ranges from 10 to 20 parts per thousand (ppt), but it can exceed 40 ppt, which is more than typical seawater. The water temperature varies seasonally, daily, and spatially. The headwaters range from 43° Fahrenheit (F) (6° Celsius [C]) in winter to 86°F (30°C) in summer, and the lower portions can exceed 104°F (40°C) in summer (Moyle et al. 2015).

The population size historically reaches approximately 1 million fish (Sada and Deacon 1994) in spring and early summer and then drops to tens of thousands in late winter (Sada and Deacon 1994). Salt Creek pupfish live one to two years and mature in two to three months. Pupfish are most plentiful in deeper water with taller vegetation and overhanging banks (Myers 1996). They have two primary spawning periods in spring and late summer. Pupfish move downstream into ephemeral habitats in spring, where growth is faster, and reproduction is elevated (Jones et al. 2016; Jones 2017). Significant die-offs are associated with hypoxic (lack of oxygen) conditions and habitat loss due to increasing temperatures. Significant die-offs are assumed to occur with flash floods as well. Fish in the lower reaches get stranded in isolated pools that dry up. Salt Creek pupfish feed primarily on algae and filamentous cyanobacteria, but they may also consume snails, aquatic insects, and small crustaceans (NPS 2022).

After the floods of 2022 and 2023, vegetation in and adjacent to the creek has been reduced, and the braiding pattern of the creek has been altered. NPS personnel have observed pupfish that appear more active than average, which is consistent with increased spawning behavior of other closely related pupfishes following floods (Chaudoin 2014).

Effects of Alternative A: No Action

Direct Impacts. Under the No-Action Alternative, no infrastructure would be rebuilt, and debris would not be removed. Without a boardwalk in place, walk-in visitors could compact soil, trample vegetation, and create social trails, all of which contribute to erosion, as described above for vegetation, floodplains and wetlands, and wildlife. The wood from the damaged boardwalk was likely treated with copper naphthenate. The acute risk posed by the leach rate of this preservative can exceed the level of concern for saltwater fish (EPA 2017). Leaving debris in place thus poses some risk to Salt Creek pupfish. However, the majority of the debris is downstream from the majority of the pupfish population.

Unnatural erosion results in excessive sediment loads in Salt Creek during runoff events, which adversely impacts the habitat of the Salt Creek pupfish. Excessive erosion reduces vegetation that holds the banks together, which can remove the deeper undercut banks and reduce the amount of vegetation in and adjacent to the creek, which provides both cover and food. The loss of vegetative cover and floodplain function makes the streamflow more vulnerable to solar heating, which lowers dissolved oxygen levels and further degrades the aquatic habitat.

Under the No-Action Alternative, no potential construction impacts, as described under the Proposed Action Alternative below, would occur.

Cumulative Impacts. The cumulative impacts analysis area for Salt Creek pupfish is the Salt Creek drainage basin. Salt Creek does not flow into another water body and is therefore a

closed system hydrologically. The Salt Creek pupfish does not occur anywhere else on earth. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on Salt Creek pupfish would result from taking no action.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, the boardwalk, road, parking lot, vault toilet, and associated infrastructure would be rebuilt, and debris would be removed. The proposed boardwalk would reduce the potential for visitors to walk along the creekbanks by providing easily accessible viewing opportunities. Thus, the effects of vegetation trampling and soil compaction from visitors walking on creekbanks would be reduced, as described in “Vegetation.” The potential impacts on pupfish described above would be less likely to occur under the No-Action Alternative. Habitat that was impacted by the 2022 and 2023 floods would likely recover faster in the vicinity of the boardwalk than it would under the No-Action Alternative.

Construction activities would have the potential to affect Salt Creek pupfish habitat and would be minimized in the manner described in “Vegetation.” Fuel spills into the creek from construction equipment are a concern. This potential would be minimized with the best management practices and stipulations described in Chapter 2. These include regularly monitoring and checking construction equipment to identify and repair any leaks. A spill kit would be always kept on-site and on each piece of equipment that could potentially leak fuel. Fuel would be stored in fuel trucks or aboveground storage tanks, and all fuel storage would be in staging areas. NPS-approved containment best management practices would be established in case of a spill.

Construction timing in fall, winter, and early spring would avoid most of the pupfish’s spawning, but a delayed completion date could overlap with the early spawning period. If this were to happen, the measures designed for protecting habitat would reduce potential impacts. NPS biologists would direct other measures as necessary and monitor construction. The park would have discretion to delay completion of construction to fall if necessary.

Cumulative Impacts. The cumulative impacts analysis area for Salt Creek pupfish is the Salt Creek drainage basin. Salt Creek does not flow into another water body and is therefore a closed system hydrologically. The Salt Creek pupfish does not occur anywhere else on earth. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on Salt Creek pupfish would result from implementing the proposed action.

PALEONTOLOGICAL RESOURCES

Affected Environment

The park is part of the Basin and Range Province. The oldest rocks in the park were formed approximately 1.8 billion years ago. The rocks from the Funeral and Panamint Mountains are much younger, approximately 500 million years in age (NPS 2002). The park contains a rich

and diverse but fragile and irreplaceable paleontological record that is nearly as extensive and complicated as the park's geological record.

Paleontological resources, or fossils, along with the sedimentary units in which they are preserved provide evidence of the history of life in the North American western interior. Soil development in the park has been greatly slowed, which has resulted in exceptionally well-exposed geological features that support an equally exceptional exposure of fossil remains. These fossil remains have value as (1) stratigraphic indicators for correlating deposits containing them and for determining relative geologic age, (2) records of past life forms showing the course of evolutionary trends of plants and animals, and (3) evidence of changing paleoenvironments (NPS 2002).

This track site north of the project area has been known since at least 1940, while the portion within the project area was first intensively studied in 1999. Portions of the site contain paleontologically sensitive geologic units, which are classified as Class 4 – High on the Bureau of Land Management's (BLM) Potential Fossil Yield Classification (PFYC) system (BLM 2016). Based on the paleontological surveys conducted in 2022 and 2023 (Aase 2023; Bonde 2024), the project area consists of the Furnace Creek Formation that includes various in-situ (in their original place) specimens. In the project area, paleontological sensitivity is highest where fossiliferous sandstone bedrock is exposed and lowest where bedrock is not present or buried deeper than could be disturbed by project activities.

The track-bearing rock is microbialite, a type of limestone deposited as water chemistry is changed by respiration of a microbial mat. Salt Creek is salty, and the salt precludes snails, which eat microbial mats. In the absence of snails, microbial mats establish on the creek bottom, binding the sediment and inducing limestone precipitation. Sediment from minor flood events is incorporated into the microbialite without interrupting its growth. Microbialite growth is interrupted when sand and alluvium are deposited during major flood events. The uncemented flood deposits create a separation between the underlying microbialite layer and the one that establishes on top of it.

If a large animal walks across a semi-firm microbialite, depressions are formed and remain as the microbialite hardens into rock. Fossil tracks occur on multiple layers of microbialite to an unknown depth and lateral extent. The density of tracks on any given layer is variable.

The 2022 and 2023 floods altered the location of sediments in the project area via changes in the braiding pattern of the channels. Some bedrock that may have been exposed may now be buried and vice versa. It is not known whether the quantity of exposed fossiliferous sandstone bedrock has increased or decreased.

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, the Proposed Action would not be implemented. Debris from the old boardwalk would remain in the wash, which would have no effect on paleontological resources. The road and parking area would not be restored. The boardwalk would not be replaced. There would be no infrastructure deterring visitors from walking along the creek, including areas of high paleontological sensitivity, which could result in damage to paleontological resources from collection or incidental

trampling. No potential impacts from construction activities would occur. Flood-damaged infrastructure remaining in place would be unlikely to affect bedrock and thus paleontological resources.

Cumulative Impacts. The cumulative impacts analysis area for paleontological resources is the Salt Creek drainage basin. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on paleontological resources would result from taking no action.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, large, visible pieces of infrastructure debris would be removed from the creek channel and floodplain downstream from the site. Most buried debris would be left in place to minimize resource damage associated with extracting it. Larger, heavier debris would be removed with the least-damaging methods and equipment practicable, including the use of helicopters (Appendix A). Debris is likely mixed with alluvium and possible fossil-bearing material. Any fossil specimens discovered would be out of context. Due to the low potential for paleontological resources to occur in the wash bottom and the mingling of alluvium and possible fossil-bearing material, the potential for disturbance of individual paleontological resources by debris removal would be low.

Under the Proposed Action Alternative, the road to the parking lot would be restored to its pre-flood condition. The 1.2-mile road would follow the previous alignment, with minor adjustments at the end to connect to a new parking lot location. Most of the restoration work would be done by a grader. The potential for paleontological resources adjacent to the road is low due to the depth of sediment covering potential fossil-bearing geological units and given that the road would retain its original alignment and not involve excavation into sensitive bedrock. Therefore, the potential for disturbance of individual paleontological resources would be low.

The parking lot would be reconstructed to the same capacity as the pre-flood parking lot, though in a different location farther east due to the migration of the creek channel. Because of the high potential fossil yield adjacent to the parking lot and the fact the parking lot would be constructed with heavy equipment, the potential for disturbance of individual paleontological resources would be relatively high but minimized, to the extent practicable, with stipulations described in Chapter 2.

An ABA-compliant double vault toilet would be installed adjacent to the sidewalk. Due to the high potential fossil yield adjacent to the vault toilet and the fact that the hole for the vault would be excavated with heavy equipment, the potential for disturbance of individual paleontological resources would be relatively high. This potential would be reduced to the extent practicable, with siting criteria and the stipulations described in Chapter 2.

The boardwalk would be reconstructed in a footprint similar to the original boardwalk location. The boardwalk would be anchored primarily with steel helical piles drilled into the substrate. Due to the high potential fossil yield in the bedrock where the boardwalk would be installed and the nature of the construction, the potential for disturbance of paleontological

resources would be relatively high. This potential would be reduced, to the extent practicable, with the siting criteria and stipulations described in Chapter 2, which includes minimizing the length of boardwalk in high paleontological sensitivity areas, use of a paleontological monitor and pre-construction resource surveys to site individual piers, and avoidance of known fossils. Once construction is complete, there likely would be a surge in the number of visitors before visitation returns to pre-flood levels. The presence and increased height of the boardwalk, compared to the pre-flood boardwalk and to no boardwalk, would reduce the likelihood of visitors leaving the boardwalk and walking along the creek, where they may disturb or damage paleontological resources.

Removal of flood-damaged infrastructure would be consistent with all stipulations and mitigations as described in Chapter 2 and therefore would be unlikely to adversely impact paleontological resources.

Cumulative Impacts. The cumulative impacts analysis area for paleontological resources is the Salt Creek drainage basin. There are no past, present, or reasonably foreseeable future actions in this analysis area. Therefore, no incremental contribution to cumulative impacts on paleontological resources would result from implementing the proposed action.

VISITOR USE AND EXPERIENCE

Affected Environment

The mission of the National Park Service is to “...preserve unimpaired natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations” (NPS 2006). A fundamental purpose of the national park system is to conserve park resources and values. The park’s mission is to protect significant desert features including those that provide world-class scenic, scientific, and educational opportunities (NPS 2002).

The park’s management objective for visitor use is to “provide the visitor to Death Valley National Park with the opportunity to discover, explore, and understand the natural and cultural resources of the Park” (NPS 2002).

The Salt Creek boardwalk is an important facility that helps the park fulfill that mission. The site is a key location for children on curriculum-based field trips. The boardwalk was the only ABA-compliant accessible location in the park that enables visitors with physical disabilities, such as those requiring the use of a wheelchair, to closely experience a park resource.

Visitor use is most concentrated along major roadways in the park. Visitation to the park peaked in 2019 with 1.7 million visitors and then declined during the pandemic to less than 1 million, but it has steadily increased since. From 2014 through 2019, visitation surpassed the previous year, setting new record visitation levels each year (NPS 2023a). There are no visitation data specific to Salt Creek; however, anecdotal information indicates most visitation is from late October to early May.

The Salt Creek boardwalk was the foremost interpretive site in the park, providing visitors the opportunity to view the Salt Creek pupfish while also protecting the fish and its fragile habitat. Salt Creek is characterized as an easily accessible area that still feels like wilderness. It is an area frequently used for educational programs including school groups. Although visitors are encouraged to stay on the boardwalk, there is ample evidence (footprints and social trails) that indicates visitors leave the boardwalk to get a better view of the pupfish.

State Route 190 was temporarily closed after floods in 2022 and 2023 and has since reopened. The Salt Creek access road is closed to public vehicles. Visitors can park on the side of State Route 190 at the entrance to the Salt Creek access road and then walk in to see Salt Creek. The loss of the boardwalk and movement of the creek mean visitors cannot look down on the pupfish in the creek as intended. The lack of boardwalk leaves the sensitive creek resources with no infrastructure to deter walk-in visitors from walking along the creek.

The boardwalk was located 1.2 miles southwest of State Route 190. Prior to the floods, it was accessible via an improved dirt road that could be traversed by low-clearance, two-wheel drive vehicles. It was generally undeveloped, with an unpaved parking area with room for buses and recreational vehicles as well as a single-stall vault toilet (NPS no date [n.d.]). Originally installed in 1976, replaced around 1997, and resurfaced in 2011, the boardwalk consisted of an ABA-accessible, meandering, lollipop-shaped loop exploring the lower section of Salt Creek. It had several viewing platforms, benches, and a short bridge spanning a small pond on the western end. The boardwalk itself was approximately 3,630 feet long by 6 feet wide, for a total footage of approximately 21,780 square feet, plus viewing platforms. The wooden boardwalk was pier-and-beam style due to wet topography. Prior to the flood events, the boardwalk sat low enough to the ground that sand would blow onto the surface; the presence of sand and occasional broken boards made wheelchair use or use by those with mobility issues difficult on the boardwalk.

The boardwalk was destroyed in the major flood event experienced in the park in August 2022. The thousand-year flood event changed the flow of the water for the area and destroyed 95% of the boardwalk features. The flood swept away the boardwalk, leaving pieces of it scattered in the wilderness downstream, and changed the overall topography of the area. The flood also damaged the parking lot, access road, vault toilet, and interpretive waysides. The subsequent flood of similar size in summer 2023 further damaged these areas.

The goal of every NPS unit is to protect and maintain the visual quality of the landscape and the built environment. State Route 190, which provides vehicular access to the Salt Creek boardwalk, is a national scenic byway known as the Death Valley Scenic Byway. It was officially designated in 1968 (California Department of Transportation [Caltrans] 2023). The viewshed on the access road from State Route 190 is that of a wide-open desert with a broad, sweeping view. As you enter the Salt Creek drainage, this view gives way to a low range of hills on either side of the drainage that limits visibility beyond due to the hills' height. Peak-month average daily traffic on State Route 190 in the vicinity of the Salt Creek boardwalk is 1,250 vehicles, which is significantly lower than what is seen on other state highways (Caltrans 2021).

Vehicle noise is generally not an issue in the park despite the fact there are many heavily used roads. Due to the park's size, most areas are well away from traffic and its noise. The park is in the vicinity of several military facilities: Fort Irwin (US Army), Naval Air Weapons Station China Lake (US Navy), Edwards Air Force Base (US Air Force), and Nellis Air Force Base (US Air Force). Military aircraft from these facilities commonly use the park's airspace. Military aviation activities are the primary source of noise in the park. Portions of the park, including Salt Creek, are in a joint service R-2508 special use airspace complex designated as a military operations area, which is used on a daily basis (NPS 2002).

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, vehicular access to the project area would remain closed. The parking area and vault toilet would not be rebuilt. This would limit access to only visitors capable of making the 1.2-mile walk from the highway to the creek, precluding most visitors from visiting the site. Visitors would not be able to view the Salt Creek pupfish in the creek from an elevated position as intended. No interpretive displays would be present. As described above, this site was the only ABA-accessible facility in the park that enabled visitors to be immersed in the resource in a near-wilderness environment. In addition, the site had been an important educational and interpretive facility for both adults and school children, who visited on field trips. The lack of these types of experiences would be important long-term losses for park visitors.

Additionally, there would be no infrastructure deterring visitors from walking anywhere they like. In order to see the pupfish or the creek up close, visitors would have to walk along the creek, which would cause damage to sensitive resources as described throughout this chapter. Under the No-Action Alternative, any visitors who choose to visit the Salt Creek area would likely see the damaged remains of the previous boardwalk and related infrastructure in the creek channel. Other than at historic sites, experiencing recently damaged, unusable infrastructure in a national park would be an unexpected and likely unwelcome visitor experience and visually inconsistent with the surrounding landscape.

Cumulative Impacts. The cumulative impacts analysis area for visitor use and experience is the entire park. The 2022 and 2023 floods damaged several roads and other facilities in the park, which the park closed or limited access to. If the proposed project is not implemented, visitors could be displaced to other open attractions, combining with the displacement from other flood-closed attractions to increase visitation at other locations, including in wilderness. Lack of access to this park attraction would also combine with other closed attractions to adversely affect the visitor experience from loss of opportunities to recreate and learn from interpretive features.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Implementation of the Proposed Action Alternative would result in restoration of the access road, renovation of the parking lot, replacement of the single vault toilet with a double vault toilet, removal of the boardwalk debris, and replacement of the boardwalk. Travelers on State Route 190 would see construction activities on the access road, which would predominantly consist of a grader and construction vehicles

accessing the site. This would be inconsistent with the viewshed described above as well as the criteria for national scenic byway status, which seek to minimize “visual intrusions” (Caltrans 2008). These visual intrusions from construction would be a short-term, minor impact to visitor experience because they would slightly alter the viewshed of State Route 190.

Helicopter flights related to removing the boardwalk debris would be visible and audible. However, the project area sustains frequent noise from military overflights. Helicopter noise levels would not exceed existing overflight noise levels. Construction at the creek would not be visible or audible from the highway or any other frequently visited location in the park.

During construction, the site would be closed to all visitation. Removal of the previous boardwalk debris and construction related to the road, parking area, toilet, and boardwalk would take place over a five-to-six-month period during the late fall, winter, and early spring. This time period is the peak visitation period for the park, and visitors would be unable to experience the Salt Creek site. Given the site is currently closed to vehicular traffic, visitation to the site is low, so these impacts would be short-term and minor.

While this impact on visitor use would be adverse, it would be short-term. There are other locations in the park to visit, including other pupfish resource areas. In addition, the nearby Ash Meadows National Wildlife Refuge has an accessible boardwalk where pupfish can be viewed. The park would inform visitors in advance of construction activities via multiple methods including the park’s website, signs, and visitor center. Park staff would be available to address visitor questions during construction and provide regular updates to the public about project progress and any associated delays.

Upon completion of the construction, Salt Creek would be open to the public. Parking lot and boardwalk accessibility would be improved over that of the previous facilities. The boardwalk itself would be higher than the previous boardwalk, so it would not collect blowing sand. Improvements would be made to the configuration of the parking lot to make school bus access easier and safer for student drop-off and pick-up; however, parking capacity would remain unchanged. The new parking lot design would decrease the potential for vehicle and pedestrian conflicts, particularly with school groups. The new parking lot configuration would make it easier to move directly to the boardwalk and improve circulation patterns at the site. This would serve to protect the streambed since visitors can access the boardwalk right away. The visible flood-damaged infrastructure currently in place would not be present to detract from the visitor experience.

New tactile elements would be provided on the waysides, which would help improve accessibility for people with limited vision. The boardwalk would be constructed to ABA standards. The increased width would better allow passage and decrease congestion. Larger bump-outs would be included as part of the spurs, which would enhance visitor experience by providing better opportunities to view the pupfish as well as improving pedestrian traffic flow on the boardwalk.

Cumulative Impacts. The cumulative impacts analysis area for visitor use and experience is the entire park. The 2022 and 2023 floods damaged several roads and other facilities in the park, which the park closed or limited access to. Implementing the proposed action, and thus

making a closed visitor attraction available again, would lessen the cumulative impacts of inaccessible visitor attractions in the park.

WILDERNESS

Affected Environment

The Wilderness Act (Public Law [PL] 88-577) defines wilderness as “an area where the earth and its community of life are untrammelled by man, where man himself is a visitor and does not remain.” The intent of the act is to “secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” The management of wilderness areas within the national park system is guided by *NPS Management Policies 2006*, which is supplemented by Directors Order 41: *Wilderness Stewardship*.

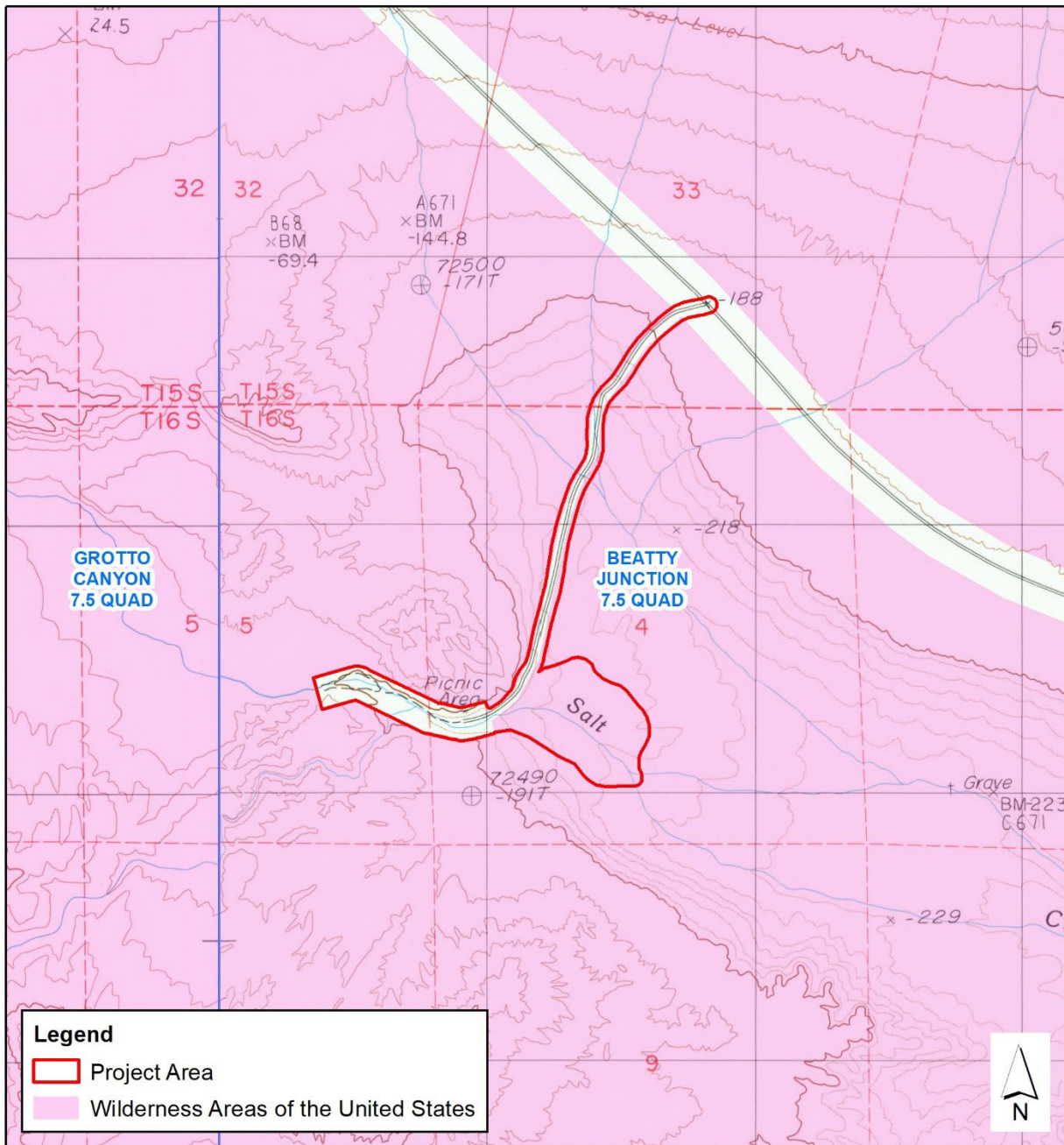
The passage of the California Desert Protection Act by congressional action on October 31, 1994, resulted in nearly 95% of the park being designated as wilderness (NPS 2002). The access road, parking lot, toilet, and boardwalk, are outside but adjacent to designated wilderness. The wilderness boundary is generally 50 to 300 feet from the centerline of the park roads. The creek downstream of the boardwalk and parking lot are in wilderness (Figure 14). The park manages over 3,190,451 acres of designated wilderness guided by the *Death Valley National Park Wilderness and Backcountry Stewardship Plan* (NPS 2013). This plan provides a framework for management actions to preserve and improve wilderness character, while also providing unique visitor opportunities. Among the park’s management objectives for wilderness values are:

- Manage and protect wilderness values and resources so as to ensure public understanding and appreciation of the vast wilderness assets of the park.
- Strive to restore disturbed areas in wilderness.

The Wilderness Act requires the National Park Service to preserve wilderness character. To facilitate monitoring and evaluation of management actions, the National Park Service has defined five tangible qualities that contribute to wilderness character:

- **Natural**—Ecological systems are substantially free from the effects of modern civilization.
- **Solitude or a primitive and unconfined type of recreation**—Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.
- **Undeveloped**—Wilderness retains its primeval character and influence and is essentially without permanent improvement or modern human occupation.
- **Untrammelled**—Wilderness is essentially unhindered and free from the actions of modern human control or manipulation.
- **Other features**—For this park, other features are the ethnographic value to the Timbisha Shoshone and accommodating ongoing traditional cultural uses by the

Timbisha Shoshone within their Natural and Cultural Preservation Area and other special use areas (NPS 2013).



Beatty Junction, CA
USGS 7.5' Quadrangle
Contour Interval = 40 feet
Scale 1:24,000

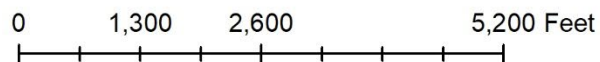


FIGURE 14. WILDERNESS AT THE SALT CREEK SITE

The 2022 flood left broken pieces of infrastructure, mostly boardwalk, up to a mile downstream in designated wilderness (Figure 10), negatively impacting the undeveloped quality of wilderness character.

Effects of Alternative A: No Action

Direct and Indirect Impacts. Under the No-Action Alternative, the National Park Service would not remove damaged infrastructure in the creek channel, including wilderness. If the damaged infrastructure is not removed, it would remain in the wilderness area and continue to impact wilderness. In addition, there would be no infrastructure deterring visitors from walking anywhere, including into the wilderness areas, which would result in the formation of social trails and potentially diminish the natural quality and opportunities for solitude or primitive and unconfined recreation of the wilderness.

Cumulative Impacts. The cumulative impacts analysis area for wilderness is the entire park. As described under “Visitor Use and Experience,” the 2022 and 2023 floods damaged several roads and other facilities in the park, which the park closed or limited access to. If the proposed project is not implemented, visitors could be displaced to other open attractions, combining with the displacement from other flood-closed attractions to increase visitation at other locations, including in wilderness.

Effects of Alternative B: Proposed Action

Direct and Indirect Impacts. Under the Proposed Action Alternative, large, visible pieces of infrastructure debris would be removed from the creek channel and floodplain both outside and in the wilderness, positively impacting the undeveloped quality. Most buried debris would be left in place to minimize resource damage associated with extracting it. Materials to be extracted include primarily wood, metal, and concrete. Smaller, lightweight debris would be removed by hand. Larger, heavier debris would be removed with the minimum amount of motorized equipment required, including the potential use of helicopters and consistent with the park’s MRA authorizing the activity in wilderness (Appendix A); use of motorized equipment and aircraft would have a negative effect on the undeveloped quality while in use.

Helicopters would facilitate debris removal without heavy equipment traversing the surface of the creek channel and floodplain in the wilderness. Helicopters would likely take off from the Furnace Creek Airport and would drop debris either at a construction staging area at the site or at the airport. These activities would be audible and visible from the wilderness, and thus have short-term impacts on the opportunities for solitude or primitive and unconfined recreation quality of wilderness for the duration of the activity, which may be two to three weeks. This quality would also be negatively impacted by noise from construction activities which could be heard in the wilderness, but the noise would be localized, short-term, and minimized through best management practices, such as the use of well-maintained and properly functioning equipment and vehicles.

Although the road, parking lot, vault toilet, and boardwalk would not be in wilderness, the construction would be visible from some areas of wilderness. At Salt Creek, the wilderness boundary is within 50 to 300 feet of the centerline of the road, parking lot, and boardwalk. The project area was a previously existing development, and the Proposed Action would

replace existing infrastructure. In addition, installing a double vault toilet would potentially reduce toilet paper and human waste in the wilderness. The new boardwalk would be designed at a greater height to discourage off-trail access into the wilderness, decreasing the potential for social trail creation. The combined effect of these facilities would be to limit or improve the natural quality and the opportunities for solitude or primitive and unconfined recreation.

Cumulative Impacts. The cumulative impacts analysis area for wilderness is the entire park. As described under “Visitor Use and Experience,” the 2022 and 2023 floods damaged several roads and other facilities in the park, which the park closed or limited access to. Implementing the proposed action, and thus making a closed visitor attraction available again, would lessen the cumulative impacts of visitor displacement to other locations in the park, potentially including wilderness.

CHAPTER 4: CONSULTATION AND COORDINATION

This section describes the public involvement and agency consultation during the preparation of the environmental assessment. The National Park Service places a high priority on public involvement in the NEPA process and on giving the public an opportunity to comment on the alternatives. Consultation and coordination with federal, state, and local agencies, as well as Tribes, were conducted to identify issues and concerns related to park and Tribal resources.

INTERNAL SCOPING AND PUBLIC INVOLVEMENT

Scoping is “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (1501.7). The scoping process is focused on determining the extent and nature of issues and alternatives that should be considered during a NEPA review. The scoping process includes both internal efforts within the National Park Service and external efforts with the public, as described below.

Internal Scoping

Internal scoping refers to the use of NPS staff to accomplish the outcomes discussed above. An interdisciplinary team that is familiar with the issues and affected resources is used to ensure expertise in all relevant topics.

The Federal Highway Administration (FHWA) is a cooperating agency, and they are developing the design for the project. The FHWA would oversee the construction of the project. The National Park Service and FHWA held several internal scoping meetings in 2022 and 2023. These included a site visit with the interdisciplinary team on January 9, 2023. The National Park Service and FHWA also held a design charrette on April 19 and 20, 2023 for the purpose of collaboratively recommending a schematic alignment of the boardwalk. The National Park Service held a pre-NEPA project planning workshop on August 2 and 3, 2023 with an interdisciplinary team. The team refined the project’s scope, purpose and need, planning issues, and preliminary alternatives.

Civic Engagement

The National Park Service held civic engagement for the proposed project from February 21 to March 25, 2023. The National Park Service encouraged public input on the proposed action, potential alternatives, environmental issues that should be addressed, and considerations regarding visitor experience. The National Park Service issued a press release and posted a fact sheet on the project using the Planning, Environment, and Public Comment (PEPC) website. No public meetings were held during the civic engagement period.

A total of 42 correspondences were received during the comment period. Correspondence was received from 18 different states with 43% submitted by individuals from California.

SECTION 7 OF THE ENDANGERED SPECIES ACT

The National Park Service has determined that the proposed action would have no effect on species listed as threatened or endangered under the US Endangered Species Act of 1973. There is no suitable habitat present in or near Salt Creek, as described in Chapter 1, Table 2, for any species listed under the US Endangered Species Act, before or after the floods. No consultation is required for no effect determinations.

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

The park is currently conducting consultation with the Timbisha Shoshone and the California State Historic Preservation Officer (SHPO). The park sent a letter on March 6, 2023, that initiated Section 106 consultation per 36 CFR 800.3, described the proposed undertaking and preliminary area of potential effect, and invited the Tribe to attend a consultation meeting April 18, 2023, at Salt Creek. The Tribe was unable to attend. Consultation with the Tribe continued through design development. The Tribe shared that Salt Creek was a place that was visited and tended to historically, and they expressed interest in protecting the fish, water, and vegetation in the area. However, no specific historic properties of traditional religious and cultural significance were identified in the project area. The project area is also not in the portions of the park that are cooperatively managed with the Tribe.

The park sent a letter to California SHPO on March 6, 2023, that initiated Section 106 consultation per 36 CFR 800.3. The SHPO responded via letter on April 27, 2023, agreeing that the project constitutes an undertaking with potential to affect historic properties.

The park sent the Tribes and SHPO updated Section 106 consultation letters on March 21, 2024, describing the undertaking, identifying the area of potential effects to historic properties, summarizing consultation efforts with Tribes and the public, identifying historic properties, and assessing the potential for effects to historic properties. Additional print copies of the letter and enclosures were hand-delivered to the Timbisha Shoshone on April 1, 2024. The National Park Service determined that no historic properties had been identified in the area of potential effect. Pending responses from SHPO and the Tribe, the National Park Service will continue consultation to keep consulting parties updated on progress of the undertaking and to address any comments or concerns.

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CHAPTER 6: LIST OF PREPARERS

Table 4. List of Preparers

Name	Title
National Park Service, Denver Service Center	
Erin Chipps	Natural Resource Specialist
Madeline Ruffner	Section Chief
Alex Schwartz	Project Manager
Wesley Wills	Cultural Resource Specialist
National Park Service, Death Valley National Park	
Nichole Andler	Visitor Use Specialist
Ben Dunphey	Environmental Compliance Manager
Richard Frieze	Hydrologist
Jenette Jurado	Park Ranger
Amanda Landon	Archeologist / Section 106 Coordinator
Kali Richardson	NEPA Specialist
Kevin Wilson	Aquatic Ecologist
Abby Wines	Public Involvement Officer
Matthew Yarbrough	Outdoor Recreation Planer
National Park Service, Pacific West Regional Office	
Danette Woo Nolan	Regional Environmental Coordinator
Nicholas Mitrovich	Environmental Protection Specialist
Sarah Killinger	Regional Section 106 Coordinator
Rachel Wolstenholme	Wildlife Biologist
Erik Frenzel	Regional Wilderness Coordinator
National Park Service, Geologic Resources Division	
Vincent Santucci	Paleontology Program Coordinator
Justin Tweet	Paleontologist
University of Nevada, Las Vegas and Tule Springs Fossil Beds National Monument	
Aubrey Bonde	Paleontologist

Name	Title
Federal Highway Administration, Central Federal Lands	
Nate Allen	Project Manager
Jeffrey Felling	Civil Engineer
Aarcher Consulting	
Craig Miller	Project Manager
David McIntyre	NEPA Specialist
Carrin Rich	Editor
PanGIS, Inc.	
Douglas Mengers, RPA	Cultural Resource Specialist
William Eckhardt	Cultural Resource Specialist
Steve Harvey, RPA	Cultural Resource Specialist

ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Act of 1968, as amended
BLM	Bureau of Land Management
Caltrans	California Department of Transportation
C	Celsius
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
e.g.	for example
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
MRA	minimum requirements analysis
n.d.	no date
NEPA	National Environmental Policy Act of 1969, as amended
NHPA	National Historic Preservation Act of 1966, as amended
NPS	National Park Service
NRHP	National Register of Historic Places
PFYC	Potential fossil yield classification
PL	Public Law
ppt	parts per thousand
PRPA	Paleontological Resources Preservation Act
SHPO	California State Historic Preservation Officer
SPCC	spill prevention, control, and countermeasure
US	United States
USC	United States Code
USFWS	US Fish and Wildlife Service

APPENDICES

A: Minimum Requirements Analysis

B: Floodplain Statement of Findings

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APPENDIX A: MINIMUM REQUIREMENTS ANALYSIS

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Death Valley National Park Wilderness Minimum Requirements Analysis

A Minimum Requirement Analysis (MRA) is required for all proposed actions, projects, proposed special uses, scientific activities, equipment use, etc. in Congressionally Designated Wilderness or Potential Wilderness in Death Valley National Park that either **1)** propose a Wilderness Act of 1964 Section 4(c) prohibited use (Appendix 1) or **2)** have an effect on wilderness character (Appendix 2) per NPS Management Policy 6.3.5 and Director's Order 41 (Appendix 1).

Can the entirety of the proposal be performed through actions outside of Wilderness?

If the answer is YES, STOP. Conduct the actions outside of Wilderness and do not complete this form.

A. PROPOSAL INFORMATION

Proposal Title: Wilderness Debris Removal at Salt Creek

Name and Affiliation of Proponent: Federal Highway Administration

NPS Proponent Contact Information: Ben Dunphey

Submission Date: 2024-02-14

Location of Proposed Action(s): Salt Creek

Purpose and Underlying Need (*hover mouse for definition*): The purpose of this action is to restore wilderness character. The need for this action arose due to the record-breaking flooding that occurred in 2022 and 2023, scouring the Salt Creek Boardwalk area and depositing boardwalk debris into wilderness.

Description of Proposed Action(s):

The proposed action consists of field crews hiking into wilderness. Crews would use hand tools for the majority work, but in some cases, gas-powered chainsaws may be required. Crews would prepare debris to be sling-loaded out of wilderness with a helicopter. The helicopter would take off and land at the established Salt Creek Boardwalk parking lot (non-wilderness) or Furnace Creek Airport (non-wilderness).

Aerial imagery obtained during design of the new boardwalk revealed 79 locations where

debris was deposited into wilderness. The proposed action covers roughly 35 acres of wilderness, within 0.5 mi of the original eastern start of the previous boardwalk. The average piece of displaced boardwalk is 18 feet, but the longest piece of displaced boardwalk is 61 feet. There is an estimated ~1,431 linear feet of displaced boardwalk in wilderness. This is about half of the original boardwalk's length (2,892 linear feet of original boardwalk). 399 linear feet of the old boardwalk remain in their original alignment, outside of wilderness. Cumulatively, about 1,062 feet of boardwalk remains unaccounted for and is likely under several feet of sediment. (GIS analysis, Denver Service Center, 12/22/2023)

Crews would dismantle as much above-ground debris as possible to avoid ground disturbance. Full removal of debris would require extensive digging in some areas and could increase visible marks of human influence from the adjacent highway and Salt Creek Boardwalk site. Partially buried debris would remain in place.

No Action Outcome/Current Management Strategy:

The no action alternative would leave boardwalk debris in wilderness indefinitely. Over time, the debris may get covered by other flood or scour events.

B. DETERMINE NEED FOR ANALYSIS

Answer the following questions to determine if the proposed action(s) require a Minimum Requirements Analysis per NPS Management Policy 6.3.5 and Director's Order 41.

- 1) Does the proposed action(s) include a Section 4(c) prohibited activity?** Section 4(c) prohibited activities include: the use of mechanical transport and/or motorized equipment and vehicles, the landing of aircraft, and the installation of materials, equipment and/or structures (*hover over for more information*).

YES ☒

NO ☐

- 2) Does the proposed action(s) include any of the following?**

- a. Human actions that intentionally or unintentionally control or manipulate the components or processes of ecological systems inside the wilderness (*hover over for more information*)?

YES ☐

NO ☒

NOT SURE ☐

- b. Removing or killing rare or sensitive species/subspecies, ii) Handling of federally threatened or endangered species/subspecies, iii) Having more than negligible effects on the health or survival of a population of a species/subspecies, or iv) Manipulating an organism but not removing it from wilderness?

YES ☐

NO ☒

NOT SURE ☐

- c. Occur in a sensitive area or at a sensitive time for a particular species (*hover for more information*)?

YES ☐

NO ☒

NOT SURE ☐

- d. Restrict (even temporarily) visitor access to or movement in a particular area or involve surveys of visitors?

YES ☐

NO ☒

NOT SURE ☐

- e. Result in a noticeable effect (beyond that expected if the crew were members of a typical/legal recreational group) on opportunities for solitude?

YES ☒

NO ☐

NOT SURE ☐

- f. Include aerial surveys over wilderness?

YES ☐

NO ☒

NOT SURE ☐

If you answered YES or NOT SURE to any of the questions in this section, complete Section C.

If you answered NO to all of the questions in this section, contact the Environmental Compliance Office before completing the rest of this form.

C. DETERMINE IF THE ACTIONS ARE NECESSARY AND APPROPRIATE

Answer the following questions to determine if the proposed actions should be performed.

- 1) Is this proposed action(s) a response to an emergency as determined by the superintendent in accordance with law and policy?**

YES ☐

NO ☒

If the answer is YES and the approved emergency SOPs and management plans have gone through a Minimum Requirements Analysis, skip to Section F and follow the approved plans. If the approved plans have not gone through a Minimum Requirements Analysis, continue completing this form.

- 2) Is the proposed action(s) necessary to meet the requirements of other federal law(s) (i.e., any special provisions of the Wilderness Act of 1964 or subsequent wilderness laws) or does a federal law(s) support the proposed actions (e.g., Organic Act, Omnibus Management Act, Endangered Species Act, or any other federal laws)?**

YES ☐

NO ☒

If the answer is YES, cite the law(s) and section: [Click or tap here to enter text.](#)

- 3) Is the proposed action(s) outlined in this project necessary to preserve one or more of the 5 qualities of wilderness character? (See Appendix 2)

Untrammeled	Undeveloped	Natural	Solitude/Primitive/ Unconfined	Other Features
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

If the answer is YES, describe how the wilderness character(s) specified will be affected if the proposed actions are not taken: ***The undeveloped character of wilderness will be marred by the continuous visual sight of boardwalk debris. The debris will also serve as a visual reminder that the wilderness is not in its natural state because the rest of the wilderness area is very flat, barren, and lacks many large objects.***

- 4) Is the proposed action(s) necessary to achieve one or more of the public purposes for wilderness as stated in Section 4(b) of the Wilderness Act: “recreational, scenic, scientific, educational, conservation, or historical use”?

YES ☐

NO ☒

If the answer is YES, explain: [Click or tap here to enter text.](#)

If you answered YES to any question 2-4 above, continue to the next section.

If you answered NO to all questions 2-4 above, contact the Environmental Compliance Office or your Park contact before completing the rest of this form.

D. STATE PROPOSAL ALTERNATIVES

This section is for stating any reasonable alternatives for executing the proposed action(s). Simple proposals (e.g., no prohibited uses) may only need one alternative. Other proposals may need additional alternatives to help determine the minimum tool to execute the proposed action(s). Depending on the complexity of the proposal, you may want to include the No Action or Current Management Strategy to develop a baseline for your proposed action(s). Note that there is no limit to the number of reasonable alternatives considered, but the level of analysis provided should be commensurate with the anticipated level of impact to wilderness resources.

For Table 1, identify the core steps which must take place in wilderness in order to complete the project (column 1). Next, determine different ways (alternatives) in which those steps can be accomplished. Different alternatives must satisfy the same steps in different ways. For example, steps could be “Transport supplies to the work site” and “Erect wire fencing” and different alternatives to accomplish those steps could be “Use human labor” or “Use machinery”. If needed, contact appropriate park staff to determine the current management strategy (if any) related to the proposed actions. See Appendix 3 for an example of a completed table. If additional space is needed, use the extra tables provided in Appendix 4.

Table 1: Project Core Steps and Alternatives

Core Steps	No Action – Current Management Strategy	Alternative 1 <i>Heli. & Hand Tools</i>	Alternative 2 <i>Heli. & Motorized Tools</i>
Crew access to site	No access would occur.	Crew would hike into site, observing LNT principles.	Crew would hike into site, observing LNT principles.
Crew removal of debris from ground	No debris removal from the ground would occur.	Crews would remove as much above-ground debris, or accessible portions of partially buried debris, using only hand tools.	Crews would remove as much above-ground debris, or accessible portions of partially buried debris, using both hand tools and motorized tools, though the latter would only be used for large pieces of wood that need to be broken down.
Final removal of debris	Debris would remain in wilderness.	Debris would be prepped for sling-load removal by helicopter. Helicopter would not land in wilderness.	Debris would be prepped for sling-load removal by helicopter. Helicopter would not land in wilderness.

For each alternative, provide a narrative that describes the actions for the core steps.

No Action – Under the No Action alternative, no debris removal would occur and the debris would remain in wilderness indefinitely. Over time, the debris may eventually be buried by other flooding or depositional events.

Alternative 1 – Under Alternative 1, crews would walk to debris in wilderness and remove as much aboveground debris as possible with hand tools only. The debris would then be prepped for helicopter removal. The helicopter would remove, via sling-load, the debris without landing in wilderness. This would likely limit the total amount of debris that is removed and increase the crew's time in wilderness.

Alternative 2 – Under Alternative 2 crews would walk to debris in wilderness and remove as much aboveground debris as possible using both hand tools and motorized tools. The debris would then be prepped for helicopter removal. The helicopter would remove, via sling-load, the debris without landing in wilderness. This would maximize the amount of debris that can be removed and decrease the crew's time in wilderness.

E. EVALUATE PROPOSAL ALTERNATIVES

Use the tables in this section to evaluate the alternatives from Section D. Reference Appendix 2 for definitions of each wilderness character and actions that can degrade those characters, including prohibited uses. Extra tables provided in Appendix 4.

Analyzing Impacts to Wilderness Character

Note if the project alternatives have any impacts on wilderness character in Tables 2 and 3. Distinguish between short-term (S) and long-term (L) impacts. You may select more than one box. If there are no impacts, do not select a box. Use Table 4 to provide a narrative of impacts.

Table 2: Negative Impacts to Wilderness Character

	Untrammeled	Undeveloped	Natural	Solitude/Primitive /Unconfined	Other Features
No Action	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>
Alternative 1	S <input type="checkbox"/> L <input type="checkbox"/>	S <input checked="" type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input checked="" type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>
Alternative 2	S <input type="checkbox"/> L <input type="checkbox"/>	S <input checked="" type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input checked="" type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>

Table 3: Positive Impacts to Wilderness Character

	Untrammeled	Undeveloped	Natural	Solitude/Primitive /Unconfined	Other Features
No Action	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>
Alternative 1	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>
Alternative 2	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input checked="" type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>	S <input type="checkbox"/> L <input type="checkbox"/>

Table 4: For each alternative, provide a narrative that describes the impacts noted above.

Alternative	Narrative of Impact(s) to Wilderness Character
No Action	Leaving the debris in wilderness would have long term negative impacts to the undeveloped and natural characteristics of wilderness. The debris would be a visible mark of human impact in wilderness. It would be a visual reminder that the landscape is not untouched nature.
Alternative 1	Alternative 1 would have short term negative impacts to the solitude characteristic of wilderness due to the crew's presence in wilderness and noise generated from debris removal and helicopter pick-up of debris. Alternative 1 would have long term positive impacts on the undeveloped and natural characteristics of wilderness by mostly restoring the natural, undeveloped look of the wilderness. Some aboveground debris would remain in wilderness if it could not be removed with hand tools.
Alternative 2	Alternative 2 would have short term negative impacts to the solitude characteristic of wilderness due to the crew's presence in wilderness and noise generated from debris removal and helicopter pick-up of debris. Alternative 2

	would have long term positive impacts on the undeveloped and natural characteristics of wilderness by mostly restoring the natural, undeveloped look of the wilderness. Most debris would be removed from wilderness. The debris that remained would be partially buried or belowground.
--	--

Analyzing Other Considerations

Use Table 5 to explain how other things may be affected (both directly and indirectly) by the proposed alternatives. Consider effects on natural or cultural resources; social, recreational, economic, timing, or experiential effects; societal or political impacts.

Table 5: Other Considerations

Alternative	Additional Impact(s) of Project Alternatives
No Action	If visible debris remains in wilderness, visitors may attempt to hike towards it. In hot months, this could increase search and rescue operations because visitors often underestimate distance and water needed to complete hikes.

F. SELECTING THE MINIMUM REQUIREMENT ALTERNATIVE

Taking into account all potential impacts and factors from Tables 2-4, select the alternative that will most effectively resolve the issue/study the proposal seeks to address while having the least overall adverse impact on park resources, values and visitor experience, and on wilderness resources and character. Note: any actions declared an emergency (see Section B) do not require filling out Tables 2-4 or sections C through E.

When selecting the preferred alternative for actions in wilderness, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable. Provide detailed justification for the selected alternative. Include the tools or methods which will be utilized to complete the project and the steps which will be taken to minimize impacts:

The preferred alternative is Alternative 2. Alternative 2 minimizes the amount of time crews spend in wilderness while maximizing the amount of aboveground debris that can be removed. Alternative 2 would have the most beneficial impact on the undeveloped and natural character of wilderness, with only short-term impacts to the solitude characteristic of wilderness. Crews would observe Leave No Trace principles and avoid sensitive resources when planning their path to debris. Where feasible, preparation for sling-loading would occur in washes, where no resource concerns are anticipated.

G. PROJECT APPROVAL

This project has been reviewed and approved by the following individuals. Project Alternative **TBD** has been selected and will be carried out following the methods described on this form.

Preparer:

Kali Richardson, GBI NEPA Specialist

Sign Here:

Subject Matter Expert:

Rob Wissinger, Chief of Law Enforcement

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NEPA Specialist:

Ben Dunphey, Environmental Compliance
Manager

Sign Here:

Park Superintendent:

Mike Reynolds

Sign Here:

APPENDIX A.1 – GUIDANCE FOR MINIMUM REQUIREMENTS

Wilderness Act of 1964 - Prohibition Of Certain Uses Section 4(c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

National Park Service Management Policy 6.3.5 – Minimum Requirements All management decisions affecting wilderness must be consistent with the minimum requirement concept. This concept is a documented process used to determine if administrative actions, projects, or programs undertaken by the Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts. The minimum requirement concept will be applied as a two-step process that determines

- whether the proposed management action is appropriate or necessary for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the [Wilderness Act](#); and
- the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.

In accordance with this policy, superintendents will apply the minimum requirement concept in the context of wilderness stewardship planning, as well as to all other administrative practices, proposed special uses, scientific activities, and equipment use in wilderness. The only exception to the minimum requirement policy is for eligible areas that the Service has not proposed for wilderness designation. However, those lands will still be managed to preserve their eligibility.

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Although park managers have flexibility in identifying the method used to determine minimum requirement, the method used must clearly weigh the benefits and impacts of the proposal, document the decision-making process, and be supported by an appropriate environmental compliance document. Parks must develop a process to determine minimum requirement until the plan is finally approved. Parks will complete a minimum requirement analysis on those administrative practices and equipment uses that have the potential to impact wilderness resources or values. The minimum requirement concept cannot be used to rationalize permanent roads or inappropriate or unlawful uses in wilderness.

Administrative use of motorized equipment or mechanical transport will be authorized only

- if determined by the superintendent to be the minimum requirement needed by management to achieve the purposes of the area, including the preservation of wilderness character and values, in accordance with the [Wilderness Act](#); or
- in emergency situations (for example, search and rescue, homeland security, law enforcement) involving the health or safety of persons actually within the area.

Such management activities will also be conducted in accordance with all applicable regulations, policies, and guidelines and, where practicable, will be scheduled to avoid creating adverse resource impacts or conflicts with visitor use.

While actions taken to address search and rescue, homeland security and law enforcement issues are subject to the minimum requirement concept, preplanning or programmatic planning should be undertaken whenever possible to facilitate a fast and effective response and reduce paperwork.

For more detailed guidance, see [Director's Order #41](#) and the National Wilderness Steering Committee Guidance Paper #3: "What Constitutes the Minimum Requirements in Wilderness?"

Director's Order #41 – Wilderness Stewardship Section 6.4 Minimum Requirements Parks must complete a "minimum requirements analysis" (MRA) in order to document the determination of whether a proposed action (project), which involves a prohibited use, is necessary to meet minimum

requirements for the administration of the area for the purpose of wilderness. The Wilderness Act in Section 4 (c) identifies the prohibitions (codified at 16 U.S.C. 1133(c)) and Section 2 describes the purpose of wilderness (codified at 16 U.S.C. 1131).

Parks must first determine if the action (project) is necessary for the administration of the wilderness area, to realize the purpose of wilderness. Once the action (project) is determined necessary, parks must next determine the activity (method or tool) to accomplish the action (project) with the least negative impact to wilderness. This MRA should be undertaken using an interdisciplinary approach that includes the project lead, wilderness manager, resource specialists, and superintendent.

NPS Management Policies provide that a MRA must also be applied to all other administrative actions (projects) within wilderness that could potentially affect wilderness character. Also, whenever an environmental assessment or environmental impact statement is prepared for work projects within wilderness, a MRA should be included as part of the document.

Under no circumstances may a MRA be used to allow permanent roads or commercial enterprise within wilderness. The use of motorized equipment and the establishment of management facilities are specifically prohibited when other reasonable alternatives are available.

For newly designated wilderness, parks will prepare a MRA, along with an NHPA Section 106 Determination, to evaluate the retention or removal of administrative facilities, structures, and installations.

The Associate Director will ensure that additional information, guidance, and detail on applying the MRA are included in RM 41.

APPENDIX A.2 – WILDERNESS CHARACTER AND VALUES

Below is Appendix E of the Death Valley Wilderness Backcountry Stewardship Plan which defines each wilderness character within Death Valley National Park and includes the Park's wilderness values.

APPENDIX E: WILDERNESS CHARACTER NARRATIVE

OVERVIEW

Wilderness character at Death Valley includes these universal and intrinsic qualities of wilderness character: naturalness, solitude or primitive and unconfined recreation, undeveloped, and untrammelled. In addition, it includes discrete features of the landscape that represent these wilderness values: ecological, geological, scientific, educational, scenic, and historical. Plus, it includes the intangible aspects of wilderness character, most notably the historic and continuing relationship of the Timbisha Shoshone people to their ancestral homeland.

NATURAL QUALITY OF WILDERNESS CHARACTER

Death Valley National Park is a vast landscape of extremes. Badwater Basin in the Death Valley trough is 282 feet below sea level making it the lowest point in North America and one of the hottest places on earth. From the floor of the salt pan the land slopes steeply and dramatically to the often snow covered Panamint Mountains, punctuated by Telescope Peak which rises to 11,049 feet above sea level. Diverse sand dunes, salty creeks, alluvial fans, ancient shorelines, playas, water fluted canyons, craters, and varied mountain ranges provide an extensive variety of habitats.

This harsh and varied desert environment provides habitat for an amazing array of plants and animals, some of which occur nowhere else in the world. The steep gradients of the landscape coupled with the ecotone influences of both the Mojave and Great Basin Deserts creates rapid transitions of life zones and immense biological diversity, a surprising aspect of a landscape that largely appears barren. This interface between two different deserts gives rise to a remarkable diversity of plant communities and intact wildlife habitats that continue to exist and evolve without recent extirpations or extinctions though several species in the park are listed as threatened or endangered. Desert tortoise, the icon of the Mojave, continues to exist at the extreme northern edge of its range in the gently sloped Greenwater Valley area of the park, while the more common desert bighorn sheep occupy the steep and rugged terrain of the park's many canyons and mountain ranges. Several species of desert pupfish survive in a handful of salty springs and pools, and along with their extinct cousins found elsewhere in the region, serve as a laboratory to study speciation and extinction in response to both past climate change and future climate change. The park's water resources are precious but few, especially the parks oasis-like perennial springs that support and attract virtually all life in the park (including humans) while also serving as the incubators for the evolution of rare and unique species of invertebrates that only exist in specific springs. These critical water resources are characterized by the periodic flooding events that, ironically, continue to be the primary geomorphic process that gives rise to the visible landscape that is mostly devoid of surface water. The rumbling of rocks in the form of colluvium and alluvium and the frequent whistle or roar of wind provide a striking contrast to the silence that often encompasses much of the park's backcountry. Such natural soundscapes, as well as relatively dark night skies and clear visibility, persist as the natural conditions under which the community of life lives.

The natural quality of the park's wilderness character is degraded by the pervasive evidence of past mining activities and pre-existing roads, while the manipulation of springs by past human actions and modern park visitors, presence of artificial water sources (e.g. guzzlers), and presence of exotic plants and animals have localized effects on this quality. There are also past grazing impacts as well as currently permitted livestock

grazing in some areas of the wilderness which degrade the natural quality. In a broader context, the naturalness is also degraded by air pollution and light pollution mostly originating from distant urban centers particularly on the south end of the park. Of special concern for air quality is the observed increase in acid deposition and the implications it has for increasing soil nitrogen. This increase in soil nitrogen benefits the non-native red brome grass which then increases the fire frequency and fire size, potentially converting native desert shrublands to alien grasslands. Even more broadly, climate change is likely acting upon the park's biophysical resources and most experts expect that the Mojave Desert will get hotter and maybe even dryer in the future. Such predictions have significant consequences for the biological resources of one of the hottest and driest places on earth.

UNDEVELOPED QUALITY OF WILDERNESS CHARACTER

Modern facilities in Death Valley National Park are few and modern facilities within the wilderness are even less common. There are a few communication installations present at Mormon Peak, Grapevine Peak and Dry Mountain, a handful of signs in wilderness, and some mine closure installations for public safety, but otherwise the millions of acres of desert wilderness are free from modern development. There are many view points within the park where the entire landscape lies within the park and the only visible sign of human development, if any, is a thin ribbon of road fading into the horizon.

In contrast, historic facilities and artifacts are common throughout the park and are frequently encountered in the wilderness. The mineral wealth and geographic location as an entry point into California during the gold rush and homesteading period has left behind ample evidence of past human developments, particularly related to 150 years of mining activities. The arid environment which slows natural decay coupled with the relative inaccessibility of many historic sites has resulted in the standing remains of numerous structures and artifacts from the last half of the 19th century and the first half of the 20th century. The arid landscape also marks the passage of people in the form of historic roads, travel routes, and utility corridors, particularly those connecting historic settlements or mining sites to the few reliable water sources yielded by such a dry place. Most of the expansive network of backcountry roads was originally constructed as historic routes of travel, then "cherry-stemmed" out of the wilderness to continue to provide vehicular access to points of interest to history buffs and mining enthusiasts. In some cases roads were closed by wilderness designation and the former road prism is still visible. Today, several thousand acres of patented mining claims remain in the form of inholdings (along with approximately 60 state land sections), but the era of industrial mining is over within the park. The visible evidence of more recent and still operational industrial mines outside of park boundaries serve as a reminder of the mineral wealth of the desert and the efforts humans will go through to extract it. Associated with the historical use period of the park, there are also the remains of cattle grazing operations in the form of fences, corrals, line shacks, and manipulated water sources. Most of the grazing has been terminated, but the Hunter Mountain Allotment remains an active allotment, grazed by the same family since the late 1800s.

Native people have long been a part of this rugged landscape as evidenced by extensive archaeological sites (and probably many more unknown sites) and the continuing relationship between this land and the modern day Timbisha Shoshone people. The Timbisha desire to continue their traditional cultural practices, such as mesquite cultivation, pinyon harvest, and spring maintenance within the Timbisha Shoshone Natural and Cultural Preservation Area, a 2.4 million acre overlay that includes both wilderness and non-wilderness lands. There are also legally designated traditional cultural properties, such as those associated with the origin of the people at Ubehebe Crater and their ancestral homelands.

The undeveloped quality is degraded by the presence of installations such as communication equipment, grazing infrastructure, fences, utility corridors, artificial water sources for wildlife and research installations. In addition, there are numerous debris piles that degrade the undeveloped quality of wilderness character in the park such as modern trash dumps, crashed aircraft, and abandoned vehicles. There are also off-road vehicle

trespass incidents, some of which remain visible for years after the incident. This quality is also degraded by those rare occasions of authorized motorized equipment usage (e.g. chainsaws, helicopter landings, etc) that are either used during emergency incidents or are authorized as the minimum tool to implement a planned activity as determined in a minimum requirements decision analysis. The loss of statutorily protected cultural resources also degrades this quality.

UNTRAMMELED QUALITY OF WILDERNESS CHARACTER

Since the designation of wilderness in 1994, the Death Valley National Park Wilderness remains largely untrammled, with few intentional manipulations of the park's biophysical resources. Where such trammels do occur, they are generally very localized and small in scale. Thus in many ways the wilderness serves as a natural laboratory for the study of landscape-scale ecosystem processes. This lack of intentional manipulation is both by design and by default. It is also an unplanned consequence of a park with a large land base that is perpetually underfunded and understaffed, where most of the park's attention is necessarily focused on managing the developed areas where most visitation occurs, thus leaving few resources to expend in remote wilderness areas of the park.

This quality is degraded by actions that deliberately control or manipulate the earth and its community of life. The most frequent form of trammeling that has occurred is the control of exotic plants in desert springs and removal of burros to protect bighorn sheep. Exotic plant removal has occurred almost annually in recent years, while burro removal was a common occurrence in the past and is anticipated to be a regular occurrence in the future. The most pervasive form of trammel within the park is the indirect influence of numerous paved and unpaved roads which alter water flows and alluvial processes through their alignment, ditches, culverts, and other engineered features. The other forms of trammeling that occur are very isolated incidents. There is only one natural ignition that has been suppressed in the park in the history of fire record keeping, the Bullfrog Fire of 2006 which burned in non-wilderness lands, and that suppression action was in the form of mop-up after the fire had made its initial run and thus likely didn't alter the fire perimeter or intensity of the burn. There have been several human caused ignitions in the wilderness that have been suppressed, most notably the Happy Fire of 2000. There are a few artificial wildlife watering locations primarily on the northwest side of the park that were inherited when the lands were added in 1994 and the presence of artificial water serves to manipulate the distribution and abundance of wildlife species, though it is not known to what extent any of the guzzlers are still functional. Over time, many of the park's natural water sources have been manipulated by humans to provide more reliable or usable water for human uses, livestock, or wildlife. With the exception of Timbisha cultural practices at a few spring sites, such manipulations are not condoned by Park Managers but may still go on in some places. Also as part of the park's ongoing efforts to mitigate public safety threats posed by abandoned mine sites, some soils have been re-contoured or backfilled and bat gates/cupolas have been installed which may alter use by wildlife. Plants, animals, or physical resources are sometimes authorized for scientific collection through a research permit process, but there may also be instances where collections exceed permit limits or plants and animals are taken (poached) illegally.

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION QUALITY OF WILDERNESS CHARACTER

The vastness of the landscape, the lack of trails or facilities, and the harshness of the environment give rise to an abundance of solitude. In many areas of the park, a backpacker can go for days without encountering another person and this is especially true in the Cottonwood Mountains, Grapevine Mountains, and Tucki Mountain. The rugged topography and lack of water provides for the ultimate desert backcountry experience with abundant opportunities for challenge and self-reliance, including a chance for wintertime trips without winter conditions, equipment, or skills as well as summertime trips to the high elevation lands. The sheer size of the park coupled with the varied topography and complex geology means that there are a wide variety of backcountry experiences available, most of which can be accessed without traversing a developed area. With

open terrain, few nocturnal predators, clear night skies, and no canopy overhead, the park provides a unique opportunity for night hiking. Most visitor destinations focus on springs, historic sites, canyons, summits, and geologic wonders, but with almost no trails visitors traverse the landscape in whatever way and direction their physical ability and sense of adventure lead with few or no encounters with other visitors. This vastness and relatively low visitation provides ample opportunity for solitude, a chance to contemplate the mysteries of universes while observing the dark night sky, and the sounds of nature where it can be so quiet you can hear the rumble of rock against rock or even the saltation of soil particles as they continue the erosive processes that shape the land.

Given the vastness of the landscape, there are very few signs, trails, or designated campsites and those that do exist are usually in close proximity to roads. As of 2011, there are about 15 miles of designated hiking trail/routes and over a 100 miles of hiking routes that connect points of interest and water sources but are not maintained as formal trails by the NPS. There are relatively few regulations that confine the visitor's opportunity for primitive and unconfined recreation, though there are a few no camping zones as well as restrictions about fire use, length of stay, and party size. Such lack of regulations are typical of immediately surrounding BLM and Forest Service wilderness areas though a little more restrictive than adjacent BLM lands, but are vastly less restrictive than the experiences offered in the nearby Sierra Nevada park and wilderness areas. There are very limited opportunities for stock use and such use is infrequent. Most recreational experiences require advance knowledge and backcountry skills as there are few opportunities for help and the harsh environment is unforgiving of mistakes.

The opportunity for solitude or primitive and unconfined recreation is generally greatest in the northern end of the park and less available in the southern end of the park due to the influence of surrounding military operations (debris and overflights) and the influence of air pollution and light pollution originating from distant population centers in Las Vegas, NV and Los Angeles, CA. However, many of these impacts are not easily detected by a short-term visit to the park and so from the perspective of a wilderness visitor solitude is still easily found anywhere off the paved roads in this vast park.

This opportunity for solitude is degraded by the presence of frequent military overflights at some locations and an abundant network of backcountry roads which both provide access but also are visible and audible for long distances. It is also diminished by reduced visibility caused by poor air quality and light pollution, both originating from regional population centers hundreds of miles beyond park boundaries. New recreational pursuits, such as sand kiting have the potential to diminish opportunities for solitude due to the equipment used. These uses tend to concentrate at specific sites and it is likely in the future new forms of extreme sports will further exacerbate this condition. The primitive and unconfined quality is degraded by visitor use restrictions, particularly no camping in the Valley floor and along high use corridors such as Mosaic and Natural Bridge canyons.

INTANGIBLE ASPECTS OF WILDERNESS CHARACTER

The Timbisha Shoshone Tribe has occupied the area encompassed by Death Valley National Park for thousands of years. Their elders occupied and used the vast lands now defined as Wilderness, and their descendants still visit and utilize those areas today. While the Timbisha do not necessarily recognize the concept of Wilderness as defined by Congress (since one is never truly alone), they do identify Wilderness as a tool to protect land from development, encroachment, and incompatible uses, and understand the Park's duty to protect these areas. Passage of the Timbisha Shoshone Homeland Act of 2000 (P.L. 106-423) established a land base for the Tribe and a large Natural and Cultural Preservation Area and special use areas (+1.5 million acres), much of which is in Wilderness. However, since the NPS-Timbisha Cooperative Management Agreement has not been finalized, this means that there are many aspects of this relationship as yet to be defined and clarified. Access to places of importance, and management of resources, including gathering and management of plant resources have at times been complicated by NPS rules and regulations.

Communication between the Park and the Tribe has not always been effective in the past, but is expected to improve over time.

The Timbisha recognize existing impacts to wilderness that they would like to see reduced. Overflights by military and private aircraft disturb their experiences in Wilderness. The presence of high numbers of people hiking off trail is not desired by the Timbisha, and protection of cultural and natural resources is of the utmost importance. The Tribe would like to continue to work with the park to identify sensitive areas for resource protection (such as campsites, birthing areas, and cache areas), and receive information on resources and management from the Park as well. The Tribe would also like to continue to pass along its traditional cultural knowledge to younger tribal members through site visits and ceremonies. While the Tribe does not favor mechanized intrusions into Wilderness, they acknowledge that some motorized travel may be necessary to transport elderly cultural practitioners into now relatively inaccessible areas.

WILDERNESS VALUES

Wilderness values are things that add value to wilderness *where they occur* but are not universally intrinsic to all wilderness lands within the park. These are features of the landscape to be valued and preserved by park management as they contribute to wilderness character and they are also of value for reasons not related to wilderness as specifically identified in the enabling legislation and/or General Management Plan. The Wilderness Act in Section 2(c)(4) lists the categories in which these wilderness values might exist: ecological, geological, scientific, educational, scenic, or historical value.

Of particular importance at Death Valley are the cultural resources. The California Desert Protection Act of 1994 added significant acreage to Death Valley National Park, established most of the park as wilderness, and directed the park to "... 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..." Passage of the act added many thousands of prehistoric sites, as well as hundreds of very visible historic structures, including cabins and mining infrastructure, such as tramways, headframes, and mills - many of which are located in wilderness. For this reason, much of the discussion of wilderness values at Death Valley will be focused on cultural resources.

Table 1. Wilderness Values at Death Valley National Park (modified from original document for 508 compliance)

Ecological Values:

- extreme conditions and isolation provide habitat for an unusually high number of plant and animal species that are highly adapted to these conditions ¹ (e.g. endemic species)
- provides habitat for a number of threatened, endangered, and sensitive species

Geological Values:

- World renowned for its exposed, complex and diverse geology and tectonics, and for its unusual geologic features, providing a natural geologic museum that represents a substantial portion of the earth's history ¹
- includes a continuous section of the Pleistocene shoreline of Lake Manly providing an excellent opportunity for quaternary studies

Scientific Values:

- contains one of the nation's most diverse and significant fossil records and most continuous volcanic histories ¹
- contains five major sand dune systems representing all types of dune structures, making it one of the only places on earth where this variety of dune types occurs in such close proximity ¹
- provides for the study of extreme environments because it contains the lowest point in North America, the driest spot in the US, and is one of the hottest places on earth¹

Educational Values:

- one of the largest expanses of protected warm desert in the world ¹
- provides outstanding opportunities for solitude, challenge, and self-reliance including the opportunity to practice primitive skills and use primitive tools

Scenic Values:

- the extremely colorful, complex, and highly visible geology and steep rugged mountains and canyons provide some of the most dramatic visual landscapes in the US ¹
- includes some of the darkest night skies in the region, especially on the north end of the park

Historical Values:

- continuous home of Native Americans, from prehistoric cultures to the present day Timbisha Shoshone Tribe ¹
- contains an unusually high number of well preserved archeological sites, including rock art and alignments ¹
- includes an extensive and well preserved mining history representing over 150 years of mining technology¹¹

¹ taken from 2002 Death Valley General Management Plan

APPENDIX B: FLOODPLAIN STATEMENT OF FINDINGS

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Salt Creek Boardwalk Replacement Project Floodplain Statement of Findings *Draft*

May 2024

Mike Reynolds, Superintendent,
Death Valley National Park
Recommended

Date: _____

Ed Harvey, Chief
Water Resources Division
Certification of Technical Accuracy and
Service-wide Consistency

Date: _____

David Szymanski, Regional Director
Pacific West Region
Approved

Date: _____

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INTRODUCTION

The National Park Service (NPS) is proposing to reconstruct the Salt Creek boardwalk and related infrastructure in Death Valley National Park, which was damaged by flooding in 2022 and 2023 (Figures 1, 2, and 3). Design and construction of the project would be conducted by the Federal Highway Administration (FHWA), Central Federal Lands Highway Division, which is a cooperating agency in the National Environmental Policy Act (NEPA) process.

On August 5, 2022, unprecedented rains caused severe flash floods across the park, which destroyed the Salt Creek boardwalk and associated infrastructure (Figures 1–3). The floods swept away the boardwalk, leaving pieces of it scattered downstream, altered the overall topography of the area, and changed the course of Salt Creek. The floods also damaged the parking lot, access road, vault toilet, and interpretive waysides. The road and trail have been closed since this event. From August 19 to 21, 2023, for the second year in a row, extreme flooding associated with the remnants of Hurricane Hilary again severely flooded Salt Creek, further altering the stream channel.

Salt Creek is the only location in the world where the Salt Creek pupfish (*Cyprinodon salinus salinus*) occurs. This subspecies of pupfish is listed as “high concern” by the State of California (Moyle et al. 2015). Providing accessible viewing, interpretive, and educational opportunities while simultaneously protecting the species and its habitat requires infrastructure. Without appropriate infrastructure, visitors create social trails by walking around the creek. These trails disturb the fish’s habitat and life cycle, as well as that of other wildlife that use the creek, and they harden soil, damage vegetation, increase sedimentation, and limit suitable soil conditions for healthy vegetation, especially salt grass (*Distichlis spicata*) and pickleweed (*Allenrolfea occidentalis*). Loss of vegetation decreases shading along the creek, which is a critical component of the pupfish’s habitat.

The purpose of the project is to maintain viewing, interpretive, and educational opportunities for visitors, including those with limited mobility, to see and learn about the Salt Creek pupfish (*Cyprinodon salinus* ssp. *salinus*) and Salt Creek itself while protecting the species and its fragile habitat and maintaining the integrity of the surrounding wilderness area. There are no longer accessible viewing, interpretive, or educational opportunities at Salt Creek. The lack of infrastructure, previously present, leaves the pupfish and their sensitive habitat vulnerable to damage caused by visitors walking and creating informal trails around the area. In addition, the Salt Creek boardwalk was Death Valley’s only ABA-compliant interpretive site, and there is a need to restore this accessible opportunity for visitors to closely interact with the park’s landscape and natural features.



Project Vicinity Map

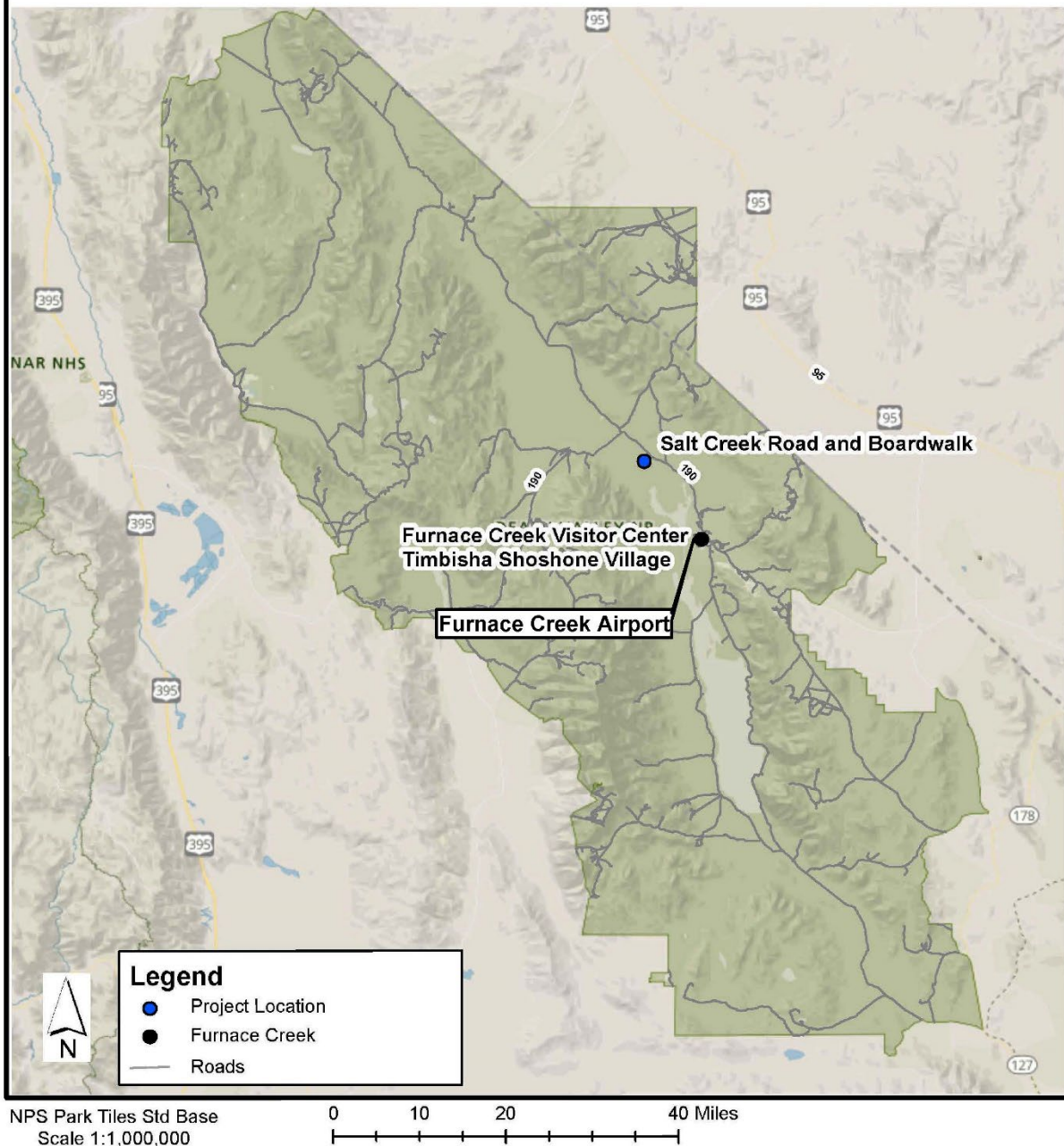


FIGURE 1. PROJECT VICINITY MAP

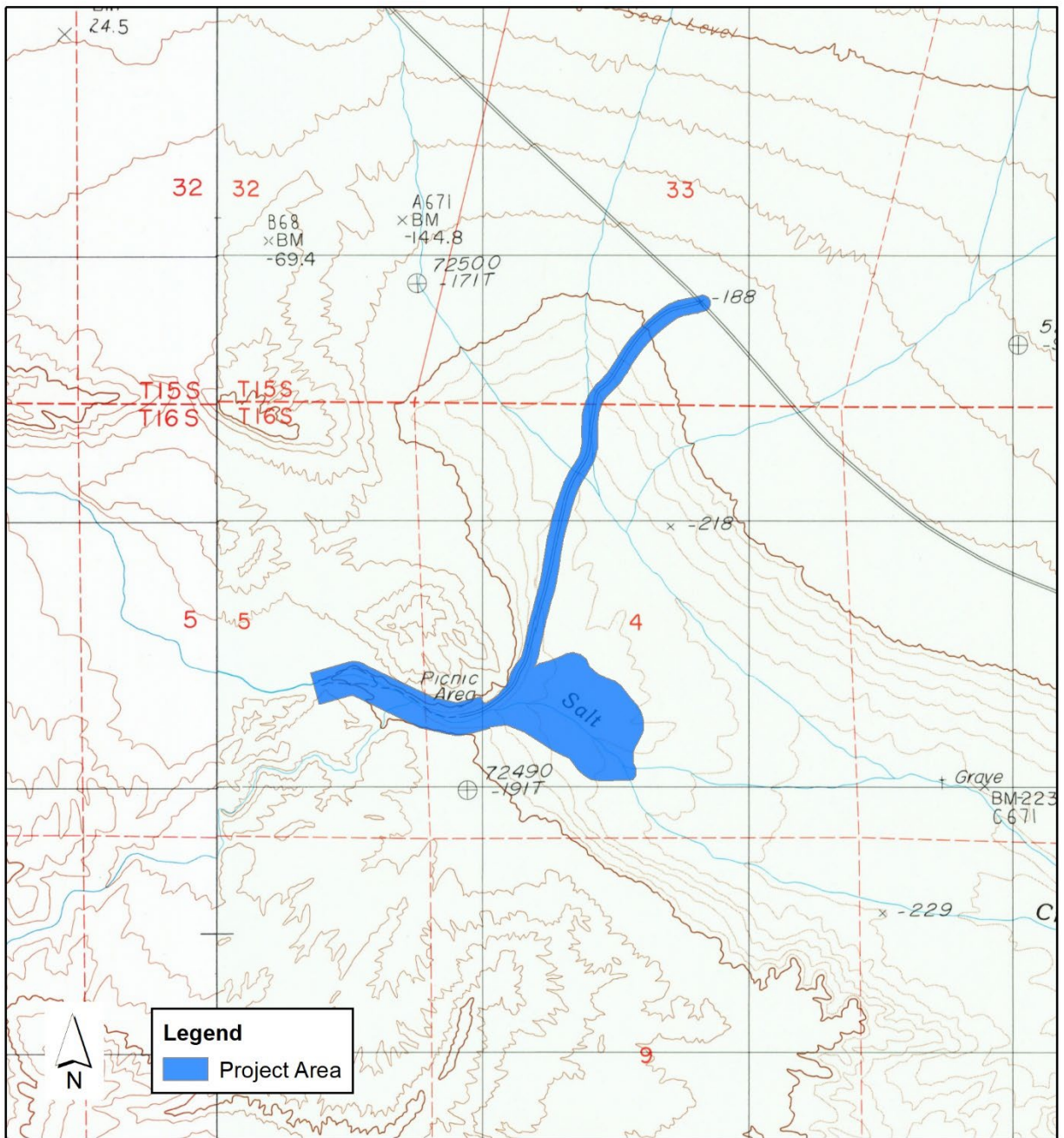


FIGURE 2. PROJECT AREA MAP



FIGURE 3. FLOOD-DAMAGED BOARDWALK

Executive Order 11988 “Floodplain Management” and Executive Order 13690 “Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input” require the National Park Service and other federal agencies to evaluate the likely impacts of actions in floodplains and to improve the nation’s resilience to flood risk. The objective of Executive Order 11988 is to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Executive Order 13690 was issued to establish a Federal Flood Risk Management Standard (FFRMS) for federally funded projects to improve the nation’s resilience to floods and to ensure new federal infrastructure will last as long as intended. NPS procedures for complying with the floodplain executive orders are outlined in NPS Director’s Order 77-2: *Floodplain Management* and Procedural Manual 77-2: *Floodplain Management* (NPS 2002).

It is NPS policy to preserve floodplain functions and values and minimize potentially hazardous conditions associated with flooding, including threats to human health/life, risk to capital investment, and impacts on natural and beneficial floodplain values. If a proposed action is found to be in an applicable regulatory floodplain, and relocating the action to a non-floodplain site is considered not to be a viable alternative, then a formal floodplain statement of findings must be prepared. The statement of findings must (a) quantify flood conditions and associated hazards as a basis for management decision making, (b) describe

the rationale for selection of a floodplain site, (c) disclose the resources and amount of risk associated with the chosen site, and (d) explain flood mitigation plans. The statement of findings must be available for public review and comment, generally by including it in an applicable NEPA compliance documentation.

NPS policy on watershed and stream processes (NPS 2006) states that, "*The Service will protect watershed and stream features primarily by avoiding impacts on watershed and riparian vegetation and by allowing natural fluvial processes to proceed unimpeded. When conflicts between infrastructure (such as bridges and pipeline crossings) and stream processes are unavoidable, NPS managers will first consider relocating or redesigning facilities rather than manipulating streams. Where stream manipulation is unavoidable, managers will use techniques that are visually nonobtrusive and that protect natural processes to the greatest extent practicable.*"

This floodplain statement of findings presents the rationale for the replacement and rehabilitation of park infrastructure within the 100-year floodplain of Salt Creek. This includes road repair, reconfiguration of a parking lot, sidewalks, picnic tables, a vault toilet, and replacement of a boardwalk. This floodplain statement of findings:

- quantifies the flood hazard associated with the proposed action;
- presents the rationale for the development of proposed facilities within the regulatory floodplain of Salt Creek in the park;
- documents the anticipated negative impacts of these improvements on human health/life, capital investment, and floodplain functions and values; and
- presents mitigations to these impacts.

PROPOSED ACTION

SUMMARY

Under the Proposed Action, the National Park Service would reconstruct facilities at Salt Creek, which were severely damaged in floods in 2022 and 2023 (Figures 1–6). The road, parking lot, vault toilet, and boardwalk would be reconstructed. The National Park Service would also remove damaged infrastructure from the creek channel, including from designated wilderness. Visitor vehicle access would be restored to the site. The boardwalk, vault toilet, and two parking spaces would be Architectural Barriers Act (ABA)–compliant and flood-resilient to the extent possible within the constraints of the purpose of and need for the project. The site, which is currently closed to vehicle access due to the damage, would also be closed to pedestrian access during construction, which is estimated to occur from approximately fall 2024 through spring 2025.

As described above, the objective of Executive Order 11988 is to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there

is a practicable alternative. As described below, adverse impacts from modification of the floodplain, would be avoided to the extent possible with design improvements over the previous boardwalk. There is no practicable alternative that would include a boardwalk resilient to significantly larger flood events than the proposed design. The purpose of rebuilding the boardwalk and associated infrastructure is for visitors to be able to view a 1.5-inch fish and to protect the fish from the visitors. If the boardwalk were constructed farther back or higher up from the creek, visitors would not be able to see the fish and would walk on the creek banks in order to view it. As described above in the Introduction, visitors walking on the creek bank damages the natural resources present, including the Salt Creek pupfish, which occurs nowhere else on earth. The National Park Service has documented visitors walking off the boardwalk and the damage it causes, which is why the boardwalk was present.

The location of the road and parking lot are also constrained by an adjacent wilderness boundary. Neither feature can legally be constructed in wilderness.

ROAD

The National Park Service would restore the road to its pre-flood condition — a dirt road accessible by low-clearance, two-wheel drive vehicles. The 1.2-mile-long road would follow the previous alignment, with minor adjustments at the end to connect to a new parking lot location (Figure 4). The road would be 24 feet wide with 1-foot shoulders. Rock embankment, rip-rap, or gabion baskets would be used to armor the road embankment against a new branch of the creek abutting the road alignment (Figure 5). This design would protect the road up to the 25-year storm event. The road cannot be shifted farther away from the creek because of the adjacent wilderness boundary.

The road surface would continue to consist of local, native materials of sand, soil, small rocks, and gravel. If any fill material is needed, it would be sourced from within the park. The road work would require use of a grader and an excavator within the limits of the road area, a roller for compaction, and dump trucks for moving material. An on-site water tank would be placed in the parking lot area, to be used for dust suppression.

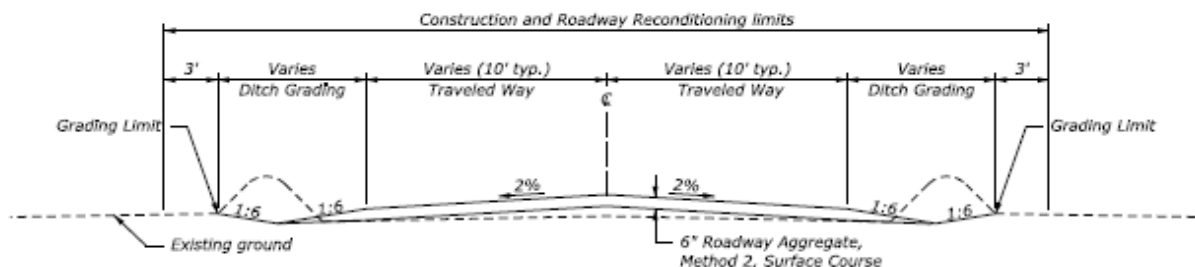


FIGURE 4. ROAD TYPICAL SECTION

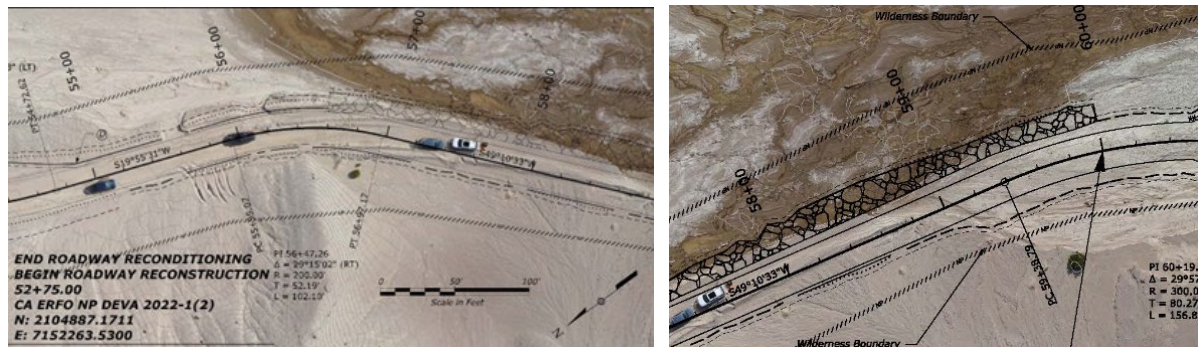


FIGURE 5. ROAD PLAN WITH ARMORING

PARKING LOT

The National Park Service would reconstruct the parking lot to a similar capacity as the previous lot, though in a different location farther east due to the migration of the creek channel (Figure 6). The parking lot would consist of the same type of materials as the road described above. Although parking spots would not be delineated, capacity would be approximately 30 vehicles, including two designated ABA spots. Parking would be perpendicular to the flow of traffic on either side of a rectangular lot with a loop at the end of the lot to facilitate buses turning around. Buses would park along the entrance road. Adjacent to the ABA parking spots would be a concrete curb and ABA-compliant sidewalk that would connect to the vault toilet and the boardwalk. Concrete sitting areas with picnic tables would be located at the transition from the sidewalk to the boardwalk. A 4-foot-high wood-post-and-steel-cable fence would encircle the area. The parking lot would be constructed with heavy equipment to level it, including a grader and other equipment as needed. Exposed bedrock would be covered with native materials via grading.

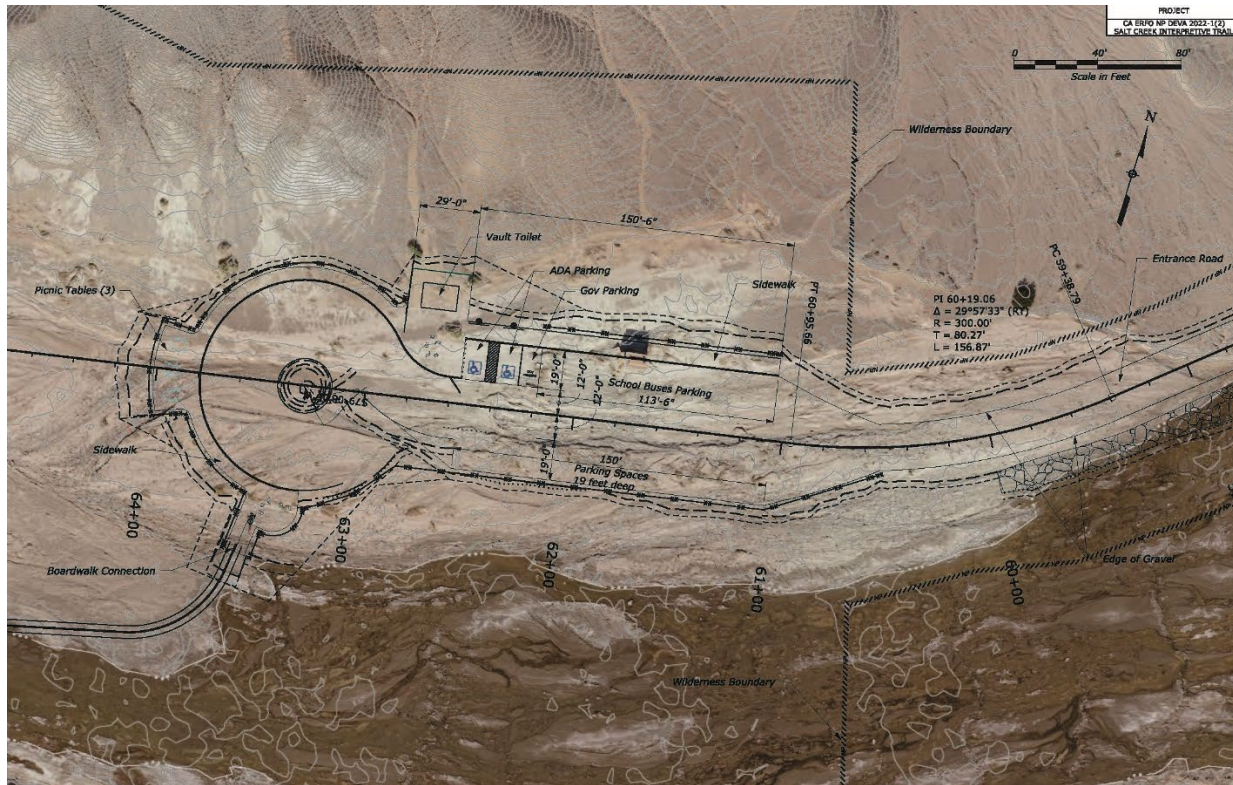


FIGURE 6. PARKING LOT CONCEPTUAL DESIGN

VAULT TOILET

The National Park Service would install an ABA-compliant double vault toilet adjacent to the parking lot (Figure 6). The unit would be prefabricated, approximately 14 feet wide by 9 feet deep by 10 feet tall, with a pitched roof and an underground 12-foot-deep vault. The building would be textured with aggregate and finished in a color to blend into the surroundings. The hole for the vault would be excavated with a backhoe or similar equipment at least 100 feet from the ordinary high-water mark and in an area of low paleontological sensitivity to the extent practicable, and the unit would be lowered into place with a crane.

BOARDWALK

The National Park Service would construct a boardwalk in a footprint similar to the original boardwalk location, with the proposed alignment sited based on the current creek channel alignment, elevations, and sensitive resources (Figure 7). The boardwalk would be flood-resilient, to the extent possible as described below, within the constraints of the purpose and need of the project, as described in the *Introduction*. The general alignment would be a spine-and-loop layout with wider “bump-outs” and benches at select viewing locations. The alignment would cross the creek and other sensitive resources at right angles to the extent practicable to minimize the crossing distance and associated disturbance. The boardwalk would be located and designed to provide multiple opportunities to see pupfish and learn about them, including varied interpretive signs and waysides. The boardwalk would be approximately 6 feet wide (except wider at the bump-out viewing areas), 18 to 36 inches high,

half a mile long, and ABA-compliant (Figures 7–10). Railings would be included in select locations as necessary for safety and resource protection. The deck would be thermally modified wood without any chemical treatments to last an estimated 25 years. The support structure and railings would be primarily wood with metal connecting hardware. The boardwalk would be anchored predominantly with steel helical piles drilled into the substrate (Figure 10). Individual piles would be sited to minimize sensitive resource damage, supplemented with floating piles that sit on the surface of bedrock where necessary and practicable.



FIGURE 7. BOARDWALK CONCEPTUAL ALIGNMENT

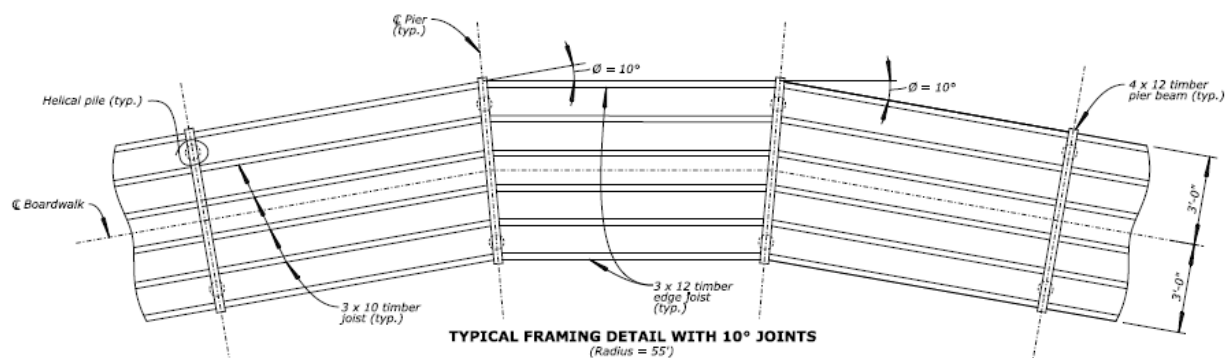
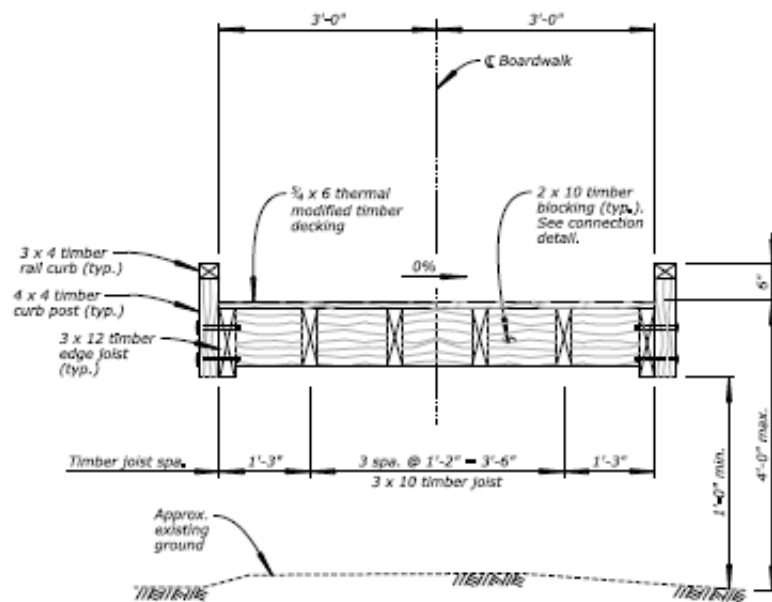
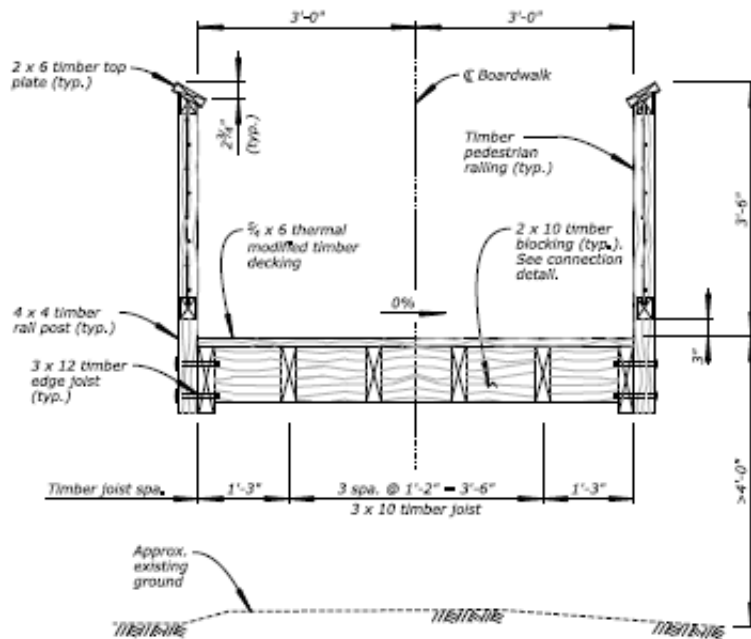


FIGURE 8. BOARDWALK CONCEPTUAL TYPICAL DECKING



TYPICAL SECTION WITH RAIL CURB



TYPICAL SECTION WITH PEDESTRIAN RAILING

FIGURE 9. BOARDWALK TYPICAL SECTIONS

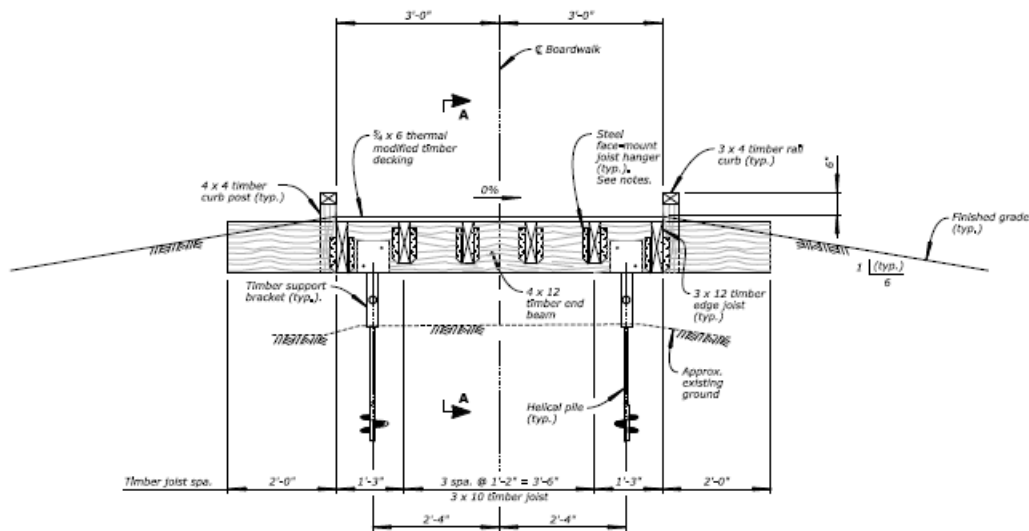


FIGURE 10. BOARDWALK CONCEPTUAL ABUTMENTS

Although no boardwalk that would fully withstand the floods of 2022 and 2023 could be feasibly constructed, the proposed boardwalk would be constructed to be resilient to smaller flooding events. For example, the proposed helical piles are less likely to be compromised by flooding than the previous concrete supports. Helical piles are also quicker to install and disturb less soil than concrete supports. The proposed boardwalk elevation has been designed to pass the 25-year (4% annual exceedance probability [AEP]) storm event. Raising the boardwalk higher above the creek would likely negatively impact visitor experience by moving the viewing platform farther from the pupfish habitat and making it more difficult to view the 1.5" fish, which would likely adversely impact resource protection by encouraging visitors to exit the boardwalk to get closer to the creek.

The proposed boardwalk foundations would be designed with a scour design flood of the 50-year storm (2% AEP) and scour check flood of the 100-year storm (1% AEP). The boardwalk would be stable up to and including the 100-year storm event (1% AEP) for scour.

The boardwalk would be constructed during daylight hours using a variety of heavy equipment (e.g., skid steer) and hand and power tools (e.g., saws and drills). Heavy equipment would be restricted to the minimum size needed to complete the work and operated in a manner to traverse the minimum amount of area as few times as possible, reducing potential soil and vegetation impacts to the extent possible.

REVEGETATION

The National Park Service would qualitatively monitor the progress of plant regrowth following the floods and construction with a focus on bank-stabilizing vegetation. If banks are substantially eroding to an extent that would adversely impact pupfish, the park would implement a revegetation plan to replace vegetation. Steps would likely include monitoring; invasive plant control; seed collection, purchase, cleaning, and storage; plant salvage and plant grow-out in a nursery; planting; watering; and monitoring. Key species would include pickleweed (*Allenrolfea occidentalis*) and salt grass (*Distichlis spicata*).

DEBRIS REMOVAL

Under Alternative B, the National Park Service or FHWA would remove large, visible, easily removed pieces of infrastructure debris from the creek channel and floodplain at and downstream from the site with the minimum motorized equipment necessary, consistent with the authorizing minimum requirements analysis (Figure 11). Most buried debris would be left in place to minimize resource damage associated with extracting it. Materials to be extracted include primarily wood, metal, and concrete. Smaller, lightweight debris would be removed by hand. Larger, heavier debris would be removed with the least-damaging methods and equipment practicable, including the use of helicopters. Helicopters would facilitate removal of debris without heavy equipment traversing the surface of the creek channel and floodplain. Helicopters would likely take off from the Furnace Creek Airport and would drop debris either at a construction staging area on the site's parking lot or at the airport.

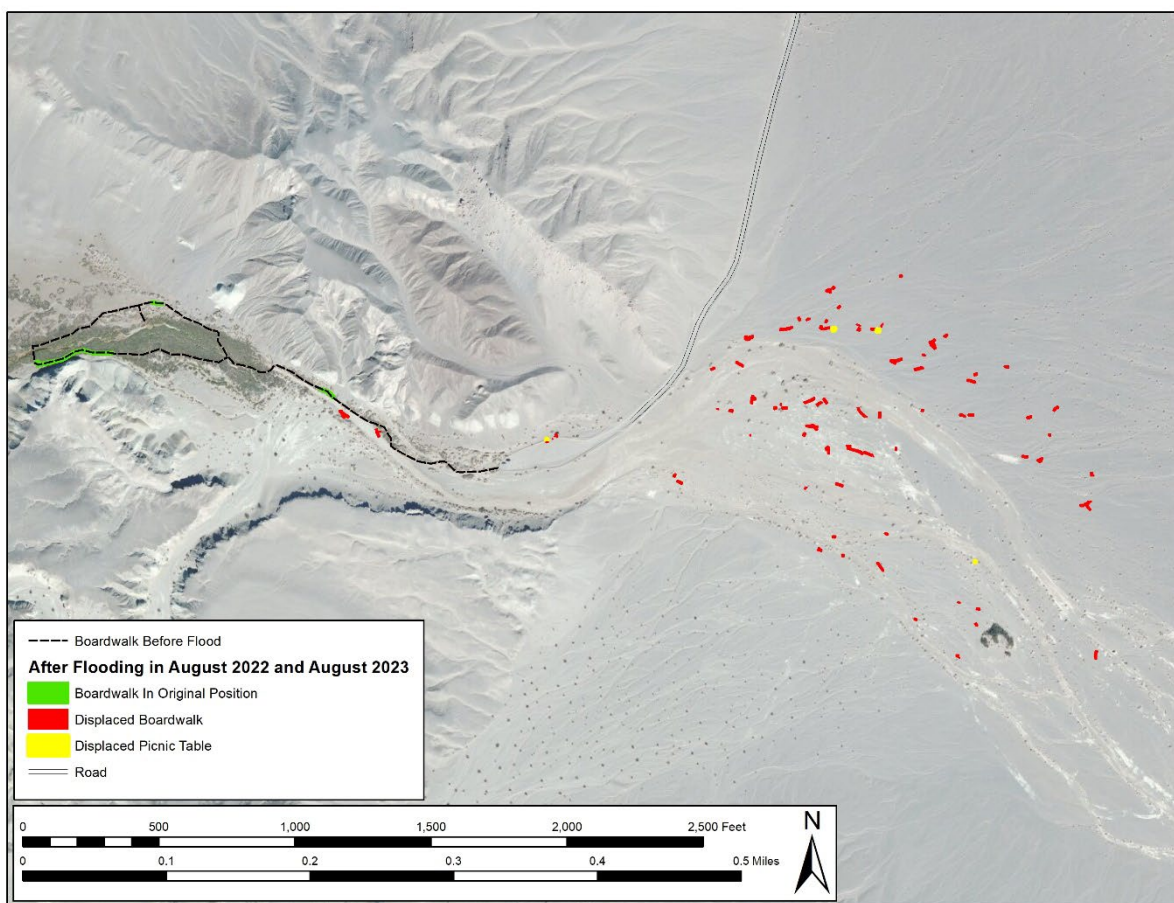


FIGURE 11. SALT CREEK BOARDWALK DEBRIS FIELD, OCTOBER 2023

Approximately 399 linear feet (2,699 square feet), in three segments, remain in the original pre-flood alignment. Approximately 49% of the original 2,892-linear-foot boardwalk is displaced and visible in aerial photography (Figure 10). The majority of the visible displaced material is in wilderness. Most of this material is partially buried. The rest of the material is likely buried.

STIPULATIONS AND MITIGATIONS

The National Park Service places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the park would implement stipulations and mitigations as part of the Action Alternative. The following measures are relevant to floodplain considerations.

General Construction Best Management Practices. The following best management practices would be implemented:

- Construction in and adjacent to the creek would be limited to October through March to minimize work during pupfish spawning periods. Construction boundaries would be established based on pupfish activity.
- All work would be conducted in compliance with the park's Heat Stress Management Policy (NPS 2016a).
- Construction zones would be identified and flagged with construction tape, silt fencing, or a similar material prior to any construction activity. Flagging would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the construction zone, defined by construction zone fencing and flagging.
- The FHWA inspection staff would be responsible for ensuring the project remains within the construction area limits.
- Fugitive dust generated by construction would be controlled by water spraying at the construction site, if necessary. Any water used for dust control would be taken from a source approved by the park and applied at a rate that prevents soil erosion.
- To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks. A spill kit would be always kept on-site.
- Fuel would be stored in fuel trucks or aboveground storage tanks, and all fuel storage would be in staging areas. NPS-approved containment best management practices would be established in case of a spill.
- Tools, equipment, barricades, signs, demolition debris, and rubbish would be removed from the project work limits upon project completion.

Soils. The following measures would be implemented:

- Soil conservation measures would be employed. Soil would be replaced where present and affected to enhance revegetation following the construction phase.

- Disturbed soils are more susceptible to erosion, and until revegetation takes place, standard erosion control measures such as silt fences and/or sandbags would be used to minimize any potential soil erosion.

Vegetation. The following measures would be implemented:

- Disturbance to existing vegetation would be avoided to the greatest extent possible.
- During construction, native vegetation would be flagged for avoidance to the greatest extent possible.
- Vehicles, equipment, and storage and staging for materials would occur within the project footprint.
- Equipment used would be cleaned prior to arrival on-site to reduce the introduction of nonnative plant species.
- All equipment and materials would be staged on hardened surfaces, such as roadways and parking areas, to avoid damage to vegetation.

SITE DESCRIPTION

The site is approximately 14 miles northwest of Furnace Creek in Death Valley National Park, Inyo County, California (Figures 1 and 2). The legal description includes Sections 4 and 5, Township 16S, and Range 46E. Elevations average 208 feet below mean sea level (bmsl). A 1.2-mile dirt road leads from Highway 190 to the Salt Creek site (Figures 1 and 2).

FLOODPLAINS

The perennial flow of Salt Creek begins at McLean Springs. The creek flows within a broad floodplain with a meandering, braided channel. Salt Creek is a closed basin; it does not flow into another creek. It may flow for approximately 3.1 miles (5 km) in the winter, but it dries to approximately 0.9 miles (1.5 km) in summer (Moyle 2002). Salt Creek is a meandering, mud-bottomed, braided, saline stream. Before flooding, the creek was deepest near the headwaters and shallowest in the lower drainage, where the water only flows seasonally, and it includes pools, runs, and marshes (Sada and Deacon 1995; Dzul et al. 2012). Salt grass (*Distichlis spicata*), pickleweed (*Allenrolfea occidentalis*), and saltbrush (*Atriplex canescens*) bordered the creek. Heavy growths of wiregrass (*Juncus* sp.), hornwort (*Ceratophyllum demersum*), and algae were present. Since flooding, the stream is more channelized, the braiding pattern has been altered, and vegetation cover is substantially reduced.

The past and proposed boardwalk, parking lot, and most of the access road are in the floodplain (Flood Insurance Rate Map: 0600732425D, Zone A) (Federal Emergency Management Agency [FEMA] 2023) (Figure 12). FEMA defines Zone A as “areas without base flood elevation” for the 1% annual chance flood (100-year floodplain). The western portion of the site is within the 0.2% chance annual flood (500-year floodplain). The FFRMS regulatory floodplain in the project area ranges from 201 (downstream) to 193 feet below

mean sea level (upstream), and the existing land surface elevation ranges from 205 (downstream) to 200.5 feet below mean sea level (upstream) (using the 500-year floodplain method) (figures 12 and 13). The proposed boardwalk would be 18 to 36 inches higher than the surface elevation. During a 500-year flood event the project site would be inundated by four to seven feet of water, with the deepest flood waters located upstream where the floodplain is more constricted.

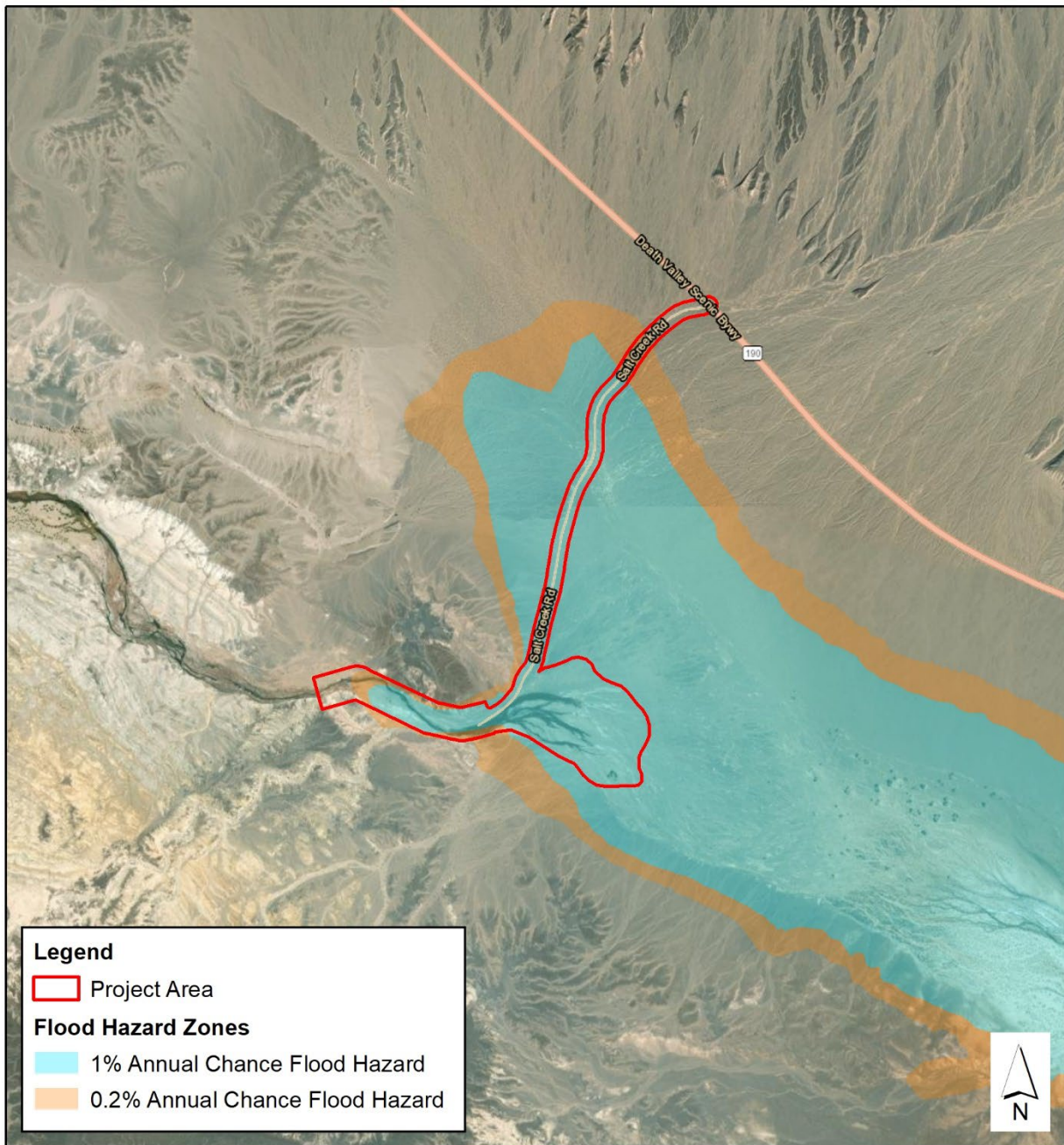


FIGURE 12. FEMA NATIONAL FLOOD HAZARD LAYER FIRMETTE

The site is approximately 16 acres within the floodplain of the creek, which has been used as an NPS interpretive facility since the 1970s. All of the actions associated with the proposed alternative are Class I actions (NPS 2002), which “include location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking

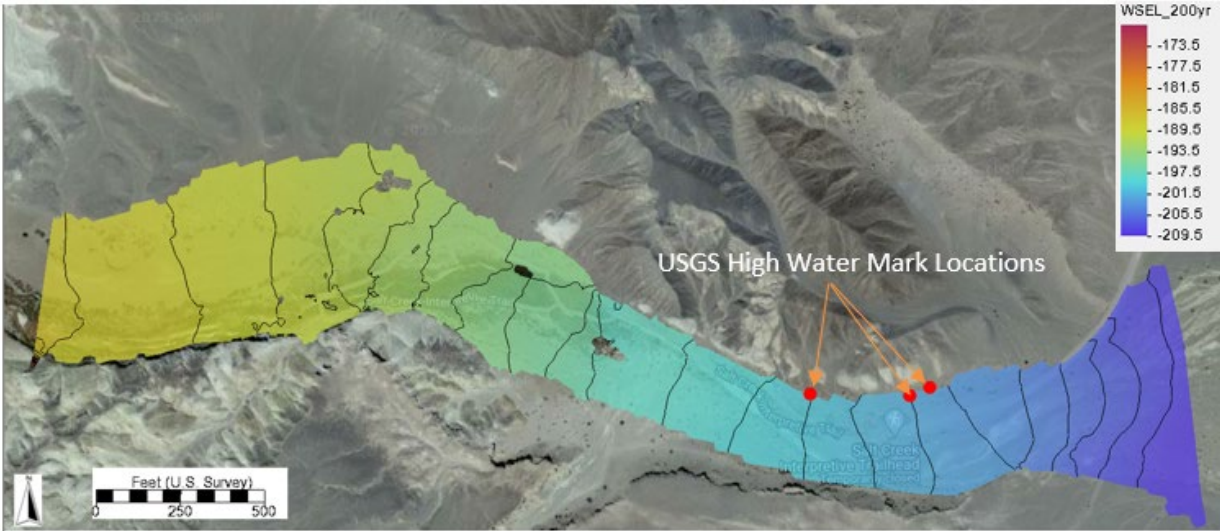
lots; or other man-made features which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Class I Actions are subject to the floodplain policies and procedures if they lie within the 100-year floodplain (the Base Floodplain).”

The site is and has been susceptible to flooding during 100-year flood events. On August 5, 2022, unprecedented rains caused severe flash floods across the park, which destroyed the boardwalk. The floods swept away the boardwalk, leaving pieces of it scattered downstream, altered the overall topography of the area and changed the course of the creek. The floods also damaged the parking lot, access road, vault toilet, and interpretive waysides. On August 20, 2023, for the second year in a row, extreme flooding (associated with the remnants of Hurricane Hilary) again severely flooded Salt Creek, further altering the stream channel.

Both floods are believed to have been between a 200-year and 500-year storm event based on site observations and Surface-Water Modeling System (SMS) modeling and LIDAR (Figure 13). FHWA used SMS to model the base flood elevation (Figure 14) and determined the site hydrology using available gage data (station number 10251100) in the project vicinity and conducting a flood frequency analysis using the available data.

Mitigation efforts have been taken to protect the structure. These include designing the boardwalk profile to pass the 25-yr storm event (4% AEP) without pressure flow and designing boardwalk foundations with a scour design flood of the 50-year storm (2% AEP) and scour check flood of the 100-yr storm (1% AEP). The scour design of the boardwalk was completed by creating sediment transport models as well as analyzing local scour at pier locations to ensure the effects of scour were captured. The installation of the new boardwalk will not pose any risk to life or property and will be significantly more resilient than the previous boardwalk that was in place. In addition, significantly raising the boardwalk would take away the visitor experience that is vital to the purpose of the boardwalk.

200-yr Storm Event



500-yr Storm Event

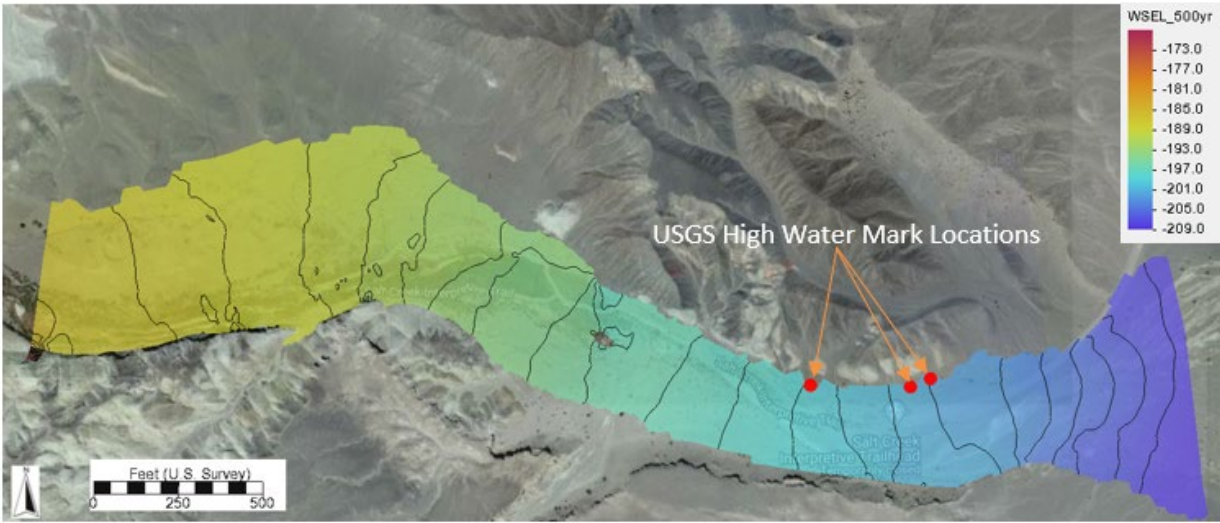


FIGURE 13. 2022 MODELED FLOOD MAPS

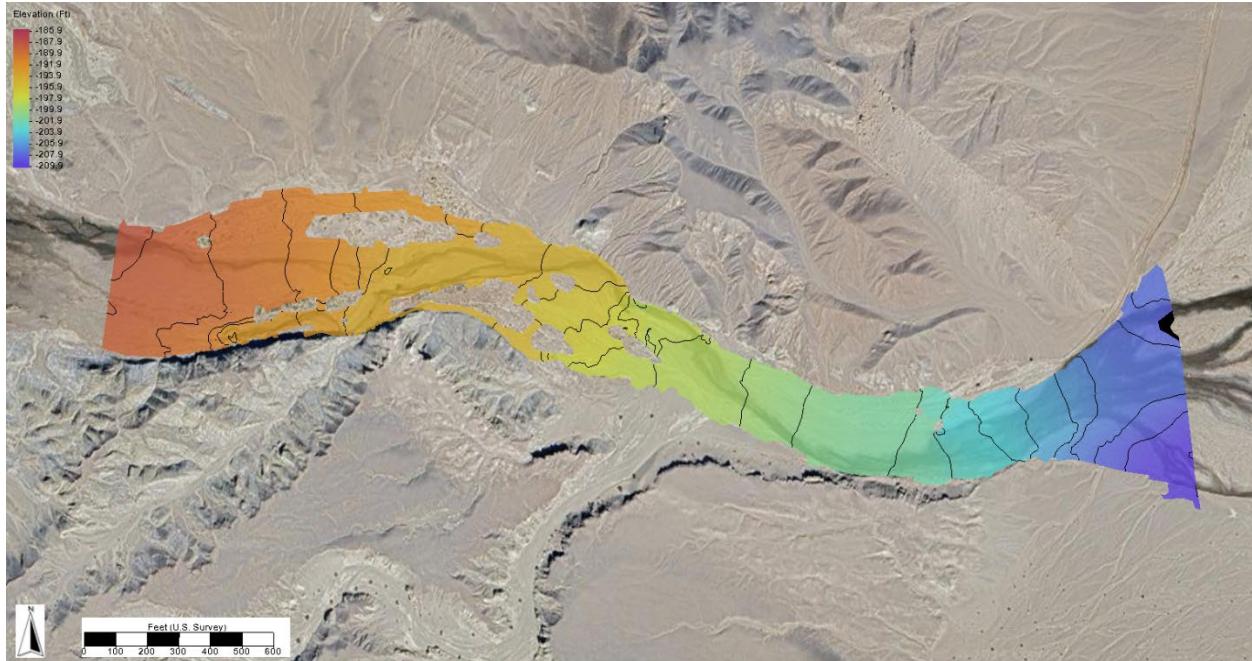


FIGURE 14. MODELED BASE FLOOD ELEVATION

WETLANDS

Wetlands, as defined by US Army Corps of Engineers criteria and the wetland definition used for Section 404 of the Clean Water Act permitting (33 CFR 328.3), were present in pockets along the creek where silty wetland soils and hydric vegetation were present (US Fish and Wildlife Service [USFWS] 2023). These wetlands were palustrine, emergent, persistent, and seasonally flooded, under the Cowardin et al. (1979) classification system (USFWS 2023). These wetlands were scoured away by the 2022 and 2023 floods and are not currently present.

The FHWA (2024) completed an aquatic resources delineation survey in December 2023 to document conditions after the second flooding event. Methodology followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar 2010), and the OHWM Regulatory Guidance Letter No. 05-05 (USACE 2005). Wetland indicator statuses for plants were taken from *The National Wetland Plant List, version 3.5* (USACE 2020).

Approximately 6 acres (4,768 linear feet) of potential Waters of the US, in the form of an intermittent stream, are currently present within the approximately 16-acre site, but no wetlands, according to US Army Corps of Engineers criteria and the wetland definition used for Section 404 of the Clean Water Act permitting (33 CFR 328.3), are currently present in the boardwalk area (FHWA 2024).

Salt Creek is riverine, intermittent, streambed, and seasonally flooded, under the Cowardin et al. (1979) classification (FHWA 2024; USFWS 2023). The National Park Service (2016) uses the Federal Geographic Data Committee (2013) definition of wetlands so that the stream is managed as a wetland even if the US Army Corps of Engineers definition is not met.

This proposed action would have no impact on existing riverine wetland function. The total new wetland impacts (permanent and temporary) from construction would affect less than 0.1 acres, in the form of helical and floating piles to support the boardwalk. The action is listed in section 4.2.1 of *Procedural Manual #77-1* (NPS 2016) as an exempt action under, “Maintenance, repair, or renovation (but not full reconstruction¹ or expansion) of currently serviceable² facilities or structures:

... This exception allows for **minor** (0.1 acre or less) deviations in the structure's configuration or fill footprint in wetlands due to changes in construction codes, methods, or safety standards (e.g., handicap [sic] accessibility), but does **not** apply to other types of reconstruction/expansion (e.g., road widening to increase capacity, road re-routing) or conversion to other uses that cause new adverse impacts on wetlands.”

Therefore, this project is exempt from an NPS Wetland Statement of Findings and compensation requirements. The National Park Service will coordinate with the US Army Corps of Engineers to ensure that the work is authorized under Section 404 of the Clean Water Act.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

No practicable alternatives exist for locating the project outside of the regulatory floodplain because:

- Salt Creek is the only location in the world where Salt Creek pupfish occur. The site, which is entirely in the 100-year floodplain, provides accessible viewing, interpretive, and educational opportunities. Pupfish are small and cannot be viewed from a distance. Therefore, the functions of the site cannot be moved to another location.
- Protecting the pupfish species and its habitat requires infrastructure. Without appropriate infrastructure, visitors walking around the creek would disturb the fish's habitat and life cycle, as well as that of other wildlife that use the creek. Social trails would be created, which would harden soil, damage vegetation, increase sedimentation, and limit suitable soil conditions for healthy vegetation, especially salt grass (*Distichlis spicata*) and pickleweed (*Allenrolfea occidentalis*). Loss of vegetation decreases shading along the creek, which is a critical component of the pupfish's

¹ Full reconstruction of instream diversions, water intake or outfall structures, or similar, legal and permitted instream structures that are damaged or destroyed by storms, floods or similar events may be allowed under this exception.

² “Currently serviceable” means usable as is or with maintenance or renovation, but not so degraded as to require full reconstruction.

habitat. Therefore, not replacing infrastructure in the floodplain would have more adverse impacts on sensitive resources than replacing the infrastructure.

INVESTIGATION OF ALTERNATIVE SITES

No alternative sites were identified that would entirely avoid locating project facilities in the floodplain. As described above under “Justification for Use of the Floodplain,” the purpose of constructing infrastructure in the floodplain is to allow interpretation and protection of the Salt Creek pupfish, which only occurs in Salt Creek. The fish are too small to view from any substantial distance, and infrastructure is needed to provide the public with up-close viewing opportunities. Without the infrastructure, visitors would walk along the creek, compacting the soil and trampling vegetation, both of which would adversely impact the pupfish. Completely preventing visitation to the site is not practicable nor desirable due to the unique features that draw people to the area.

FLOOD RISKS

Flood risks associated with the proposed action include risk to capital investment resulting from damage to infrastructure and a slight risk to human health and life due to daytime floodplain occupancy. As described in the “Proposed Action” section above, virtually all existing and new infrastructure at the site would be subject to inundation during the regulatory flood. Infrastructure would be subject to flood depths sufficient to submerge all proposed infrastructure during the regulatory flood. No electricity or other utilities are proposed or currently located at the site. For the same reasons described above in “Justification for Use of the Floodplain” and “Investigation of Alternative Sites,” opportunities for reducing the susceptibility of the infrastructure to flooding are limited.

Proposed construction activities would occur in areas of the site that previously had similar infrastructure. Although specifications differ and resilience against the 100-year storm event (1% AEP) would be greatly increased, the extent of new construction is similar to previous infrastructure. Impacts on property and to floodplain functions and values would be similar to the previous infrastructure. The boardwalk, access road, and parking lot would be of similar size as the previous features. The proposed concrete sidewalk adjacent to the gravel parking lot would be a new feature. The boardwalk is designed to be more resilient to flooding than the previous boardwalk and as resilient as possible within the constraints of the purpose of the project. The proposed boardwalk foundations are designed with a scour design flood for the 50-year storm (2% AEP) and scour check flood for the 100-year storm (1% AEP). The boardwalk structure would be stable up to and including the 100-year storm event (1% AEP) in terms of scour, and for all smaller events as well.

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The additional concrete for the sidewalk is unlikely to negatively affect flood storage or groundwater recharge to a measurable degree or degrade overall riparian services because

the concrete footprint (approximately 6,000 square feet) would be small relative to the area of the floodplain. The redesigned boardwalk and reconfigured gravel parking lot are unlikely to negatively affect flood storage or groundwater recharge to a measurable degree or degrade overall riparian services because the impervious surface footprint would remain approximately the same after construction as in the pre-flood conditions.

Because the floodplain contains little vegetation, limited rock, or developed soils, the sand, gravel, and silt present are highly susceptible to erosion, sediment deposition, and channel adjustments. The floods in the last two years have substantially altered the locations of the channels, eroded banks, and deposited sediments. Until vegetation has been reestablished, future minor flood events are likely to continue to alter the morphology of the floodplain. Floods of the size of the 2022 and 2023 floods would alter morphology regardless of vegetation presence.

The proposed boardwalk structure would be founded on helical piles 2-7/8" and 5-1/2" in diameter, which would have significantly less potential to induce flow constrictions and bed scour than the previous boardwalk foundation consisting of concrete footings (approximately) 12" in diameter (Figure 10). The proposed boardwalk is designed with a scour design flood of the 50-year storm event and a scour check flood of the 100-year storm event, meaning that the structure would be stable (in terms of scour) for events up to and including the 100-year storm. The helical piles proposed for installation (Figure 10) would have minimum impact on the streambed. However local scour would occur around the helical piles, and this is being accounted for in foundation design. The boardwalk itself is not expected to constrict the channel, as the stream is able to flow around all supports and is not constrained by abutments or embankments. The proposed boardwalk would be able to pass the 25-year storm event (4% AEP) without any pressure flow.

FLOOD MITIGATION PLAN

The park would continue to maintain an active floodplain evacuation protocol. This protocol entails monitoring communications during floods and conducting rescue and salvage operations if necessary. This protocol has proven effective in maintaining safety during storms, and it will continue to be reviewed and updated.

No proposed infrastructure could reasonably be moved. Facilities that cannot be moved would be subject to flood damage.

The design of new structures throughout the site would incorporate methods for minimizing storm damage as contained in the National Flood Insurance Program's Floodplain Management Criteria for Flood-Prone Areas (44 CFR 60.3) and in accordance with local, county, or state requirements for flood-prone areas. The boardwalk would be supported largely with helical piles, and the decking would be higher than the previous decking, increasing the level of flooding that the structure could withstand without significant damage.

Ample notice of significant, widespread storms, such as hurricanes and atmospheric rivers, is provided by the National Weather Service. In those cases, the park would have at least a day of notice and would lock the gate to the Salt Creek access road.

However, intense localized storms are harder to predict with ample notice. The National Weather Service daily forecast might indicate a chance of rain somewhere within the park. As a storm cell develops, the National Weather Service is usually able to call the park with about an hour of warning to give the predicted storm path. Fortunately, Salt Creek is only a 15-minute drive from Cow Creek and Furnace Creek, where most NPS staff work. However, the National Weather Service has not provided a detailed, location-specific warning before all of the park's recent localized flood events. This means evacuating Salt Creek may be an option but is not guaranteed. Such localized, intense weather events are likely to cause people to retreat from the short trail before any flooding results. Signage would be installed indicating that the area is prone to flooding and visitors should exercise caution in stormy conditions.

SUMMARY

The National Park Service has determined that implementing the proposed action would not result in any additional disruption of floodplains. The risk to life, property, and natural resources from flooding can be partially mitigated. The proposed action would restore visitor experience while protecting natural resources. Additionally, the project would address compliance with the ABA. New structures would be designed for improved resilience against future storm events. Avoidance of floodplains is not possible due to the required location of project facilities in the floodplain to meet the project purpose and need. Necessary adverse floodplain impacts have been reduced to the greatest practicable extent while meeting the design requirements and operational needs of the site. With the proposed mitigations applied, the National Park Service finds that the proposed action would not have any additional adverse impacts on floodplains and their associated values.

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ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Act of 1968, as amended
AEP	annual exceedance probability
CFR	Code of Federal Regulations
e.g.	for example
FEMA	Federal Emergency Management Agency
FFRMS	Federal Flood Risk Management Standard
FHWA	Federal Highway Administration
NEPA	National Environmental Policy Act of 1969, as amended
NPS	National Park Service
SMS	Surface-Water Modeling System
USDOT	US Department of Transportation
USFWS	US Fish and Wildlife Service

