

National Park Service
U.S. Department of the Interior

Death Valley National Park
California



Scotty's Castle Flood Rehabilitation Environmental Assessment

November 2017



Scotty's Castle Flood Rehabilitation Death Valley National Park

Environmental Assessment

SUMMARY

The National Park Service (NPS) is proposing to rehabilitate various historic and nonhistoric features in the Death Valley Scotty Historic District (Scotty's Castle or DVSHD) at Death Valley National Park (park). The proposed project is needed because buildings and facilities at Scotty's Castle were damaged by extensive flooding on October 18, 2015 following a major rainstorm and subsequent flash flood.

This Environmental Assessment (EA) evaluates two alternatives: a no action alternative and the NPS's preferred alternative. Under the no action alternative, the buildings and facilities at Scotty's Castle would be stabilized enough to prevent further damage, but not to the degree needed for public access. Under the preferred alternative, improvements would include repairing flood-damaged buildings and landscape features within DVSHD; replacing or upgrading electrical systems, communication systems, water utilities, and climate control facilities; and improving safety and accessibility.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet the objectives of the proposal, 2) evaluates potential issues and impacts on resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. See also *Appendix A: CEQA Mandatory Findings of Significance* for an analysis of impacts pursuant to the California Environmental Quality Act (CEQA).

Resource topics analyzed in detail include cultural resources, special status wildlife species, floodplains and wetlands, and visitor use and safety. All other resource topics were dismissed because the proposed project would have little or no impact on those resources. Public scoping was conducted in accordance with NEPA.

Public Comment

If you wish to comment on this EA, you may post comments online at <http://parkplanning.nps.gov/deva> or mail or hand deliver comments to Superintendent, Death Valley National Park, P.O. Box 579, Death Valley, CA 92328. This EA will be on public review for a minimum of 30 days.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Comments will not be accepted by fax, by e-mail, or in any other ways than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted.

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INTRODUCTION

The National Park Service (NPS) is proposing to rehabilitate and repair flood-damaged facilities in the Death Valley Scotty Historic District (Scotty's Castle or DVSHD). Scotty's Castle, with its architectural style, quality, and priceless collection of antiques and art objects, built in a remote isolated desert location in the early 1900s, is an icon that has immense public appeal.

DVSHD was damaged by a flash flood on October 18, 2015. About 3 inches of rainfall was recorded at Scotty's Castle over a five-hour period. Weather radar showed a nearly stationary cell over Grapevine Canyon and adjacent canyons that drain into Grapevine Canyon. The resulting catastrophic flash flood resulted in damage to features in DVSHD such as walkways and utilities. In particular, mud and debris flow damaged the parking lots, Garage, Long Shed, Bunkhouse, historic water tank, and Spring House. Additionally, the flood heavily eroded and reshaped the topography of the picnic area and leachfield located near the historic entrance gates and covered sidewalks and roads with mud and debris. Flood waters deposited up to 4 feet of sediment in places. With the exception of minor damage to the Garage, Long Shed, and Bunkhouse and minor water damage from preexisting leaks, most of the historic buildings at Scotty's Castle were not damaged by the flooding.

The proposed project would include repairing the interior and exterior of the Main House and Annex and associated features; repairing and stabilizing the Garage, Long Shed, and Bunkhouse, including restoring the Garage for use as a visitor center; restoring the Gas House and removing a nonhistoric addition; repairing the interior and exterior of the Hacienda and improving the interior for use as employee housing and offices; repairing, stabilizing, and mothballing the Fire Cache Building; remodeling the interior of the Cook House; repairing or replacing water, wastewater, electric, and propane utilities at Scotty's Castle; installing a new telecommunications line; repairing and improving parking and pedestrian walkways; constructing administrative trailer pads; and installing flood protection structures. Scotty's Castle and facilities within the DVSHD are shown in Figure 1.

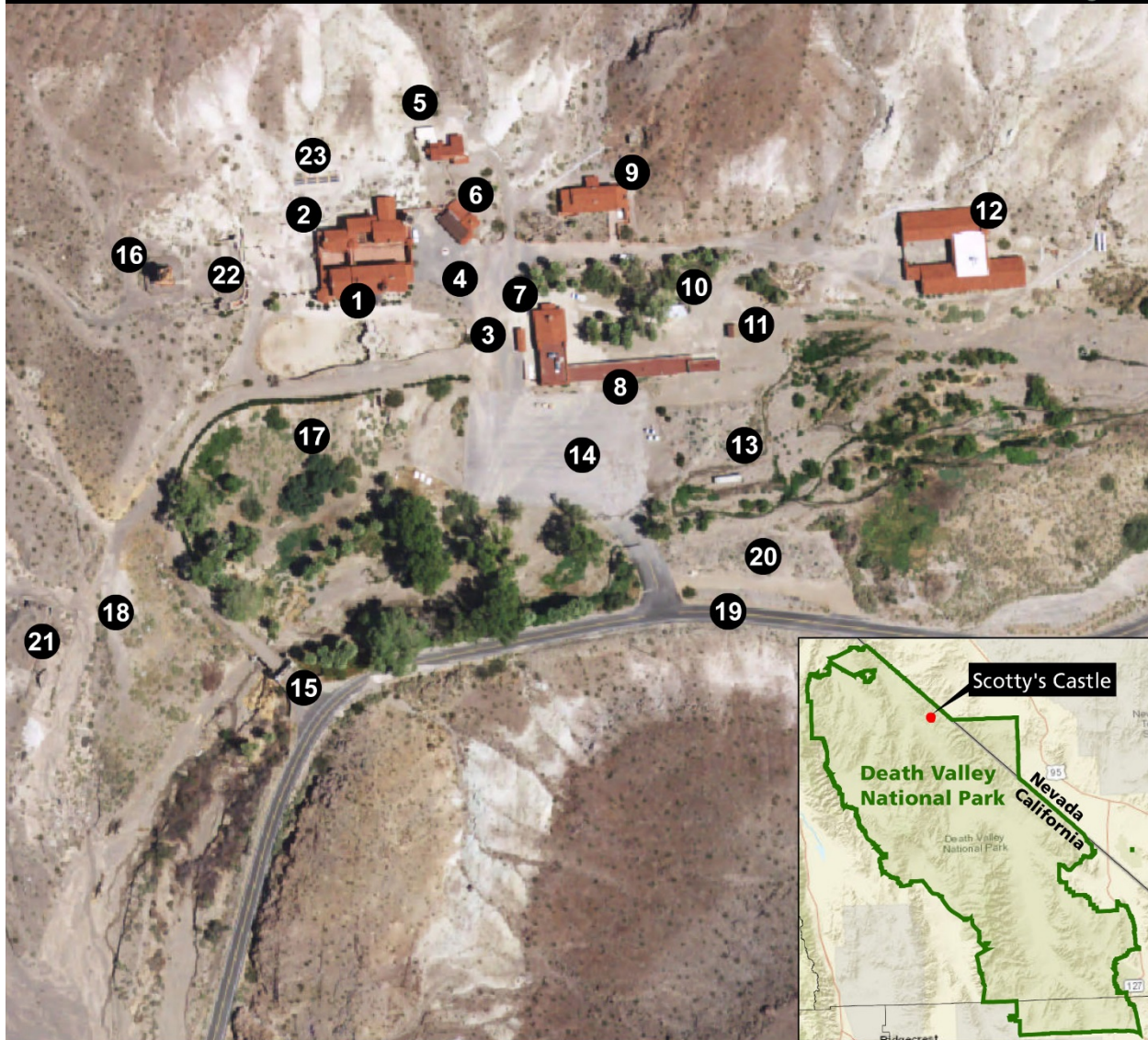
Purpose and Need

The purpose of the project is to rehabilitate and repair flood-damaged buildings, facilities, and landscape features at Scotty's Castle in compliance with current codes and standards, while meeting goals for preserving cultural and natural resources. The project also would address other critical deferred maintenance and other improvements throughout the DVSHD.

The proposed project is under consideration because buildings and facilities at Scotty's Castle were damaged by extensive flooding on October 18, 2015. The flood caused catastrophic loss of roads and utilities and extensive damage to many of the buildings and landscapes that comprise the historic district. Scotty's Castle is currently closed to the public until flood damage can be repaired and the facilities can be made safe for visitors. The project is needed to re-open Scotty's Castle for visitor use; to make the area more resilient against future flooding; and to protect the public, NPS staff, and natural and cultural resources from future flooding. In addition, repairs and rehabilitation are needed to bring buildings, facilities, and the landscape into compliance with current codes and standards.

National Park Service
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Death Valley National Park
California and Nevada



Scotty's Castle Facilities

- | | | |
|-----------------------------|--|------------------------|
| 1. Main House | 11. Fire Cache Building | 21. Gravel Separator |
| 2. Annex | 12. Stables | 22. Power House |
| 3. Ticket Office | 13. Chicken Yard | 23. Solar Water Heater |
| 4. Pedestrian Plaza | 14. Parking Area | |
| 5. Cook House | 15. Entrance Gate and Bridge | |
| 6. Gas House | 16. Chimes Tower | |
| 7. Garage Visitor Center | 17. Proposed Septic Tank Location | |
| 8. Long Shed and Bunk House | 18. Existing and Proposed Leach Field Area | |
| 9. Hacienda | 19. Bonnie Clare Road | |
| 10. Bathroom | 20. Overflow and Employee Parking | |

Figure 1. Scotty's Castle.

Issues and Impact Topics Retained for Further Analysis

Environmental issues (issues) were identified during internal and external scoping. Issues are environmental problems, concerns, and opportunities regarding the proposal to rehabilitate Scotty's Castle, or with alternatives to the proposal. The issues describe the relationship between the actions in the proposal and alternatives and the specific resources that would be affected by those actions. The issues are organized by “impact topics,” which are headings that represent the affected resources associated with the issues that are analyzed in detail. As a general rule, issues were retained for consideration and discussed in detail if:

- the environmental impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- there are potentially significant impacts on resources associated with the issue.

If none of the considerations above apply to an issue or impact topic, it was dismissed from detailed analysis.

Issues and Impact Topics Retained for Further Analysis

The issues and corresponding impact topics retained for analysis in this EA are presented in Table 1.

Table 1. Issues and impact topics retained for further analysis.

Issues	Impact Topics Related to the Issues
The proposed project would result in modifications to buildings and facilities at Scotty's Castle. Project activities could result in impacts on historic structures, DVSHD, and the Grapevine Developed Area, which is eligible for listing on the NRHP.	Cultural Resources
A draft cultural landscape report was prepared for Scotty's Castle in 2014 (NPS 2014). Project activities could result in modifications to the cultural landscape.	Cultural Resources
Potential habitat for special status species, including the federally listed least Bell's vireo (<i>Vireo bellii pusillus</i>) and southwestern willow flycatcher (<i>Empidonax traillii extimus</i>) is present near Scotty's Castle. Project activities could potentially affect these species or their habitat.	Special Status Wildlife Species
Portions of Scotty's Castle are within the floodplain of Grapevine Canyon and contain wetlands. Project activities could result in impacts on floodplains and wetlands. In addition, the project must comply with Executive Order 11988: Floodplain Management.	Floodplains and Wetlands

Issues	Impact Topics Related to the Issues
Scotty's Castle was the main attraction in the northern part of the park before it was closed in 2015. In addition, some buildings and facilities at Scotty's Castle do not meet modern codes and standards. Rehabilitating and repairing Scotty's Castle would allow increased visitor use and would improve visitor safety.	Visitor Use and Safety

Impact Topics Dismissed from Further Analysis

Several potential issues and impact topics were raised during internal and public scoping but were not retained for additional analysis. Using the same considerations noted previously, the interdisciplinary team analyzed these issues and determined they did not warrant more detailed discussion in this EA. Table 2 briefly discusses impact topics with minor effects that were dismissed from further analysis along with a brief explanation of the reasons for dismissal.

Table 2. Impact topics dismissed from further analysis.

Topic	Reason Dismissed
Air Quality and Climate Change	<p>Construction activities would temporarily increase dust and vehicle emissions. Hauling construction and fill material and operating equipment during construction would result in increased vehicle exhaust and emissions (hydrocarbons, nitrogen oxide, and sulfur dioxide emissions), which would be expected to rapidly dissipate. Mitigation measures for dust control would reduce the potential for fugitive dust.</p> <p>Greenhouse gases (GHG) emitted during project construction would consist of truck and equipment exhaust, but emissions would be short-term and would end with the cessation of construction. Any effects of construction-related GHG emissions on climate change would not be discernible at a regional scale as it is not possible to meaningfully link the GHG emissions of such individual project actions to quantitative effects on regional or global climatic patterns.</p> <p>The project would not increase the amount of vehicular traffic to and from Scotty's Castle. As such, the project would not change historic low levels of GHG or air pollutants over the long term. Therefore, air quality and climate change were dismissed from detailed discussion in this EA.</p>
Vegetation, including Special Status Species	<p>Project activities would occur within previously disturbed or unvegetated areas. No special status plant species (threatened, endangered, or species of concern) are known or expected to occur in these previously disturbed areas. New disturbance to native vegetation is expected to be minimal. Mitigation measures to avoid and minimize impacts on vegetation, including revegetation with native species and control of invasive species, would be implemented as described under <i>Mitigation Measures</i>. Because no permanent loss of vegetation would result from the project, this topic was dismissed from detailed discussion in this EA.</p>

Topic	Reason Dismissed
Wildlife	<p>Construction activities would result in temporary disturbances to wildlife due to human presence, noise generation, and vibration from heavy equipment that may displace some wildlife during the construction period. Individual reptiles and small mammals could be crushed or buried during construction activities. When construction is complete, wildlife is expected to return to the area. Project activities would occur mostly within previously disturbed areas, and no new impacts on wildlife habitat are expected.</p> <p>Mitigation measures, such as timing restrictions to avoid the bird breeding season, would be implemented to minimize impacts on migratory birds and other wildlife as described under <i>Mitigation Measures</i>. Temporarily disturbed areas would be revegetated following construction. Potential impacts on species of special concern, including the least Bell's vireo (<i>Vireo bellii pusillus</i>) and southwestern willow flycatcher (<i>Empidonax traillii extimus</i>), are discussed under <i>Special Status Wildlife Species</i>. Because impacts on wildlife would be limited to the construction period and habitat loss would be negligible, this topic was dismissed from detailed analysis in this EA.</p>
Archeological Resources	<p>Ground-disturbing activity would occur during construction at Scotty's Castle; however, this activity would be limited to previously disturbed areas. Based on previous archeological surveys (Bengston 2017; Brewer et al. 2000; Carmany-George 2012; Pearson 2003; Schneider et al. 2000; Wallace 1964), no known archeological sites would be affected. Mitigation and monitoring measures described below under <i>Mitigation Measures</i> would be implemented to reduce the potential for impacts. If previously undiscovered archeological resources were uncovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed in consultation with the state historic preservation officer (SHPO) and Timbisha Shoshone Tribe. With implementation of monitoring and mitigation, adverse impacts on archeological resources would be avoided or minimized; therefore, this topic was dismissed from detailed analysis in this EA.</p>

Topic	Reason Dismissed
Ethnographic Resources	<p>Project activities would occur within the Grapevine Canyon Archeological District, which was designated by the park in 2012. Ethnographic resources of importance to the Timbisha Shoshone Tribe have been identified within the Grapevine Canyon Archeological District and are listed as contributing features to the archeological district. Grapevine Canyon has been identified through ethnographic research as a prehistoric travel corridor; the location of an important village, "<i>Maahunu</i>"; and is a place of importance for the Timbisha-Shoshone Tribe (Johnson 2006). The tribe also occupied the area during the historic period as laborers during the construction of Scotty's Castle; and Indian Camp, their historic village, is located close to Scotty's Castle.</p> <p>The NPS is consulting with federally recognized tribes traditionally associated with the park, and copies of this EA will be forwarded to the tribes for review or comment. As described in the <i>Consultation</i> chapter of this EA, consultation with the Timbisha Shoshone Tribe and other tribes was initiated via letter on June 28, 2017. The park has been in regular contact with the Timbisha Shoshone Tribe regarding the project throughout the planning process.</p> <p>Impacts on ethnographic resources would be avoided by implementing the mitigation measures described under <i>Mitigation Measures</i>, including avoiding impacts on Indian Camp and requiring the presence of tribal monitors during construction. Because the project would not involve impacts on Indian Camp and the measures described under <i>Mitigation Measures</i> would be implemented to avoid known ethnographic sites, no impacts on ethnographic resources are anticipated. Therefore, this topic was dismissed from detailed analysis in this EA.</p>
Water Resources	<p>Impacts on water quality are possible from petrochemical spills from machinery or increased sediment loads during flooding. Petrochemical spills are unlikely, any spills would be immediately contained, and any contaminated soil would be removed as described in the <i>Mitigation Measures</i> section. Vegetation recovery is expected to restore erosion susceptibility to predisturbance levels within one year. Mitigation measures for sediment control described in the <i>Mitigation Measures</i> section would be implemented to capture sediment and minimize impacts. The average diversion rate from Staininger Spring from January 2011 to July 2015 was 126,000 gallons per day, which is about 25% of the total spring flow. This diversion would continue at a reduced rate under the preferred alternative because changes to the air conditioning system would reduce water consumption by more than 50,000 gallons per day compared with previous operations. Under the no action alternative, no water consumption would occur. There would be no long-term adverse impacts on water resources under either alternative; therefore, this topic was dismissed from detailed analysis in this EA.</p>
Socioeconomics	<p>Project activities would result in construction-related expenditures for labor, supplies, equipment, and material. Construction spending would have a slight beneficial effect on the regional economy. The project would not add additional capacity to Bonnie Clare Road or other travel routes in the park and, therefore, would not result in growth-inducing impacts. Reopening Scotty's Castle would benefit the Death Valley Natural History Association, which had annual sales of about \$220,000 from the gift shop when Scotty's Castle was open. There would be no long-term adverse effects on socioeconomics. Therefore, this topic was dismissed from detailed analysis in this EA.</p>
Indian Trust Resources	<p>No Indian trust resources are in the park; therefore, Indian trust resources was dismissed as an impact topic in this EA.</p>

Topic	Reason Dismissed
Environmental Justice	Furnace Creek, Beatty, and other communities near the park contain both minority and low-income populations; however, environmental justice was dismissed as an impact topic because no actions in the alternatives would have disproportionately high health or environmental effects on minority or low-income populations or communities.

ALTERNATIVES

Two alternatives, the no action alternative and the preferred alternative, were carried forward for evaluation in this EA. An additional alternative for Scotty's Castle was considered and dismissed (see *Alternatives Considered and Dismissed*).

Alternative A—No Action

The no action alternative describes the conditions that would continue to exist if no improvements, repairs, or changes in management were made. Under the no action alternative, the buildings would be stabilized enough to prevent further damage from water intrusion. Ongoing maintenance activities such as pest control, preventing moisture from entering the buildings, and securing Scotty's Castle against vandalism would continue. No additional repairs or improvements to the facilities would be implemented beyond the initial debris and mud removal that has already occurred, and Scotty's Castle would continue to be closed to public access.

Alternative B—Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

The preferred alternative includes numerous actions to rehabilitate, repair, and replace facilities at Scotty's Castle, as described below and shown in Figure 2 through Figure 13. The preferred alternative would reduce the risk of future flooding by minimizing placement of facilities in the Grapevine Canyon Wash floodplain and by diverting flood waters away from historic structures. No housing would be constructed in the floodplain and the value of the contents of structures in the floodplain would be minimized by not returning the collections to the Stables building. The preferred alternative would also include nonstructural flood-risk reduction measures such as warning signs and developing evacuation plans. Work would occur within DVSHD, including water supply and treatment facilities at Staininger Spring, and within a utility corridor from the Grapevine Developed Area to Scotty's Castle (Figure 2).

Work areas would be protected as needed with floor coverings (plastic or canvas tarps). Any wood sawing or metal grinding would be restricted from interior spaces except in the carpentry shop, with dust and sawdust collection. Secretary of the Interior Standards protection methods would apply to all materials cleaning. All project activities would be restricted to the Area of Potential Effect, as defined in the Section 106 consultation initiation letter submitted to the California SHPO on June 28, 2017.

Specific project details may be modified based on additional consultation with the SHPO; project details below describe the most likely approach. All actions involving rehabilitation, repair, or replacement of historic building materials would be completed in compliance with the *Secretary of the Interior Standards for the Treatment of Historic Properties*.

Main House, Annex, and Wishing Well

Interior and exterior features of the Main House and Annex would be rehabilitated and repaired, including the Annex second-story outdoor deck (lanai), the pedestrian bridge connecting the Main House and Annex, and the Wishing Well located east of the Main House and Annex. The flood-damaged exterior fabric of the Annex would be repaired to prevent further water intrusion while maintaining the historic character and improving the visitor experience. Additional actions include repairing leaks to windows and doors and improving the existing heating, ventilation, and air conditioning (HVAC) system.

Currently, stormwater drains into the lanai floor through cracks in the mortar and on the edges of the mortar. Water enters the floor structure and then travels along electrical conduits to damage the ceiling and walls of the Annex first floor. The lanai floor would be repaired to prevent leakage into the Annex, most likely by installing an additional drain and installing a waterproof membrane below the terracotta floor tiles. Existing tiles would be salvaged wherever possible. Replacement tiles would be with in-kind Saltillo tiles. Mortar would be removed and replaced to match the original mortar in color and texture, and would be feathered into surrounding mortar to minimize the visual separation of old from new mortar.

The pedestrian bridge connecting the Main House and Annex would be repaired and stabilized. Due to structural deficiencies and movement, the bridge stucco coating has been compromised, allowing water to permeate into the wood frame of the bridge and into the Main House. The frame of the bridge has undersized steel connectors and improperly installed steel plates. Proposed work would most likely include removing the steel plates and redesigning the supplemental support system that incorporates new steel connectors and replacement wood structural elements as necessary. Improperly installed steel bracing, stucco added during the last rehabilitation, underlayment (if necessary), and connectors would be removed. The bridge would be strengthened to prevent further movement and stucco coatings would be reapplied. Stucco finishes would be reapplied to match the original appearance and match the stucco on adjacent buildings.

Two windows that are currently leaking into the music room would be tested to identify the source of leaks and repaired. Repairs could consist of reinstalling and resealing windows or applying putty around deteriorating stucco. The windows may need to be replaced or reframed.

The roof at the Annex flag tower is currently leaking at the flagpole because the flashing has decayed, and the roof would be repaired to match the original construction. The current flagpole bracing is steel or iron and is corroding. The flagpole and structural connections would be removed and replaced with a more carefully detailed connection system. The existing flagpole would be reused or replaced, depending on further inspection and the detailing of the structural connection. In order to verify the condition of the structures, especially the base of the flagpole, the copper roof would have to be removed, flashing redesigned, and new copper flashing installed.

The poorly draining wood deck of the Main House observation tower is exposed to the weather, making it vulnerable to swelling, contraction, and water infiltration of the rooms below. One corner of the deck is improperly sloped and creates a low spot where water is ponding. These issues could be addressed by removing the observation deck flooring and

installing a waterproof barrier between the deck and the ceiling of the Main House. The joists under the deck floor would be shimmed to establish a proper slope and eliminate ponding, and the wood deck would be reinstalled. Alternatively, the exposed deck could be covered with a waterproof roofing material, sloped to the existing drain.

The Wishing Well located east of the Main House and Annex would be rehabilitated and made safer or mothballed. Currently, the Wishing Well is not functional and is covered by a weathered plywood cover. A plan would be developed to rehabilitate the fountain by removing the plywood cover without creating a safety hazard from falls. If rehabilitated, the Wishing Well would be rehabilitated in a way that would reduce maintenance and safety hazards. If the Wishing Well is mothballed, the park would follow guidelines for mothballing detailed in Preservation Brief #31 (Park 1993).

The HVAC system would be rehabilitated to replace components dating to the 1990s. The Main House and Annex would be thermally zoned to improve space utilization, museum storage, and efficiencies of the HVAC system. The existing water-cooled heat pumps, currently past their life cycles, would be replaced with a new optimized HVAC system. Existing ductwork and vents would be reused to the extent possible. After replacement of the HVAC system, the Main House and Annex would be maintained in a steady temperature-controlled environment to preserve museum collections. Repairing, weather-stripping, and rehanging exterior doors, and re-puttying windows would enhance the functionality and energy efficiency of the new HVAC system by preventing leakage of conditioned air to the outside.

A new cooling tower would be constructed for air conditioning for the Main House and Annex; this tower would cool water in the HVAC system and dispose of excess heat to the atmosphere. The proposed cooling tower would have a 12-foot by 12-foot base and would be up to 15 feet tall. The new HVAC cooling tower would reduce water consumption by more than 50,000 gallons per day compared with the previous water cooling system. The tower electrical and water piping would be connected to the Main House area via a combination of open trenching and paths through the existing tunnel system under the Main House. All duct work would go through the existing tunnel system. Currently, four potential locations for the tower are under consideration: the tunnel entrance location, chimes tower location, behind Annex location, and propane tank location (Figure 3). To reduce noise, the cooling tower model with the lowest decibels would be used and the tower would be shielded by landforms or walls compatible with the historic district. The potential cooling tower locations were selected to minimize visual and audible impacts.

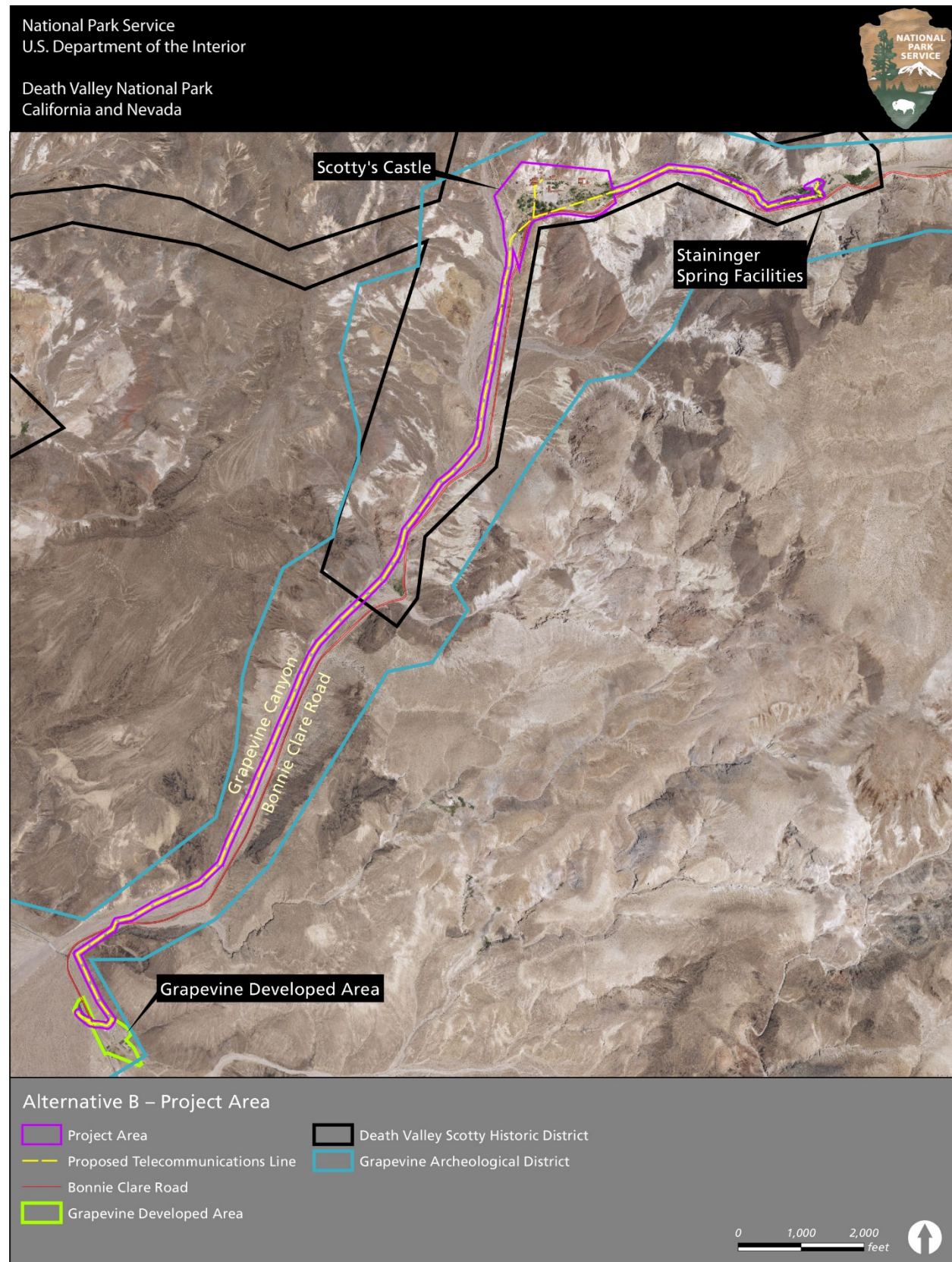


Figure 2. Alternative B project area – Rehabilitate, repair, and replace facilities at Scotty's Castle.

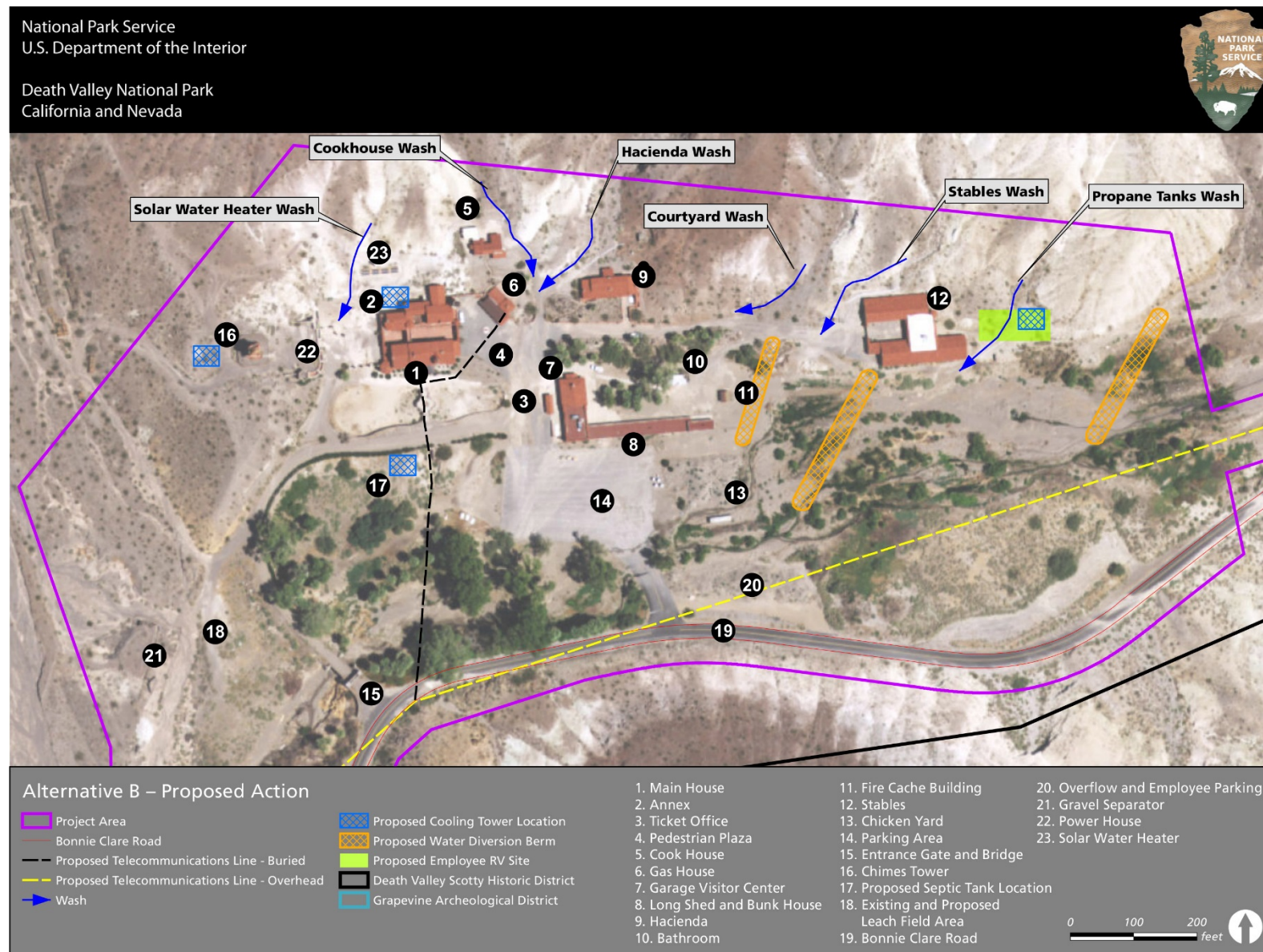


Figure 3. Alternative B – Flood-control structures, potential cooling tower locations, potential trailer pad location, and telecommunications line at Scotty's Castle.

Garage Visitor Center, Long Shed, and Bunkhouse

The Garage Visitor Center, Long Shed, and Bunkhouse exterior would be rehabilitated, and damaged interior and exterior walls would be repaired. Flood damage to all sections of the Garage Visitor Center, Long Shed, and Bunkhouse would be repaired, but work to make the buildings functional would focus only on the Garage interior for use as the Visitor Center. This work would rehabilitate the Garage portion of the structure for visitor and staff use. It would repair flood damage to the Long Shed and Bunkhouse, but would not complete all required interior repairs pending future resolution of planned use and a separate project. The Long Shed and Bunkhouse portions of the building would be mothballed. The proposed Garage Visitor Center layout is shown in Figure 4.

About 225 square feet of exterior wall along the south side of the Long Shed and Bunkhouse would be repaired or replaced and 2,500 square feet of damaged asbestos floor tiles would be removed. Exterior wall rehabilitation would be accomplished using a stucco that matches the original in material and composition. Based on condition and building needs, doors and windows would either be repaired or replaced in-kind in accordance with existing treatment plans. The two south windows would likely be replaced in-kind. Eight historic redwood doors would be preserved. Three large openings where historic garage doors once existed would have new storefront infill to seal the openings. Each infilled opening would be covered with either the original sliding track garage doors on new tracks or replica doors and tracks. The existing asphalt rolled roof would be replaced in-kind to eliminate leaks that are damaging the historic structure. The existing roof may contain asbestos, which would require mitigation measures to address. Specific mitigation measures for asbestos would be developed during detailed project design.

About 3,740 square feet of flood-damaged interior wall finishes would be replaced in the Garage Visitor Center, Long Shed, and Bunkhouse. It is likely that ductile plywood sheathing would be installed for seismic stabilization by removing the existing interior plaster, insulating the walls, attaching plywood, and then resurfacing with plaster. The garage roof would also be seismically stabilized, likely through the addition of ductile plywood sheathing. A new HVAC system would be installed in the Garage Visitor Center, consisting of new electric heating and cooling rooftop units similar in size and appearance to the existing rooftop units. The entire structure would receive a fire suppression system to adhere to NPS structural fire and other building code requirements. All electrical wiring would be replaced. To enhance the feel of the interior space, the nonhistoric drop ceiling would be removed to expose the historic structure above, showcasing the original tongue and groove wood decking and full dimensional wood rafters. New HVAC ducts, fire suppression lines, and electrical conduit would remain exposed inside the building.

New interpretive exhibits would be installed in the Garage Visitor Center. The professional quality interpretive exhibits would address multiple learning styles and would be in compliance with the Architectural Barriers Act accessibility standards (ABAAS) and Section 504 of the Rehabilitation Act of 1973 requiring accessibility of programs, services, and activities to all visitors.

The historic gas pumps located west of the Garage Visitor Center have been moved multiple times and are currently located within a noncontributing structure. The gas pumps would be

removed and likely relocated to their original location in the Gas House, and the noncontributing concrete footing would be removed to improve circulation.

New ABAAS-compliant parking would be provided south of the Long Shed and the Garage Visitor Center. The Long Shed breezeway has an existing opening that leads from the existing parking lot and into a large open courtyard north of the Long Shed and east of the Garage. Both the breezeway opening and supporting south wall suffered substantial damage as a result of the 2015 flood. The south wall was impacted by flood waters and is temporarily shored. This area would become the primary public arrival and entrance to the Garage Visitor Center and Scotty's Castle. The existing 3-foot-wide opening would be widened to about 16 feet (Figure 5) to allow for a larger and more visible breezeway entrance and to meet ABAAS code. The open breezeway also would provide improved stormwater drainage. ABAAS access into the Garage Visitor Center would be through a door on the east side, and egress would be through a door on the west side. New doors with ABAAS-compliant thresholds would be installed.

In a future project, the Long Shed and Bunkhouse would be rehabilitated, including foundation and seismic stabilization work. Seismic stabilization could include beams or interior sheathing. Once the exterior work and seismic stabilization of the Long Shed and Bunkhouse is complete, the interior of these structures would be usable again.

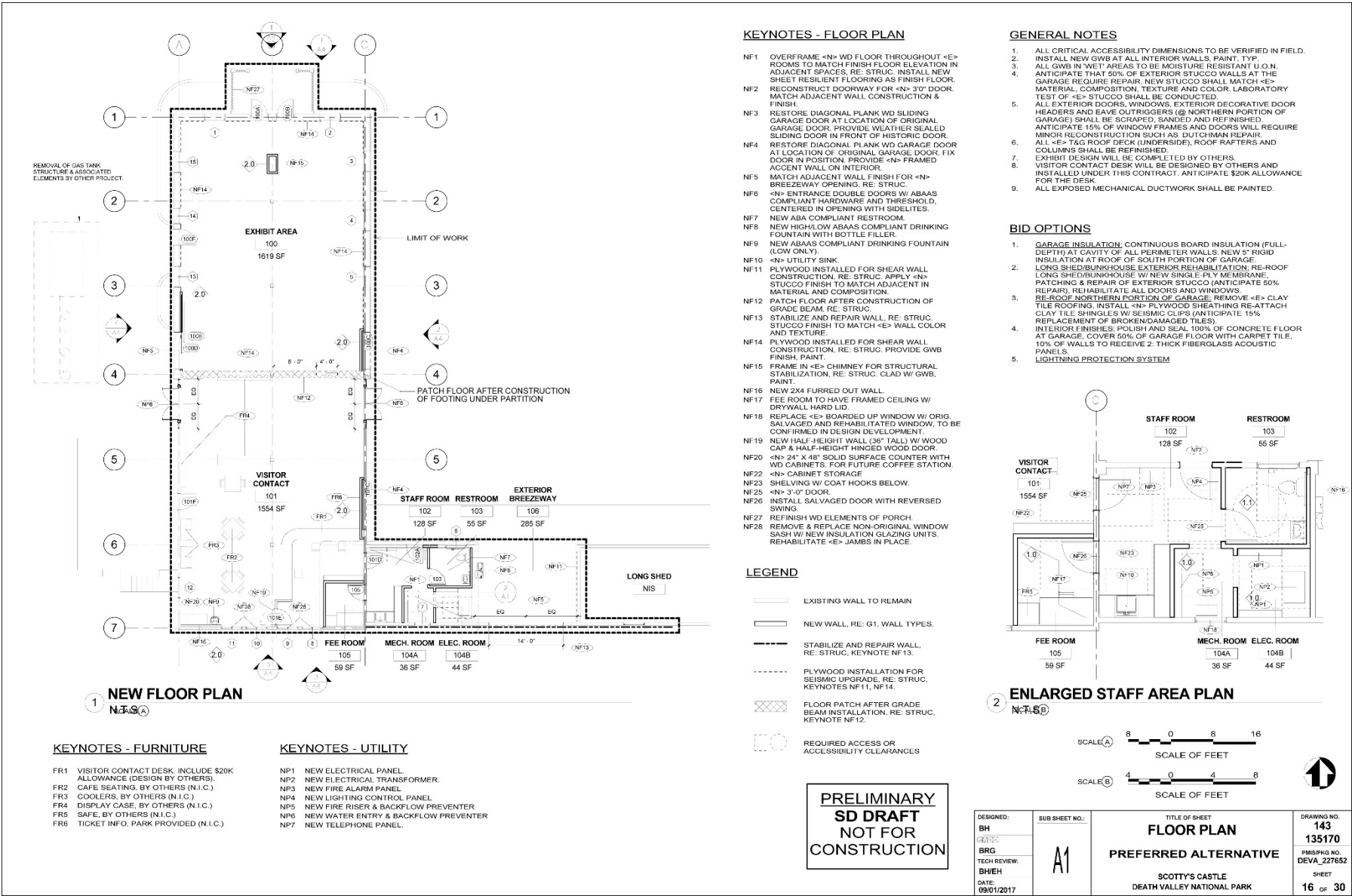
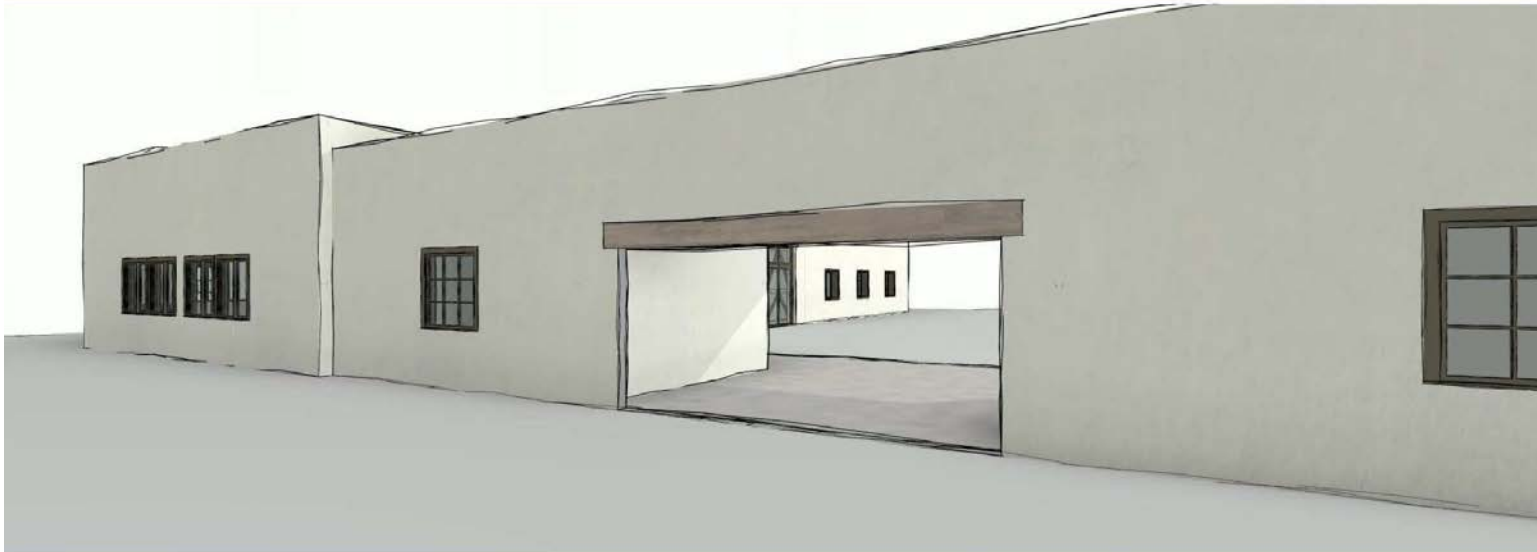


Figure 4. Alternative B – Garage Visitor Center conceptual plan.

DEATH VALLEY NATIONAL PARK / SCOTTY'S CASTLE VISITOR CENTER MINI VALUE ANALYSIS / CBA

POST VA TOPIC – South Entry Opening

7/18 & 19, 2017



ENLARGE OPENING TO BE FULL WIDTH (+/- 16'-0")

ANDERSON HALLAS ARCHITECTS, PC



Figure 5. Alternative B – Long Shed breezeway opening.

Gas House

The Gas House would be rehabilitated and circulation would be improved by removing a noncontributing wood addition on the west elevation of the building. A shade structure that is compatible with the original design of the Gas House and historic district would be installed on the western portion of the building within the footprint of the nonhistoric addition. Leaks in the roof of the historic portion of the building would be repaired. The open-air nature of the building would be restored, and the building would be used as a meeting space for tour groups. The historic gas pumps currently located west of the Garage-Long Shed-Bunkhouse would be moved to their original location in the building, and interpretive exhibits would be installed. The fire suppression and detection system would be reconfigured or changed when the wooden addition to the building is removed. The fire suppression riser currently located on the exterior northwest corner of the nonhistoric noncontributing addition would also be relocated.

Hacienda

The interior and exterior of the Hacienda would be repaired to address damage from the October 2015 flood. The interiors of the first-floor apartments and basement employee offices would also be rehabilitated. Approximately 2,600 square feet of drywall, insulation, and carpet would be replaced in the basement. Prior to interior repairs, approximately 2,600 square feet of asbestos floor tile would be removed. The electrical and information technology network system would be replaced to meet current code. Six exterior doors would be repaired, rehabilitated, or replaced, four of which are historic. Nonhistoric HVAC, plumbing, appliances, and fixtures would be repaired or replaced. Exterior site work would include regrading and installing drainage structures to minimize surface runoff that could damage the structure in the future (refer to description of *Flood-Protection and Drainage Structures* below).

Scotty's Cabin (Fire Cache)

The severely damaged Scotty's Cabin would be repaired, stabilized, and mothballed. The roof would be repaired to prevent further degradation by moisture entering the interior of the walls and damaging the plaster. The building would be preserved and mothballed for future use by:

- Repairing the wood foundation;
- Repairing and improving existing wall and roof framing;
- Repairing and replacing deteriorated rafter tails in-kind as necessary;
- Repairing existing windows and doors to be operable and maintainable;
- Shoring the current wood and brick foundations to install a new concrete slab foundation;
- Preserving existing 2-foot by 6-foot timber floor framing and reset the building on slab;
- Rehabilitating the brick skirting around the perimeter of the foundation; and
- Repairing the entry steps and handrail.

Cook House

The interior of the Cook House would be remodeled for use as an employee break room, staff library, and changing rooms for living history interpreters. Work would likely include some minor changes to the interior Cook House (western side) to change the use to a break room with a larger sink, refrigerator, and ice machine. No changes to the exterior of the building are proposed.

Chimes Tower

The flood-damaged exterior fabric of the Chimes Tower would be repaired to prevent further water intrusion while maintaining the historic character and improving the visitor experience. The Chimes Tower structure drainpipe would be repaired.

Water System

The existing water collection and delivery system at Staininger Spring is shown on Figure 6. Work on the water system would include installing a new shelter covering the 900-square-foot Spring House, repairing the historic water tank, and constructing a new roof over the historic water tank. New roofs are needed over these structures to protect the water supply and reduce water loss to evaporation. The Spring House is currently covered by a temporary plywood structure (installed in 2016 after the flood) that would be rebuilt with concrete panel walls and a precast concrete roof. The structural stability of the historic water tank would be inspected for flood damage and any necessary repairs would be implemented, including replacing the tank liner. A new roof would be installed over the historic water tank (currently uncovered), most likely using a precast concrete roofing system. The precast concrete roof would require considerably less maintenance than a wood roof and would be more resistant to damage from future floods.

Project work also includes minor rehabilitation of the nonhistoric chlorination building by cleaning out the structure and conducting minor repairs to the exterior finish. The chlorination building would also be upgraded to accommodate a new telecommunication line that is being installed aboveground via existing power poles (see *Telecommunication System*). The existing underground outlet pipes and control valves at both water tanks and the Spring House would be replaced.

Water would be delivered to Scotty's Castle via a new waterline that would be installed under Bonnie Clare Road. This is part of the Bonnie Clare Road Reconstruction Project, which is being analyzed under a separate NEPA process. The aging and deteriorating internal water distribution lines within DVSHD would be replaced within the same corridors and trenches as the existing lines and trenches being developed for other utilities. Restoration of the water system would restore important visitor and safety facilities to Scotty's Castle by restoring potable water for visitor and employee use and providing water for fire suppression to protect park visitors, staff, museum collections, and historic assets.



Figure 6. Alternative B – Staininger Spring facilities.

Wastewater System

The septic system and leachfield at Scotty's Castle would be reconstructed with new materials in the same general location they were located prior to being destroyed by the 2015 flood (Figure 7). The existing leachfield would be excavated to a depth of up to 6 feet to remove the old materials and to place engineered fill. Existing leachfield piping and leachfield material would be removed and salvaged for potential reuse or disposal. The existing vaults, manholes, and piping would be removed. The existing septic tanks would be abandoned in place. Approximately 3,000 linear feet of infiltration piping would be installed to construct the leachfield. A new underground septic tank, two new manholes, and new sewer pipes would be installed south of the swimming pool (Figure 7). The new leachfield would be smaller than the leachfield that currently exists and construction would be limited to previously disturbed areas within the footprint of the existing wastewater system; following construction, these areas would be regraded and revegetated to preconstruction conditions.

Electrical System

The electrical system at Scotty's Castle would be repaired and upgraded (Figure 8). New electrical utility boxes would be installed to upgrade the electrical service. One new box may be installed, and the existing boxes would be replaced. The new utility boxes would be similar in size (potentially a few inches larger) as the existing boxes and would be upgraded for larger amperage. The system would be constructed in the same location of the existing electrical system, which originates at the south opening of the tunnel to the Main House (south of the swimming pool). A trench would also be excavated from the tunnel on the north side of the pool to the east to connect conduits with the Garage Visitor Center. The trench would be approximately 2 feet wide, 3 feet deep, and 100 feet long. After 100 feet, the trench would connect to an existing conduit within a buried concrete trench and continue to the Garage Visitor Center. New conductors would be installed along an existing underground conduit from the Hacienda to 1) the restrooms north of the Bunkhouse, 2) the Fire Cache, and 3) the Stables. Existing noncontributing overhead electric lines from Bonnie Clare Road to the Fire Cache and existing conductors from the Fire Cache to the Stables, Long Shed, and Garage Visitor Center would be removed to restore the appearance of the historic district.

Propane System

If propane is retained as a power source, the NPS would replace or reuse existing propane tanks and replace supply lines to upgrade the propane distribution system (Figure 9). The propane tanks would be located in the same locations as they are currently located (which is outside of the mapped 100-year flood inundation area, see Figure 9 in Appendix B) and would be the same size as the existing tanks. The project would replace existing lines in their current locations. Line replacement would require a combination of using existing utility tunnels and excavation of an open trench approximately 2 feet wide and 3 feet deep within existing building paths.

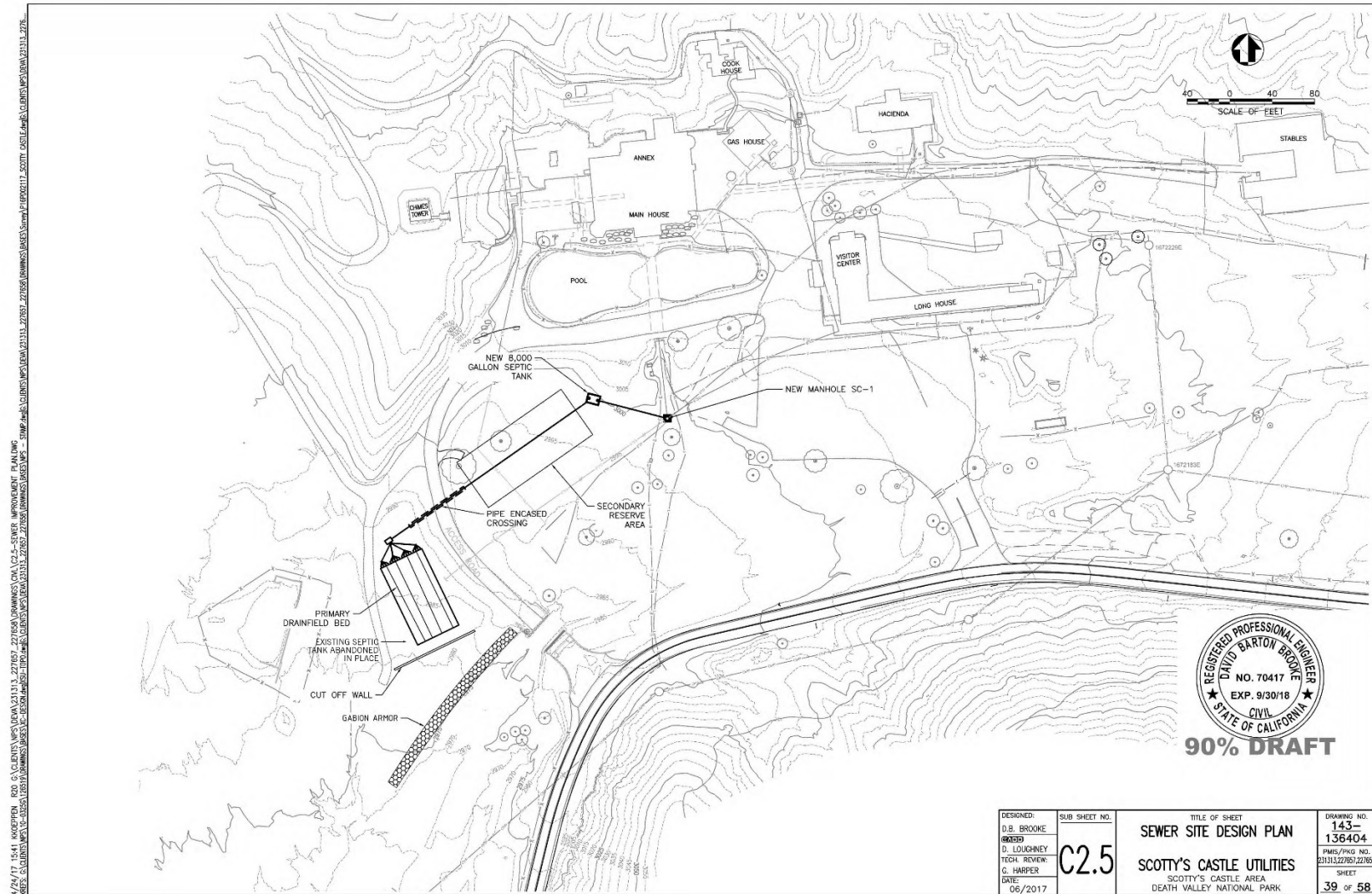


Figure 7. Alternative B – Septic system and leachfield.

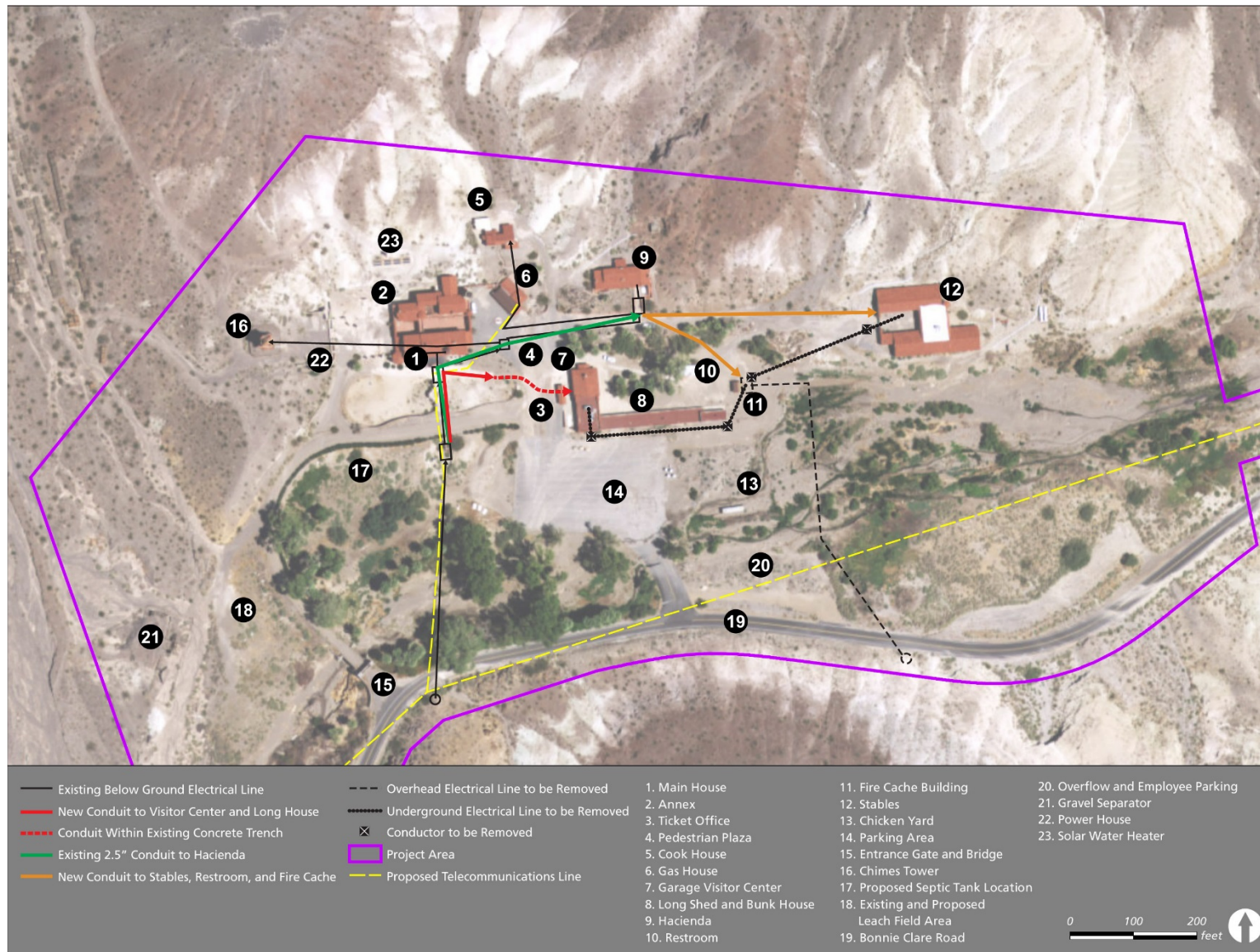


Figure 8. Alternative B – Electrical system.

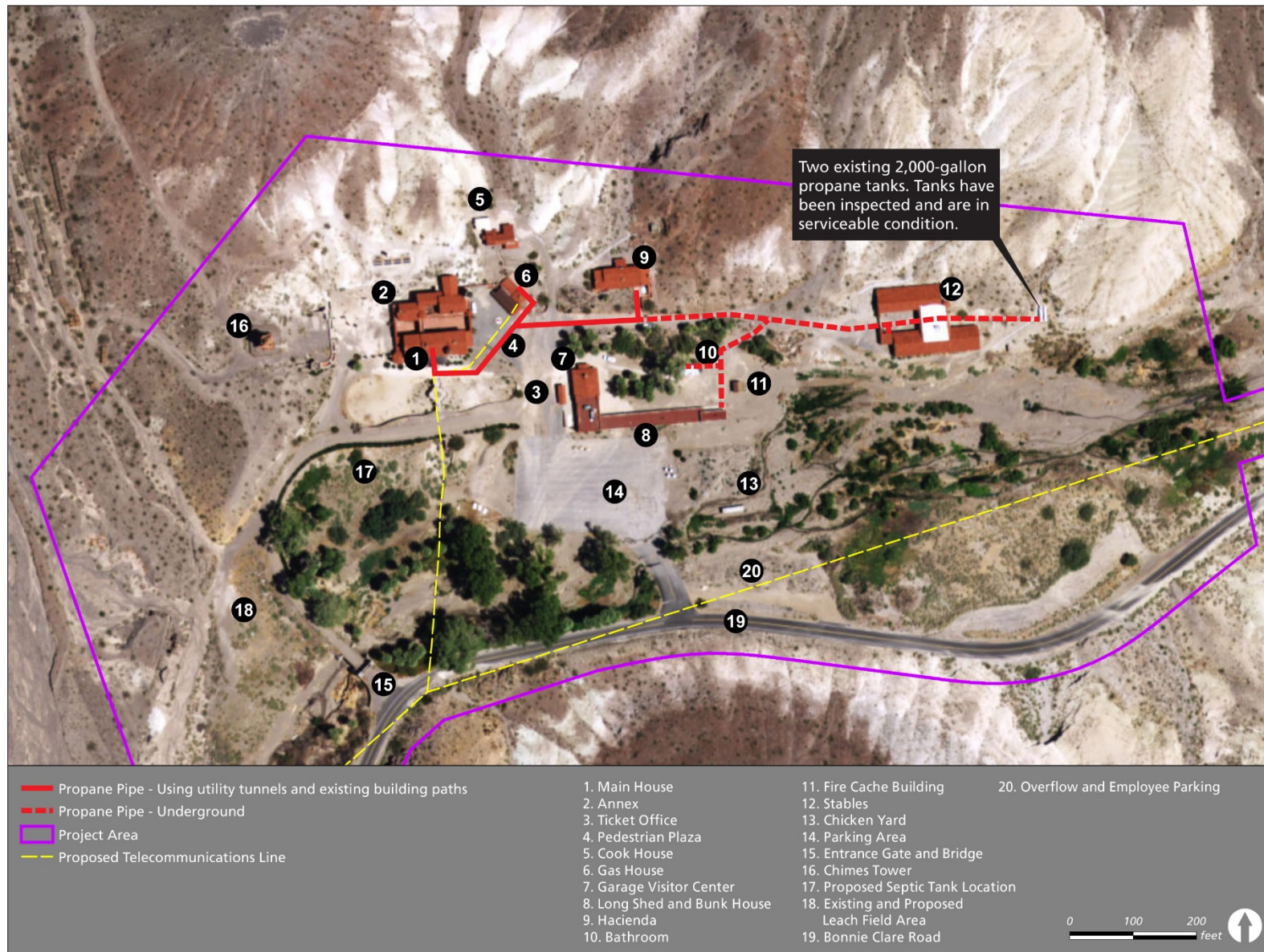


Figure 9. Alternative B – Propane distribution lines.

Telecommunication System

A new telecommunication system and line would be constructed that would begin at the Grapevine Developed Area and run aboveground using the existing Southern California Edison (SCE) power poles to Scotty's Castle; would be buried and run underground from Bonnie Clare Road to the Main House at Scotty's Castle in an approximately 2-foot-wide, 2-foot-deep, and roughly 500-foot-long open trench; then continue aboveground using the existing SCE power poles and end at the Chlorination Building at the Staininger Spring water supply facilities (Figure 2). The line would be about 4 miles long and would be installed on existing poles and accessed using existing access to the poles. No new poles would be installed; only existing nonhistoric poles maintained by SCE would be used. One or two poles may be removed if no longer needed.

The new telecommunication system line would begin at the Grapevine Ranger Station; from the Ranger Station, line would be co-located with an existing electrical service line to the Grapevine Developed Area Maintenance Building in an approximately 2-foot-wide, 2-foot-deep, and roughly 360-foot-long open trench (Figure 10). The line would be directionally drilled for approximately 70 feet under the North Highway, then placed in a 2-foot-wide, 2-foot-deep, and approximately 250-foot-long open trench to connect to the north side of the Maintenance Building. The line would then be installed aboveground to an existing power pole line (SCE) and run north east of the Grapevine Developed Area. From this point, the line would be installed aboveground on existing SCE power poles that roughly parallel the east side of Bonnie Clare Road for a distance of about 4 miles to the Chlorination Building (Figure 6).

To connect with Scotty's Castle, the proposed telecommunication line would be directionally drilled approximately 80 feet from an existing pole located on the south side of Bonnie Clare Road near the Scotty's Castle Entrance Gate, under the road to the north side of the road, then placed underground in a trench (up to 2 feet wide and 4 feet deep by up to 300 feet long) to connect with the existing telecommunication system at the south tunnel entrance to the Main House. Within the tunnels, the line would be installed in two new conduit lines hung from existing hangers along the utility tunnels below Scotty's Castle. This new conduit would run to the basement of the Gas House. The new conduit would replace an assortment of nonhistoric abandoned conduit and would also take the modern telecommunications lines off of the historical conduit hangers and other historic fabric. Historic utility conduits, lines, and other features would not be disturbed and would be left in place.



Figure 10. Alternative B – Telecommunications line, Grapevine Developed Area.

Parking, Accessibility, and Circulation

The parking lot would be expanded and reconstructed to accommodate more parking, improve circulation and access, and improve drainage (Figure 11). The existing approximately 40,000-square-foot parking area would be reconfigured and expanded to the east. The reconfigured parking area would be about 51,600 square feet. An additional existing unpaved parking area would be paved with up to about 8,000 square feet potentially available as overflow or employee parking. The east boundary of the existing visitor parking lot would be expanded up to 200 feet east into the area previously occupied by the unpaved Chicken Yard. The new area to the east would be paved and expansion would require grading to a depth of about 12 feet to facilitate installation of a level road base and provide additional space for safe access, ABAAS-compliant parking, and a restroom. The proposed design would expand the main parking area by increasing the number of paved delineated parking spaces from about 70 to up to 93 (including 4 ABAAS spaces) and 5 pull-through bus or recreational vehicle (RV) spaces. The exact number and configuration of parking spaces would be determined during final design. The Chicken Yard boundaries would be reconstructed or interpretively identified along the parking lot boundary to denote its location and historical association. The changes to parking would be completed in phases, as funding is acquired; the accessible spaces would likely be completed first, in 2018.

The reconfigured parking area could also include separate passenger unloading zones, separate bus passenger drop-off and turnaround, and a swale for flood water diversion. A new accessible restroom building would also be constructed in the parking area. In addition, improvements would be made to the detached employee/overflow lot on the side of the current parking lot entrance within the current parking lot boundaries. The overflow or employee parking area would have about 26 parking spaces. The visitor entrance to Scotty's Castle parking area would remain the same.

Approximately 72,000 square feet of deteriorated nonhistoric asphalt used in the pedestrian plaza and for walkways in the visitor pavilion area would be replaced with a surface that is compatible with the historic district and would address current concerns with safety, accessibility, drainage, and the integrity of the cultural landscape (Figure 12). The walkways were in poor condition before the 2015 flood and are completely unusable after the flood damaged and removed sections of the surface and would be repaired with asphalt. The pedestrian walkways from the Garage Visitor Center to the Main House and Annex would be upgraded to provide an ABAAS-accessible route for visitors to enter the Visitor Center and take tours of Scotty's Castle. An access ramp would be installed in the parking lot adjacent to the Garage Visitor Center, Long Shed, and Bunkhouse. New concrete flatwork would be installed to provide access from the parking lot through the open breezeway in the Long Shed. This project also would include preparing the subsurface by excavating old remnants of landscaping (palm tree root balls) and compaction.

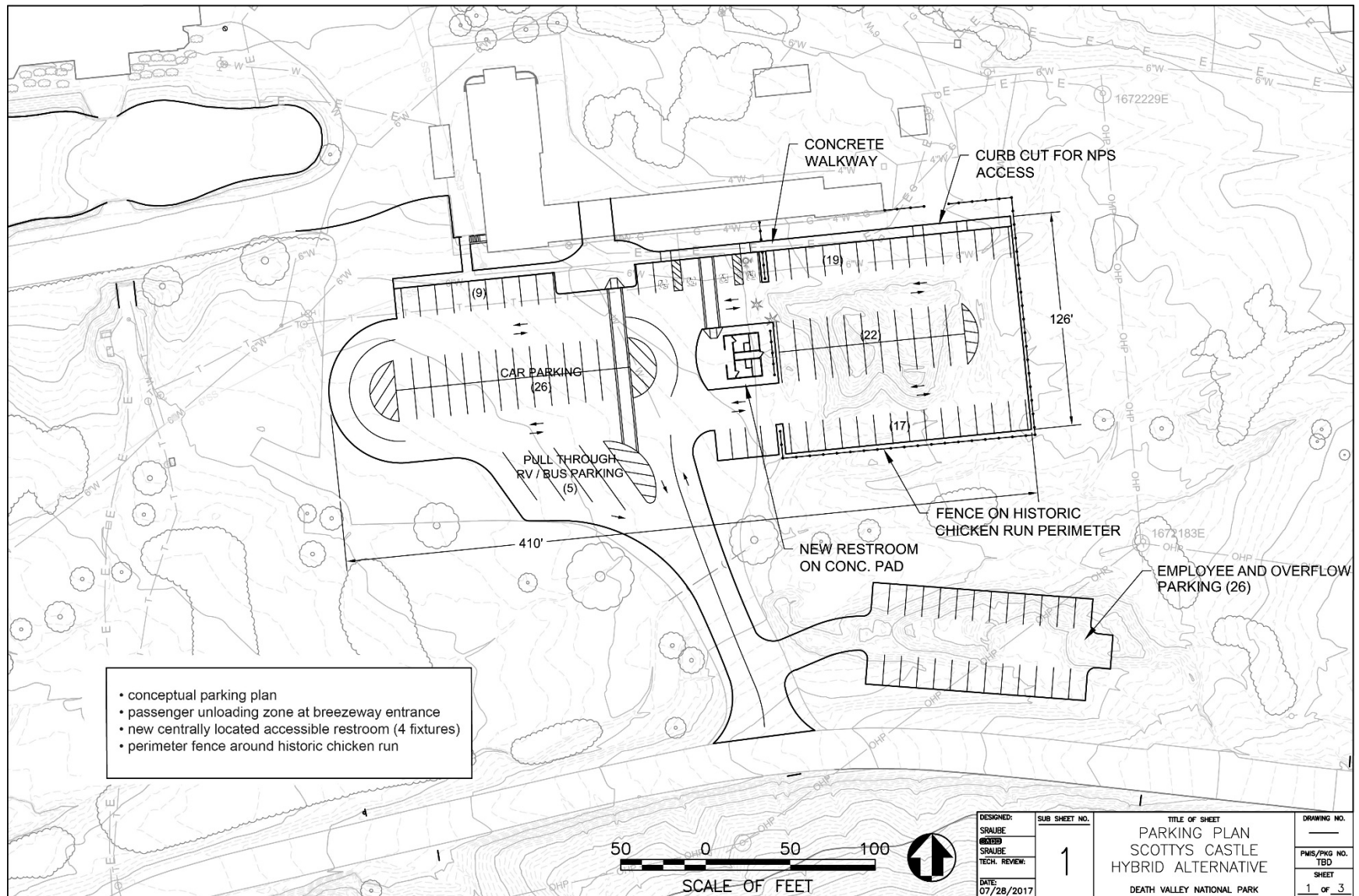


Figure 11. Alternative B – Conceptual parking plan.

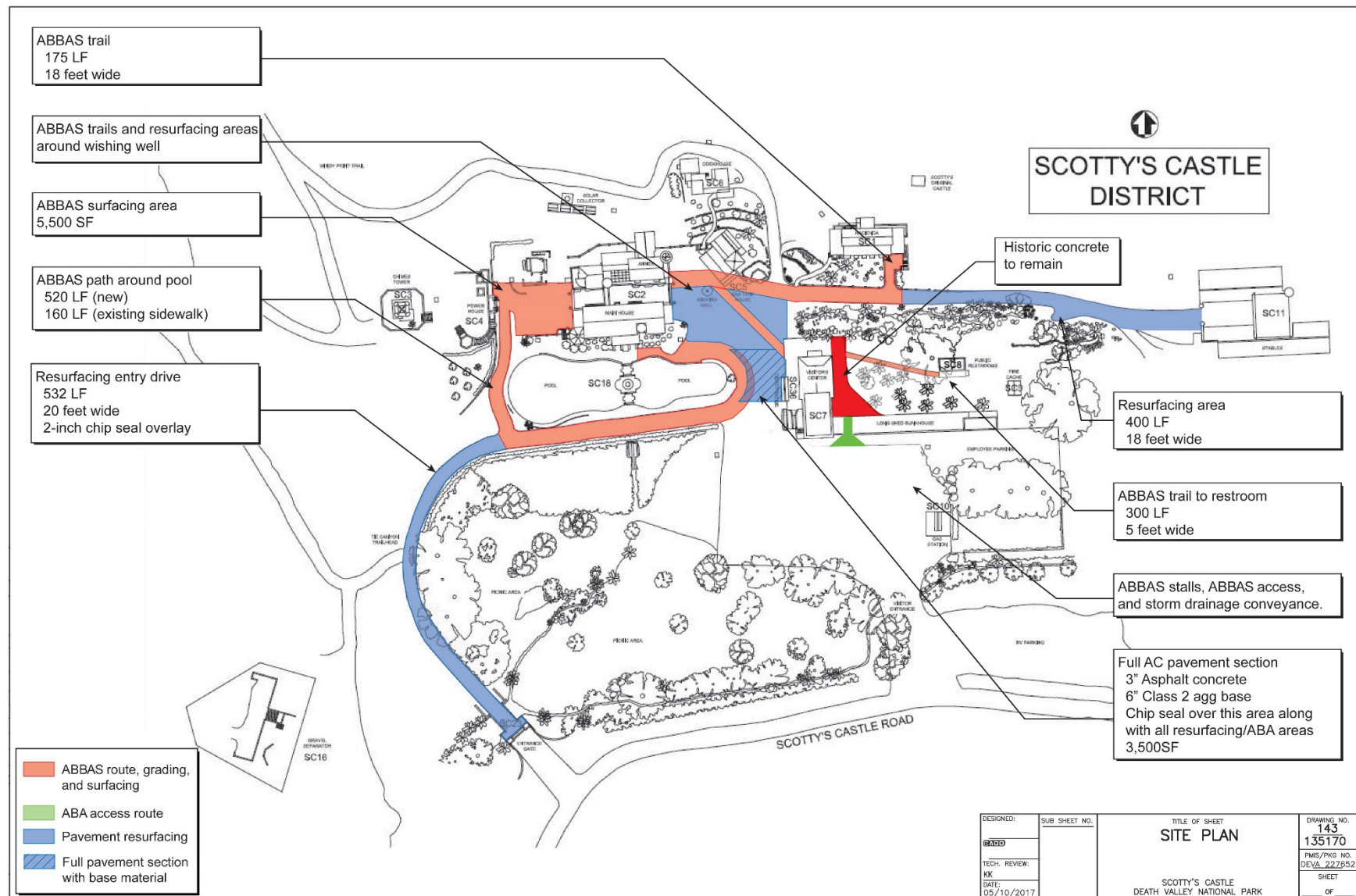


Figure 12. Alternative B – Pedestrian areas resurfacing.

Employee RV Site

A concrete pad that can accommodate two RV trailers would be constructed to allow for staff or volunteer use. The pad would be located near the existing propane tanks, if propane is not retained as a power source (Figure 3). The pad would be 60 feet by 100 feet and would likely be self-contained (i.e., no hook ups for utilities would be needed). If the park determines that telephone and electric service is needed for the RV site, lines would be installed in a trench from the Stables. Pad construction would require minimal surface grading (up to 2 feet) to create a level surface. The pad color would be selected to blend in with the surrounding landscape.

Flood-Protection and Site Drainage Structures

Three flood control berms would be constructed within the main drainage at Scotty's Castle (Figure 3). These three berms are proposed based on historical flood study observations of existing conditions. The proposed berm locations and descriptions are conceptual and are based on hydrological modeling conducted by FHWA (FHWA 2017a). A second hydrological study of the potential berm locations is also underway by the NPS and the berm locations and dimensions would be refined before construction. The berms would be constructed of gabions stacked across the drainage. Constructing the berms would require excavation to about 2 to 3 feet below grade. Local and imported rock and sand materials would be used to construct and protect the berms and maintain a soil appearance consistent with the existing environment. Local materials would be removed from areas of recent alluvial deposition along the edges of the Scotty's Castle. The berm structures would have low profiles that would contour and not extend outside the existing drainage and, therefore, the berms have low potential to create a visual impact on the surrounding landscape. Conceptual descriptions of the berms follow.

Courtyard Berm

This berm would be constructed in the drainage northeast of the Bunkhouse and Long Shed and would be approximately 15 feet wide, 5 feet tall, and 125 feet long.

Existing Berm

This berm, originally constructed in the 1980s, would be rebuilt south of the southwest corner of the Stables and would be 30 feet wide, 6 feet tall, and 175 feet long. This berm existed prior to the October 2015 flood, was constructed from earth, and was completely destroyed by the flood.

Water Meter Vault Berm

This berm would be constructed east of the Stables and water meter vault and would be 21 feet wide, 4.5 feet tall, and 150 feet long.

Additional Smaller Berms (Site Drainage)

Additional smaller berms would be constructed at the base of six ephemeral drainages located north of Scotty's Castle to redirect water flow away from buildings and other historic features (Figure 3). The ephemeral drainages would be contoured with swales and berms with gabion baskets partially below grade. The berms would be up to 6 feet tall and constructed of the alluvial materials removed from the north side of Scotty's Castle. Excavation would be needed to remove accumulated alluvial sediments from the bases of the drainages and from around the Main House, Annex, Cook House, Gas House, Hacienda, and Stables. The berms would have dimensions up to 12 feet long and 10 feet wide and would be designed to blend in with the landscape to the best extent possible, as described under *Resource Conservation Measures*. Strategies include mimicking adjacent natural landforms such as the hastate or spearhead shaped foothills that are formed between the washes, developing gentle rounded edges instead of geometric forms with hard edges, and planting native vegetation at the edges of the berms that match those found around each berm location.

Nonstructural Flood-Risk Reduction Measures

Permanent signs would be installed warning park visitors of the potential for flash flooding to occur during precipitation events. Signs would likely be placed along Bonnie Clare Road near the California/Nevada state line and near the intersection with Ubehebe Crater Road to warn visitors that they are entering an area subject to flash flooding. A flood warning and evacuation plan would be developed for visitors and park staff. The plan would include maps and descriptions of areas vulnerable to flooding and nearby areas of safe refuge, a description of the flood risk, and an evacuation plan for quickly moving visitors and staff to safe refuge areas.

Staging and Construction Access

The primary staging area for flood recovery and site restoration work at Scotty's Castle would be the existing parking area (Figure 13). Access to this staging area would be from Bonnie Clare Road. Access to utility lines and corridors (water, wastewater, electrical, propane, and telecommunications) would be along the alignments of the components of each utility corridor and from previously disturbed or historic access points.

General staging would also occur as needed in the “boneyard” in the Grapevine Developed Area. FHWA would likely have an office at the Grapevine Ranger Station during construction.

Staging for work at the Staininger Spring water system collection facilities would be in the existing disturbed area south of the Chlorination Building (Figure 14). The facilities would be accessed via the existing access road from Bonnie Clare Road. Staging and access for reconstructing the leachfield and wastewater system would be from the south and west along Tie Canyon and would tie into an existing disturbed area just west of the leachfield (Figure 15).

Contractor vehicle travel and parking would be designated as necessary to existing roads and pedestrian areas at Scotty's Castle. Work on buildings and building components using hand or power tools would occur without damage or disturbance to existing historic fabric and

landscape components. Additional work with hand and power tools would occur in the Stables carpentry shop.

Heavy equipment used would include small, medium, and large excavators; medium and small front-end loaders and backhoes; medium and small dozers; a directional boring machine; a skid steer; trenchers; delivery trucks; and water trucks. A 20- to 30-ton crane would be used for precast concrete work at the water tank and Spring House and for the septic tanks. Dump trucks would be used for hauling sand and rock for berm work, gabion baskets, and engineered sand for the leachfield. Equipment at the directional boring sites would include a directional boring machine and supporting equipment such as mud holding tanks, water tanks, and vehicles to carry drilling equipment and high-density polyethylene pipe.

Much of the restoration work would be accomplished with manual and power hand tools, such as hammers, wrenches, and drills. Power equipment such as band saws and planers would be located in the Stables carpentry shop or the courtyard alcove. Wheeled handcarts or dollies would be used for moving equipment and work items such as historic doors.

Construction Schedule

The construction period would begin in 2018 and most actions would be completed by 2020. Work on the parking lot restroom, Gas House, and Long Shed would likely occur after 2020.

Wetland Compensation

Compensation for wetland impacts would be accomplished by reestablishing wetlands as described in detail in the Floodplain and Wetland Statement of Findings (Appendix B) and in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017b). The wetland compensation measures have been designed to replace the functions and values of the aquatic resources lost as a result of this project. Additionally, the mitigation actions were designed to reestablish the high-value aquatic habitats that were destroyed during the 2015 flood event. A total of about 0.061 acre of vegetated wetlands and 0.003 acre of ephemeral riverine wetlands would be reestablished (FHWA 2017b). Wetland compensation would be constructed concurrently with reconstruction of the road.

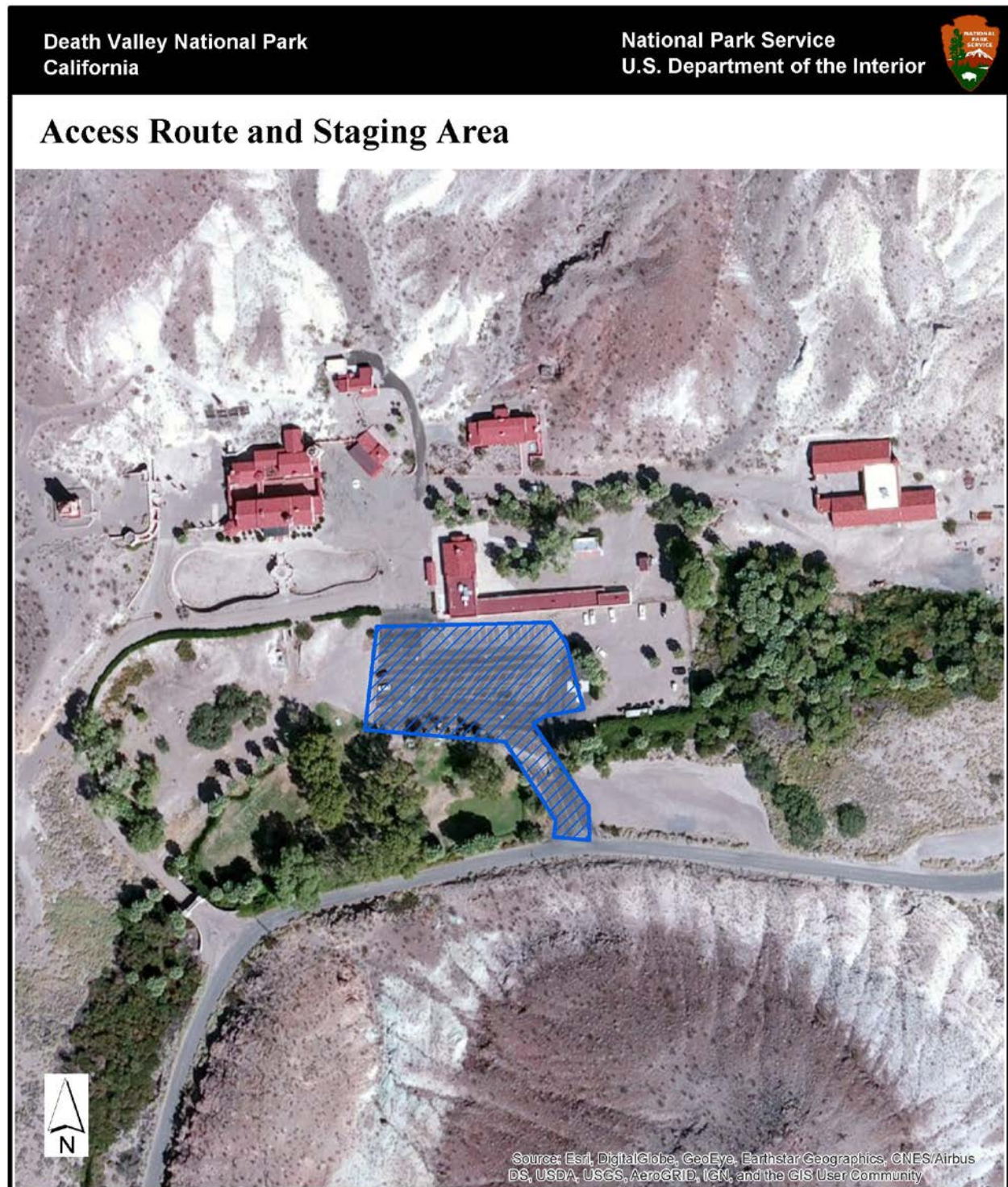


Figure 13. Staging area and access at Scotty's Castle.

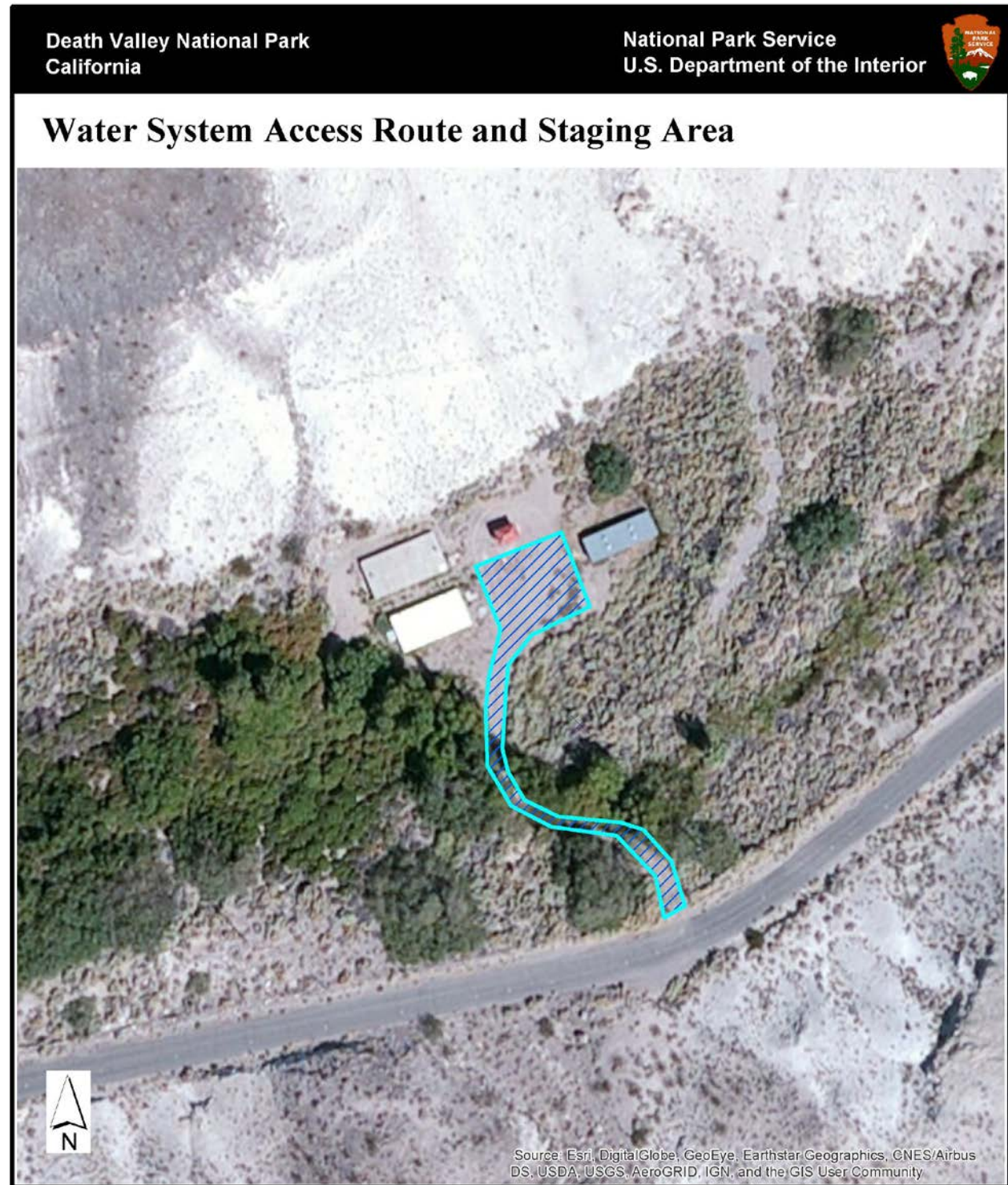


Figure 14. Water system staging and access at Staininger Spring.



Figure 15. Wastewater system access route along Tie Canyon and staging area.

Mitigation Measures

The following mitigation measures would be implemented to minimize the degree or severity of adverse effects (Table 3).

Table 3. Mitigation measures.

Floodplains	
<ul style="list-style-type: none"> Temporary and permanent features would be installed during and after construction to minimize erosion within the floodplain. Soil compaction in the floodplain would be minimized during construction, and the soil surface restored if needed after construction, and the unnatural conveyance of water from paved areas would be reduced or eliminated by the use of appropriate drainage methods to prevent accelerated runoff within the project area. Permanent signs would be installed warning park visitors of the potential for flash flooding to occur during precipitation events. 	
Wetlands	
<ul style="list-style-type: none"> Impacts on wetlands would be minimized by relocating flood-control berms out of wetlands to the greatest extent possible, as described in greater detail in the Floodplain and Wetland Statement of Findings (Appendix B) and in the Compensatory Mitigation and Monitoring Plan (FHWA 2017b). Compensatory mitigation would be constructed as described in detail the Floodplain and 	

<p>Wetland Statement of Findings (Appendix B) and in the Compensatory Mitigation and Monitoring Plan (FHWA 2017b).</p> <ul style="list-style-type: none"> BMPs for wetlands would be implemented as required in Appendix 2 of the NPS Procedural Manual #77-1: Wetland Protection (NPS 2016a). These BMPs are listed in the Floodplain and Wetland Statement of Findings (Appendix B).
<p>Water Quality and Soils</p> <ul style="list-style-type: none"> BMPs for drainage and sediment control, as identified and used by the NPS, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas (Appendix C).
<p>Wildlife and Species of Concern</p> <ul style="list-style-type: none"> Beginning April 10, all construction activities would cease in areas within a 0.25-mile buffer of suitable wildlife habitat and a qualified biologist would conduct surveys for least Bell's vireo and southwestern willow flycatcher. Surveys would be based on the U.S. Fish and Wildlife Service's (USFWS) most recent survey guidelines and protocols for the least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al. 2010). The survey protocol for southwestern willow flycatcher protocol recommends conducting surveys during three survey periods: May 15 to June 1, June 1 to June 24, and June 24 to July 17 (Sogge et al. 2010). The NPS would not conduct surveys during the third survey period unless birds were detected during the first two survey periods. If neither species is detected during surveys, construction activities would resume in areas adjacent to suitable habitat. However, if either species is detected, and surveys confirm that birds are nesting or nesting is a possible outcome, then the NPS would resume construction activities adjacent to suitable habitat after (1) the avian nesting and breeding season ends (i.e., August 16); or (2) it has been determined by a qualified biologist that the birds are not attempting to nest again or any young have fledged.
<p>Vegetation</p> <ul style="list-style-type: none"> Disturbed areas would be monitored after construction to determine if remedial actions, such as the installation of erosion-control structures or nonnative plant species control, are necessary.
<p>Invasive Plant Species</p> <ul style="list-style-type: none"> Invasive exotic plant species would be controlled in high-priority areas and other undesirable species would be monitored and controlled, as necessary. To prevent the introduction and minimize the spread of nonnative vegetation and noxious weeds, measures would be implemented during construction: (1) minimize soil disturbance; (2) pressure wash and/or steam clean all construction equipment to ensure that all machinery, rocks, gravel, or other materials are cleaned and weed free before entering the park; (3) brush down all construction equipment after every trip while transporting material outside the construction limits; (4) cover all haul trucks bringing fill materials from outside the park to prevent seed transport; (5) limit vehicle parking to existing roads, parking lots, or access routes; (6) limit disturbance to roadsides and culvert areas, including limiting equipment to the roadbed area—no machinery or equipment would access areas outside work area boundaries; and (7) obtain all fill, rock, or additional topsoil from the project area, if possible. If not possible, obtaining weed-free material from NPS-approved sources outside the park would be required. Disturbed areas would be monitored for 5 years following construction (until the disturbance has subsided) to identify growth of noxious weeds or nonnative vegetation and treat any individuals or patches observed. Treatment of nonnative vegetation would be completed in accordance with Director's Order 13: Integrated Pest Management Guidelines. In an effort to avoid introduction of nonnative/noxious plant species, no imported topsoil or hay bales would be used during revegetation. On a case-by-case basis, the following materials may be used for any erosion-control dams that may be necessary: certified weed-free rice straw, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales. Excess soil material that is infested with the invasive species <i>Halogeton glomeratus</i> would be buried a minimum of 18 inches deep and covered with clean soil at the designated mixing table site. This species has been identified adjacent to the construction area on Bureau of Land

Management land, on a few sites in the proposed construction corridor, and is a serious threat to the park.
Cultural Resources
<ul style="list-style-type: none"> • A qualified archeologist would be present on-site to monitor all ground-disturbing activities to ensure that activities occur within the Area of Potential Effect defined for the project and that no important information is lost. • Prior to construction, the archeologist would flag areas to avoid during construction, including defining the project limits at Staininger Spring, along the proposed access route and staging area for the wastewater system, and along the access road for the proposed telecommunications system. • A tribal monitor would be present for all ground disturbing activities, if available, especially for areas along Bonnie Clare Road. • In the unlikely event that previously undocumented archeological features are encountered during project implementation, all necessary steps would be taken to protect them, and work in that location should be immediately suspended until the park compliance archeologist or another archeologist meeting the Secretary of the Interior Standards has evaluated the find. • In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's Native American Graves Protection and Repatriation Act (NAGPRA) Inadvertent Discovery Plan are completed and the NAGPRA is followed. • A programmatic agreement (PA) to resolve the adverse effects on historic properties would be developed with the SHPO, American Indian tribes, and other consulting parties. All stipulations would be adhered to as part of this project. • The exterior form of flood-control berms would mimic and blend with surrounding landscape topographic forms and would not be geometric in appearance. The edges of the berms would be rounded and blend into the surrounding grade with curves and slopes that match those in the immediate area. Berms would mimic adjacent natural landforms such as the hastate or spearhead shaped foothills that are formed between the washes. Native plantings would be added at the edges of the berms to match those found around each berm location.
Visitor Use and Experience
<ul style="list-style-type: none"> • If Bonnie Clare Road reopens before Scotty's Castle, at least one lane of traffic on Bonnie Clare Road would remain open during construction. • Traffic delays from construction activities would be limited to a 30-minute maximum.
Air Quality and Soundscapes
<ul style="list-style-type: none"> • Fugitive dust plumes would be reduced to the extent possible by water sprinkling the soil during earth-disturbing activities. Possible water sources for construction would be Scotty's Castle or Beatty, Nevada. Water acquired from outside sources would be treated for aquatic invasive species and pathogens if needed. • Unnecessary construction vehicle engine idling would be limited to reduce noxious emissions and noise.

Alternatives Considered and Dismissed

The following alternatives were considered for project implementation but were dismissed from further analysis, as described below.

Mothballing Alternative

If this alternative were implemented, the buildings and facilities at Scotty's Castle would be mothballed for the long term (10 years or longer) following the preservation and stabilization procedures for historic buildings outlined in NPS Preservation Brief #31: Mothballing Historic Buildings (Park 1993). Furniture and artifacts from Scotty's Castle would continue to be kept in storage. This option was dismissed from further evaluation because it would not meet the project purpose and need to repair and rehabilitate Scotty's Castle while making it safe for the public.

HVAC Alternatives

The park considered air-cooled, water-cooled, and geothermal HVAC systems. Smaller air-cooled condensers were considered but were dismissed due to their inability to adequately cool the air in Death Valley's desert environment. Very few air-cooled condensing units are designed for use in the extreme high summer temperatures that are present in the park. When used in environments like at Death Valley, multiple oversized condensers are needed for cooling, using substantially more energy. These factors reduce the equipment's lifespan, require additional energy, and increase the likelihood of refrigerant leakage. Further, the numerous oversized condensers, located on the top of the building, were deemed too great a visual impact compared with a single more remote cooling tower.

An additional water-cooled system option was considered, in lieu of a cooling tower, which would involve finishing the Scotty's Castle swimming pool, installing piping in the swimming pool floor, capping the floor with concrete, and filling the pool. This would allow the heat of the building to be dissipated into a large surface area of water and would have similar performance as a cooling tower, but without the visual impact on the cultural landscape. Although feasible from a technical perspective, this option was dismissed because of substantial initial and long-term maintenance costs and additional staffing needs. The cost of this option also would be much higher than the cooling tower and does not align with the current interpretive vision for Scotty's Castle. Furthermore, the evaporative surface of the pool has a much larger surface area than the cooling tower and, thus, would use more water.

Geothermal systems were also considered. Geothermal systems have been troublesome to many parks and have high initial costs, issues with heat pumps, and issues with underground maintenance. Considering the high summer ground temperatures, a geothermal system is not recommended at this site. In addition, due to the number of earthquakes in the area, this system would be at greater risk for damage.

Alternatives Resulting in No Adverse Effects on Historic Properties

The NPS considered an alternative that would avoid adverse impacts on historic properties. This alternative would have most of the same components as the proposed action, but would not include: 1) installing berms to direct flood waters away from visitor use areas and sensitive historic properties; 2) installing seismic stabilization in the Garage Visitor Center to reduce damage from future seismic events; 3) providing a sufficient heating and cooling system to the Garage Visitor Center for visitor enjoyment and collections management; 4) widening the Garage breezeway entry to allow flood waters to adequately drain and provide visitors with ABAAS access into the Garage Visitor Center; and 5) expanding the parking lot and adding a new restroom to meet visitor and staff demand.

This alternative was dismissed from further evaluation because it would not meet the project purpose and need to repair and rehabilitate Scotty's Castle, provide visitors safe access, protect natural and cultural resources, provide ABAAS access where possible, and reduce future impacts from floods. Several actions critical to improving life-safety issues would not be implemented to achieve a no adverse effect determination for historic properties. Specifically, the berms, which are critical to improving the safety of staff and visitors by providing protection against future floods, would not be constructed. Without the berms, future floods would inevitably follow the same path as the 2015 flood, creating serious safety issues as water and debris flow into visitor use areas. Widening the breezeway is another aspect of the project designed to disperse the intensity of flood flows; without this project component, visitor safety, structural integrity of the Visitor Center, and ABAAS access would all be compromised. Seismic stabilization of the Visitor Center cannot be removed from the project scope because it is required to meet Executive Order 12941, *Seismic Safety of Existing Federally Owned and Leased Buildings*. This order adopted minimum technical standards for all future rehabilitation projects for federally owned buildings.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the no action and action alternatives. Cumulative effects are analyzed for each resource topic carried forward.

Cumulative Impact Scenario

The Council on Environmental Quality (CEQ) regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts are considered for the no action and action alternatives.

Cumulative impacts were determined by combining the impacts of the actions included in the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, present, or reasonably foreseeable future actions in the park that could result in cumulative impacts. The following past, present, or reasonably foreseeable actions were identified:

- Replacement of the waterline supplying water to DVSHD, completed in 2011.
- Reconstruction of Bonnie Clare Road, reconstruction of Grapevine Ranger Station parking lot and sidewalks, and resurfacing of Mesquite Spring Campground Road, completed in 2013.
- SCE replacement of more than 20 power poles along Bonnie Clare Road following the flood in 2015.
- Reconstruction of Bonnie Clare Road and a new waterline to repair flood damage, planned to begin in 2018, including:
 - Reconstructing the road;
 - Placing a water line and utility lines beneath one lane of the road;
 - Repairing a dirt berm at the water intake;
 - Installing a test well near the water intake;
 - Reconstructing a portion of the Upper Vine Ranch perimeter fence;
 - Armoring the stream channel at the entrance bridge to Scotty's Castle; and
 - Installing stream training and erosion-control structures in select locations.
- Undertakings covered under streamlined Section 106 review including:
 - Removing flood debris from inside and adjacent to historic structures, walkways, trails, and other landscape features;
 - Repairing the historic Spring House foundation;

- Repairs to Scotty's Cabin, such as regrading and clearing around the building, repairing the exterior stucco where cracked or deteriorated, repairing the roof, and painting or staining the building exterior including roof rafters and door and window trim;
 - Clearing 210,000 cubic yards of debris from the swimming pool; and
 - Removing nonhistoric utilities such as electrical, conduit, and plumbing.
- Future general landscape improvements at Scotty's Castle including:
 - Implementing palm tree management (removal of palms in nonhistoric locations);
 - Repairing the concrete and stone watercourse;
 - Replacing the Chicken Yard fence;
 - Repairing the historic boundary fence;
 - Repairing 75,000 square feet of landscaped picnic areas, including irrigation system repairs, hazard tree removal, and reseeding the lawn area;
 - Installing 700 linear feet of safety railing around the pool; and
 - Redirecting the stream into the historic channel to protect historic structures from water damage.

In addition to the items listed above, the 2014 Cultural Landscape Report (NPS 2014) will be revised in the future and may contain treatment recommendations that could affect the cultural landscape. Specific details are not available, but would generally be expected to benefit the cultural landscape.

Cultural Resources

Types of NPS cultural resources include archaeological resources, cultural landscapes, historic structures, museum objects, and ethnographic resources. As described in the first chapter, impacts to archaeological and ethnographic resources would be mitigated and were dismissed from a detailed analysis. Museum objects were recovered after the flood and are currently stored off site. This project would benefit museum objects because many will be returned to the Scotty's Castle visitor center. The exhibits will be located and designed to prevent future damage. Structures and cultural landscapes within historic districts would have more substantial effects; that analysis follows below.

Affected Environment

Historic Structures and Districts

As described below, the analysis area for historic structures and districts is the DVSHD, Grapevine Developed Area, and a 7.5-mile section of Bonnie Clare Road.

Death Valley Scotty Historic District

Scotty's Castle was listed in the National Register of Historic Places (NRHP) in 1978. The NPS evaluated it as a cultural landscape in 2005 (NPS 2005) and updated the NRHP district nomination in 2009 (NPS 2009). A 2013 draft NRHP nomination amendment has been on hold and pending updates since the 2015 flood-damaged portions of the district; therefore, all information provided in this EA is relevant to information published in the 1978 nomination and 2009 amendment (NPS 2013). The historic district is significant in 20th century architecture, folklore, social history, archeology, art, and invention, and is listed under Criteria A, B, C, and D. Construction of buildings and features in the district is associated with mining, frontier romanticism, and trends in conspicuous consumption practiced by the wealthy during the 1920s (Criterion A). The district is associated with Walter Scott (Death Valley Scotty), a colorful figure and entertainer from the American mining frontier, and person significant to the region's development (Criterion B). The Spanish Revival- influenced building and landscape architecture typifies these values and embodies distinctive characteristics of technologies and methods of construction for the period (Criterion C). The district is eligible under Criterion D because archeological deposits associated with prehistoric and historic Native American occupation of the area have potential to yield additional information important to the region's history.

The area referred to as Scotty's Castle includes 300 acres of land and structures associated with Death Valley Ranch. The period of significance for Scotty's Castle is 1922 to 1954 (NPS 2009). Prior to the 2015 flood event, the DVSHD had a total of 45 historical buildings and structures; 21 buildings and structures are individually listed on the NRHP and 9 historic structures are individually eligible for the listing on the NRHP (NPS 2009, 2012). Of these, 16 buildings and 26 structures contribute to the eligibility of the district. However, the eligibility and contributing status of individual buildings and structures may have changed as a result of the flood and no evaluations have been completed yet to determine the new status of any buildings. Buildings within the Death Valley Ranch portion of the historic district that contribute to the eligibility of the historic district include the Main House and Annex, Chimes Tower, Hacienda, Powerhouse and Pavilion, Gas House, Cook House, Garage, Long Shed and Bunkhouse, Scotty's Cabin, the Entrance Gate with apartment, Stables, and the Grotto/Servant's Quarters. Contributing structures include the Swimming Pool, Chicken Exercise Yard, Solar Heater, Gravel Separator, Wishing Well, Boundary Fenceline, Scotty's Grave, Tie Canyon, Powder Storage, Hay Platform, Spring Access Road, the tile courtyard between the castle and annex, walkways at the Cook House and Hacienda, driveway at the motel/garage, watercourses, retaining walls, entrance road and building complex access roads, and watercourse north of Bonnie Clare Road. Contributing buildings at the Lower Vine Ranch (Scotty's Ranch) include Scotty's Ranch House, Garage, Grain Shed, Blacksmith Shed, Corrugated Metal Building, Rock House Ruins, and Utility Building; contributing structures and landscape features are the Corral, Wooden Bridge, Scott's Camp, Water Trough, Perimeter and Cross Fence, access roads, trails, ditches, and fields.

The district also includes an additional 1,200 acres of Lower Vine Ranch (2.5 miles west of Scotty's Castle) and the Staininger Spring facilities (0.9 mile east of Scotty's Castle). There are no proposed actions within the Lower Vine Ranch. The water tank associated with the original development of the Staininger Spring facilities contributes to the historic district and is individually eligible for listing on the NRHP. The Spring House, water tank constructed during the 1970s, and Chlorination Building do not contribute to the eligibility of the district.

Grapevine Developed Area (GDA)

The NPS drafted a determination of eligibility for the GDA and considers the resource as historic district significant under NRHP Criteria A and C. The potential historic district is associated with significant events in history (Criterion A) and the buildings embody the distinctive characteristics of NPS styles and methods of construction during the 1960s (Criterion C). GDA is eligible for listing on the NRHP on the local level under Criterion A for its association with the Mission 66 program as the only intact example of a development with both visitor and park support services in the park. The area is eligible under Criterion C on the local level because it embodies distinct Mission 66 planning and architectural characteristics and is a representation of modern planning and infrastructure in the park. At the time the original nomination form was drafted for GDA, it was also considered eligible for listing on the NRHP under criterion exception G because all of the buildings in GDA had not met the 50-year age criterion (NPS 2011a); however, all buildings in GDA are now more than 50 years old and criterion exception G no longer applies. The period of significance is 1964 to 1965.

GDA comprises the Ranger Station, parking lots, landscaping, Four-Unit Apartment Building, Utility Building, and road in the maintenance area. Of these, there are three buildings that contribute to the eligibility of the potential historic district (the Ranger Station, Utility Building, and Four-Unit Apartment) and one contributing structure (the road in the maintenance area). The potential historic district also contains the following noncontributing structures: the entrance station, an RV parking area, a seven-bay storage shelter, and North Highway/Bonnie Clare Road.

Bonnie Clare Road

The road is a NRHP-eligible historic property associated with the early Mission 66 NPS capital development program (NPS 2011b). The road qualifies under NRHP Criteria A and C for its association with significant events in local history (Criterion A) and embodiment of distinctive characteristics that represent distinctive design and artistic values (Criterion C). The road is associated with the early Mission 66 NPS improvement program; those improvements represent a formalization of the road as a major circulation feature of the park and the NPS's continued philosophy of unobtrusive development on the landscape. The period of significance is 1947 to 1951. The road contributes to the Scotty's Castle Cultural Landscape and is also part of the Bonnie Clare Cultural Landscape.

The historic property boundary for the road is an area extending 50 feet on either side of the centerline from the California/Nevada state line for a distance of 7.5 miles south. The NPS and FHWA are preparing a separate EA and evaluation of project effects for reconstructing the road.

Cultural Landscapes

The cultural landscape of the DVSHD has been documented in a 2014 draft Cultural Landscape Report (NPS 2014), 2013 draft NRHP nomination amendment, and 2005 Cultural Landscape Inventory, all of which have been on hold or not updated since the 2015 flood damaged portions of the historic district. The cultural landscape consists of two discontinuous parcels – Upper Vine Ranch, also called Scotty's Castle, and Lower Vine Ranch. Scotty's Castle, which is the

subject of this EA, is a 283.8-acre designed landscape that was built for Albert M. and Bessie Johnson. Located in Grapevine Canyon near a spring, Johnson hired a team of design professionals to transform the modest ranch into a lavish Spanish-style estate. Work in the landscape included major grading and earthworks, complex infrastructure, roads and paths, gardens, and water features. Dewey Kruckeberg, a landscape architect from Los Angeles, designed the landscape to blend with the architectural character of the estate. He designed a lush verdant landscape as an oasis in the desert with planting beds, rock gardens, a winding watercourse, and paved walkways and stairs. Work was not completed when the Great Depression hit so many projects were left unfinished.

The cultural landscape consists of character-defining features associated with seven landscape characteristics identified in the draft Death Valley Scotty Historic District Cultural Landscape Report (CLR) (NPS 2014): natural systems and features, spatial organization, buildings and structures, small-scale features, circulation, vegetation, and views. One feature, identified as a structure in the CLR, is addressed in this section under *Small-Scale Features*.

Natural Systems and Features

Natural systems and features that influenced the historic design and character of Scotty's Castle include the narrow canyon defined by steep canyon walls and the terrace that was created to serve as the foundation for the building complex. The natural spring served as the impetus for establishing the estate at this location. The spring remains located up the canyon from the complex but is not currently supplying water to the watercourse that runs through Scotty's Castle. Millions of years of weather erosion has created hastate- or spearhead-shaped hills divided by washes that define the sides of those landforms.

Spatial Organization

The spatial organization of Scotty's Castle is still evident in the design and layout of buildings, structures, circulation routes, and land use areas. Just more than half of the Upper Vine Ranch perimeter fence that used to define the boundary of Scotty's Castle remains after the 2015 flood. Buildings and structures constructed during the period of significance remain in their original locations but many were damaged by the 2015 flood. Cottonwood Corner remains as originally intended as an attractive entrance feature to Scotty's Castle. The greatest change to spatial organization would be the entrance and parking lot, built in the 1970s, although this is viewed as a necessary modification for visitor safety and protection of the historic entrance road. Despite this change and damage from the 2015 flood, the overall organization of the most prominent spaces at the site remain largely intact.

Buildings and Structures

While buildings are addressed in the *Historic Structures and Districts* section, some structures associated with the cultural landscape are addressed here. They include the Swimming Pool, Watercourse, Upper Vine Ranch Perimeter Fence, and Interior Fences.

Swimming Pool

The long irregularly shaped swimming pool forms the central focal point for Scotty's Castle and is positioned just south of the Main House and along the main entry drive. It remains unfinished, signifying one of the character-defining aspects of Scotty's Castle and how its development was halted by the Great Depression.

Watercourse

The oasis feel emanates from the watercourse, the character of which consists of spring-fed pools, waterfalls, and lush ornamental vegetation. This prominent structure is lined with boulders and is crossed with stepping stones and paths. It is filled with ornamental plantings, including palm trees, and was not damaged during the 2015 flood.

Upper Vine Ranch Perimeter Fence

The Upper Vine Ranch perimeter fence was built in the late 1920s and defines the boundary of Scotty's Castle. A 2.6-mile portion of the 5.4-mile fenceline was rehabilitated during the 2013 realignment of Bonnie Clare Road before that same section was severely damaged during the 2015 flood. During the 2015 flood, about 95% percent of the posts along the road were washed away, broken, or otherwise damaged. Rehabilitation is planned as part of the Bonnie Clare Road reconstruction project. Therefore, 54% of the 5.4-mile Upper Vine Ranch Perimeter Fence was severely damaged in the 2015 flood.

Interior Fences

Interior fences were historically constructed to enclose smaller areas within Scotty's Castle, such as a fence built to enclose the Chicken Yard, which was constructed in the same style as the perimeter fence. Fences were also present to manage livestock including mules. The fence around the Chicken Yard was destroyed in the 2015 flood. These fences are important to the spatial organization and historic land use of the site.

Small-Scale Features

Few small-scale features survive at Scotty's Castle from the period of significance. Notable small-scale features that remain include the Death Valley Scotty (Walter Scott) grave marker, which remains today and adds to the character of the historic district.

Circulation

Circulation at Scotty's Castle is a system of roads and walkways that reflect Albert Johnson's vision for the design of Scotty's Castle including a curved grand entrance that provides a stage view of the Main House and grounds, formal walkways linking buildings, and less formal service roads. Circulation features include the historic entrance road, plaza (historic turnaround), road to the Stables, road behind the Cook House, the canyon roads, parking areas, historic walkways and paths, and a nonhistoric entrance road and parking lot. The roads were graveled during the period of significance and though later paved with asphalt, they retain their historic alignment and width. The walkways retain their historic alignment, width, and surfacing. Portions of the entrance road, plaza, and historic walkways and paths were damaged during the 2015 flood.

Vegetation

The planting plan, articulated by landscape architect Dewey Kruckeberg and based on earlier ideas envisioned by Albert Johnson, developed ornamental planting beds totaling 2 acres of the grounds around Scotty's Castle, which complemented the Spanish colonial style of Scotty's

Castle. Both native and ornamental plantings were used and their locations were determined based on water needs. For example, willows and other water-dependent plants were placed near springs and streams, and olives and cacti were placed along hillsides. Areas around Scotty's Castle that were designed included the lake area (now the picnic area), the entrance gates, the watercourse, and planting beds around buildings. Prior to the 2015 flood, historic plantings existed along the watercourse, in front of the Hacienda, in front of the Cook House, around the Garage, along the watercourse, and near the historic entrance. These areas all remained intact after the 2015 flood. The picnic area during the historic period was a lush oasis-style garden, and even though many of the historic plants had been lost, this character remained before the 2015 flood. The entrance gate area was characteristically planted with trees on either side of the gate to further emphasize the threshold one was passing through from the surrounding dry desert to the lush Scotty's Castle landscape. Like the other two areas, the watercourse was planted to exhibit a green lush environment in contrast with the surrounding landscape. Vegetation within the riparian area near the Stables was damaged during the 2014 fire and then further damaged during the 2015 flood.

Views

Views both from and into Scotty's Castle were a key design idea implemented by Johnson. The technique of the "borrowed landscape" was used to expand the impression and perceived scope of Scotty's Castle. Views from Scotty's Castle primarily occur from buildings set higher on the canyon slope, which provide views of Tin Mountain and Grapevine Canyon. The Chimes Tower was located specifically to be in view of Bonnie Clare Road so that it would enhance the approach as it was framed by Cottonwood Canyon and Cathedral Rock. These views remain intact.

Environmental Consequences

Historic Structures and Districts

Impacts of Alternative A—No Action

Under the no action alternative, no rehabilitation, repair, or replacement of facilities would take place. Periodic maintenance would occur to facilities. Minor weatherproofing, pest control, and security-related maintenance activities would continue to prevent damage to Scotty's Castle buildings from neglect, weathering, or vandalism. No flood-control structures would be constructed within the main drainage or ephemeral drainages of Grapevine Canyon, and existing flood-control structures would be at risk of failure; therefore, buildings would be at risk of damage from future flood events and further erosion of the floodplain. Deferred maintenance, repair, and replacement activities would have long-term adverse impacts on the buildings and structures at Scotty's Castle because they would continue to deteriorate to a condition where they could no longer be maintained.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions with the potential to affect DVSHD or the potential GDA historic district include the previous construction of waterlines and sewer and electrical systems, parking lots, and sidewalks in both historic districts; reconstruction of Bonnie Clare Road (completed in 2012 and proposed in 2018); and the undertakings covered

under streamlined Section 106 review described above in the *Cumulative Impact Scenario* section. Although past projects resulted in the incremental introduction of modern infrastructure to the historic districts (parking lots and sewer, fuel, and electrical systems) and permanent effects on the setting of the districts, these projects did not alter character-defining elements of the buildings and structures that contribute to the districts. Present and reasonably foreseeable future actions would rehabilitate the overall setting from flood damage and repair and rehabilitate select buildings at Scotty's Castle. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize existing adverse impacts from the 2015 flood and would not result in any character-altering changes to buildings or structures that contribute to the DVSHD or potential GDA historic district. As previously described, the no action alternative would cause long-term minor to major adverse effects on historic districts and buildings from continued neglect and erosion of the surrounding floodplain. There would be no adverse effects from the no action alternative on GDA. The effects of the no action alternative combined with the effects of other past, present, and reasonably foreseeable future actions would have a long-term adverse cumulative effect on historic buildings and districts.

Impacts of Alternative B— Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

Death Valley Scotty Historic District

Activities are proposed for the following NRHP listed or eligible buildings and structures within DVSHD: Main House and Annex, Wishing Well, Garage, Long Shed, Bunkhouse, Gas House, Hacienda, and the historic reservoir at Staininger Spring.

Actions affecting the DVSHD are subject to SHPO review. A PA to resolve the adverse effects on historic properties would be developed with the SHPO, American Indian tribes, and other consulting parties. Impacts on historic buildings and structures in DVSHD are summarized in Table 4.

Actions are proposed to improve, replace, or introduce new outdoor infrastructure around buildings and structures in Scotty's Castle. Projects to repair the pedestrian plaza and upgraded electrical systems, telecommunication systems, sewer system, and propane system would maintain the integrity of the district's pre-flood setting. Infrastructure would be installed or added to areas currently in use for the same or related activities. Culturally sensitive areas with buildings, structures, and landscape features in proximity to access and construction areas would be flagged and avoided; such areas include features within the DVSHD and Tie Canyon. These projects would have no long-term impacts because disturbances caused by these projects would be temporary and confined to previously disturbed areas.

The proposed action to expand the parking lot and construct a new restroom building would result in a permanent visual effect on the DVSHD. New parking lot surface would be introduced within the area of the historical Chicken Yard fence; however, the Chicken Yard fence was destroyed during the flood and the area on the south side of Scotty's Castle retains very poor integrity of setting because of the flood. To interpret the history of this area, the park proposes to reconstruct or interpretively identify the Chicken Yard boundaries along the parking lot boundary to denote its location. Additionally, most of the parking area improvements would

occur in the area of Scotty's Castle previously in use for parking, and the proposed design would minimize visual impacts by positioning the parking area at a distance further from contributing buildings and features of Scotty's Castle and placing the majority of the parking area outside the viewshed of the Main House. The location of the new restroom building would cause an impact because it would be placed within view of the nonhistoric entrance, thereby preventing a view of the length of the Long Shed and Bunk House; and for adding a building in a historic open space where none existed during the historic period. Though this is not an identified historic view, it is a prominent view for visitors as they enter the site. However, the building's scale matches other outbuildings around the district and would be constructed of materials that are in-kind to the character of the district and surrounding setting.

The proposed replacement of the Courtyard Berm with a larger structure and construction of berms at the base of six ephemeral drainages would be visible intrusions on the setting of the district because the structures would be introduced into areas of the district with no constructed features. Construction of the new structures would not result in any physical changes or alterations to buildings or structures that contribute to the historic district.

The proposed HVAC cooling tower would introduce a new structure into areas with no modern intrusions and cause permanent visual impacts on the district. Although the proposed locations were chosen based on their potential to be hidden behind landforms or walls that would be compatible with the historic materials at Scotty's Castle, the natural and built environment would not provide sufficient coverage to hide a 15-foot-tall structure in two of the proposed locations: below the pool or near the Chimes Tower. Additionally, the tower may potentially cause permanent audible impacts. No physical changes or alterations to buildings or structures that contribute to the historic district would occur. Similar visual impacts are likely for construction of an RV trailer pad. The NPS would consult and coordinate with the SHPO when locations are determined.

Proposed actions to the Garage interior and Long Shed exterior would result in adverse physical and visual effects on these buildings. Construction of the flood protection structures would create permanent intrusions and an adverse effect on the setting of the district. Additional investigations and consultation with the SHPO is needed to determine the approach and effects for projects in the Main House and Annex and Gas House, and construction of a new cooling tower and RV trailer pad.

Table 4. Summary of impacts on historic buildings and structures at DVSHD.

Contributing Resource	Project Component	Impact
Main House and Annex	Repair bridge structural system and stucco	This project component would not cause impacts because the exterior appearance of the bridge would be preserved and structural components would be rehabilitated and repaired in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i> (SOI standards) and NPS standards.
	Repair leaks in lanai; historic tiles would be reused or replaced in-kind	This project component would have a beneficial effect because the new membrane would not be visible and historic materials would be preserved or replaced in accordance with SOI standards.

Contributing Resource	Project Component	Impact
	Repair leaks in Music Room windows	Waterproof glazing would be repaired to NPS standards and would not result in impacts because it would not introduce materials that visibly change character-defining features of the Music Room or windows.
	Repair flagpole and structural connections	This project component would not result in impacts because it would maintain the original character-defining features of the flagpole and reuse historic materials or replace them in-kind with their original appearance.
	Repair leaks in Observation Tower floor	This project component could result in impacts, but they would be resolved through the PA. Additional material investigations and consultation with the SHPO is needed to determine the approach and materials necessary for repairs. The park would follow SOI and NPS guidelines for repair and in-kind treatment of windows.
Wishing Well	Rehabilitate or mothball	The project would maintain the Wishing Well in its current condition and, therefore, would have no impact on this resource. If mothballed, the park would use guidelines for mothballing detailed in Preservation Brief #31 (Park 1993).
Garage Visitor Center	Expose and clean the historic wood ceiling	Restoring the original tongue and groove wood decking and wood rafters of the Garage interior would enhance the historical integrity of the Garage and result in a long-term beneficial effect.
	Install new heating/cooling rooftop units and three new spiral ducts along the interior ceiling	The addition of HVAC ducts, new fire suppression lines, and electrical conduit to the interior would introduce visible nonhistoric elements to the building and result in permanent adverse physical and visual changes to the historic fabric of the building interior. However, these changes would have a long-term negligible to minor impact on the Garage since the interior has been remodeled multiple times, the utilities would be finished to match the appropriate background, and these elements are minor intrusions to the overall character of the Garage.
	Install new exhibits, visitor contact areas, and concessions area	This project component would have no impact because the new visitor contact areas would be installed within areas of the Gas House interior that were previously remodeled, used as exhibit and concession areas, and were destroyed by the 2015 flood.
	Restore and reinstall three original sliding track doors	Because the original Garage doors would be reused, the project would have a long-term beneficial impact from restoring the building to its original historic appearance.
	Remove noncontributing ticket booth and gas pumps	Because the concrete foundation was installed by the Gospel Foundation and NPS in the 1960s and 1990s, respectively, it does not contribute to the DVSHD and is considered a visual intrusion. This project component would have a long-term beneficial impact because it would restore the historic design, integrity of association, and historic circulation pattern of the building and DVSHD. The SHPO concurred with the park in 2013 that removal of the foundation and wood structure would result in no adverse effect on any character-defining elements of the district.

Contributing Resource	Project Component	Impact
	Repair south windows	This project could result in adverse impacts on historic structures. It is currently unknown the extent or scale of repair needed. When impacts are determined, the NPS would resolve any impact through the PA.
Garage Visitor Center, Long Shed, and Bunkhouse	Replace 3,740 square feet of flood-damaged interior wall finishes; ductile plywood sheathing would be installed for seismic stabilization by removing the existing interior plaster, insulating the walls, attaching plywood, and then resurfacing with plaster	This project component would result in permanent physical and visual impacts on the building because historic materials would be removed and replaced with modern materials. Photographs of the original plaster finish would be used to replicate the historic wall finish. Preservation Brief #19 (Park 1989) and Preservation Brief #41 (Aguilar 2016) would be followed to the extent practicable. The NPS would consult with the SHPO through the PA on acceptable textures, if necessary.
Long Shed	Enlarge breezeway opening from 3 feet to about 16 feet	Widening the breezeway through the Long Shed would result in permanent adverse physical and visual impacts on the historic building. The widened opening would be designed to maintain the original design of the building. A long-term beneficial effect would be that the enlarged opening would improve stormwater drainage and protect the building from damages similar to those sustained during the 2015 flood.
Gas House	Remove the noncontributing addition on the west elevation of the building and install a shade structure within the footprint of the addition in a design that is in-kind to the original design of the Gas House and historic district	Rehabilitation of the exterior would result in a long-term beneficial impact because it would restore the building and setting of Scotty's Castle to its historic appearance. However, the condition of the historic building fabric where the noncontributing addition attaches is unknown, and additional investigations are needed to determine the extent of negative physical and visual impacts from repairs to the historic building fabric. Additionally, the design of the proposed shade structure is currently unknown. When the project scope is determined, the NPS would consult with the SHPO.
Hacienda	The interior and exterior of the Hacienda would be repaired to address damage from the 2015 flood and improve the interior for new park uses	Activities proposed within the Hacienda interior would occur in areas that were previously remodeled and, therefore, the action would have no impact on character-defining elements of the building. In the event the historic doors cannot be rehabilitated, additional consultation would occur with the SHPO to find suitable replacements.

Contributing Resource	Project Component	Impact
Historic Water Tank at Staininger Spring	Repair flood damage and install a new liner and concrete roof on the historic water tank; construct new shelters and complete minor rehabilitation and repairs on the noncontributing Spring House and Chlorinator Building; install a new water test well	The action would have a long-term beneficial impact on the tank because the masonry structure protecting the spring and roof above the historic water tank was destroyed in the 2015 flood. Designs for all new structures at the Staininger Spring facilities would be low profile and out of view and would maintain the industrial setting and use of the area.

Grapevine Developed Area

Under Alternative B, construction of the new telecommunication line would not result in any physical or visual impacts on buildings within the potential GDA historic district. The proposed line would be co-located with existing electrical lines and buried under North Highway within GDA. The project would therefore not affect the visual integrity of setting of the district and its contributing features. The proposed activity would have no impacts on the potential historic district.

Bonnie Clare Road

No impacts on Bonnie Clare Road would occur under the preferred alternative. The NPS and FHWA are currently preparing a separate EA and evaluation of project effects for repairing flood damage to the road.

Mitigation

All work activities on buildings and structures that contribute to the eligibility of the DVSHD would conform to the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and applicable NPS guidelines for repair and in-kind replacement of historic materials. The park has initiated consultation with the SHPO to ensure that repair, restoration, and mothballing work is designed and implemented in a manner that would ensure preservation of the historic character of the district and contributing buildings. Adverse effects would be mitigated by implementing the measures in the *Mitigation Measures* section, including preparing a PA with the SHPO and tribes.

Cumulative Impacts

As described under the no action alternative, the impacts of past, present, and reasonably foreseeable future actions on historic structures and districts have had and would continue to have long-term beneficial cumulative effects because they minimize existing impacts from the 2015 flood and would not result in any physical changes to buildings or structures that contribute to DVSHD or GDA. Alternative B would result in impacts on historic buildings and the setting in DVSHD, but would not affect the characteristics of buildings that contribute to the eligibility of the historic district. Alternative B would not result in impacts on the GDA. When the effects of Alternative B are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on the DVSHD and GDA would be beneficial, even with minor impacts from Alternative B.

Cultural Landscapes

Impacts of Alternative A—No Action

Under the no action alternative, no repairs or improvements would be made to the cultural landscape characteristics or features that were damaged or destroyed by the 2015 flood. Noncompatible nonhistoric fabric, such as the concrete foundation currently underneath the gas pumps, would remain, as well as a noncompatible wood addition to the Gas House. Overall, the no action alternative would contribute adverse effects on the cultural landscape from continued deterioration of those characteristics and features that were damaged or destroyed by the 2015 flood, including continued erosion or damage of vegetation features that are left unprotected or areas that were obscured or changed by debris flow that accumulated such as the picnic area. The beneficial effect of restoring the historic spatial organization and historical fabric of certain features would not be realized.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscape contributing characteristics and features include reconstruction of Bonnie Clare Road in 2013; future reconstruction of Bonnie Clare Road to repair flood damage; undertakings covered under streamlined Section 106 review; and future landscape improvements at Scotty's Castle, as described above under *Cumulative Impact Scenario*, including replacing the Chicken Yard fence, historic perimeter fence, and repairing the picnic area; and installing safety fence around the swimming pool. Although these past, present, and reasonably foreseeable future actions would result in temporary impacts on the cultural landscape during construction, they would repair and rehabilitate some features associated with the overall cultural landscape character. Collectively, over the long term, these actions would minimize adverse impacts on the cultural landscape and restore some historic conditions. For example, the no action alternative would contribute adverse effects on the cultural landscape from continued deterioration of characteristics and features that were damaged or destroyed by the 2015 flood. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the cumulative effect on cultural landscapes is adverse.

Impacts of Alternative B— Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

Four primary actions associated with this project would result in adverse impacts or potential adverse impacts on the cultural landscape. They include the proposed locations of the cooling tower, a shade structure proposed for the Gas House, the redesign of the visitor parking lot, and proposed flood-protection structures. Those actions are described below and their impacts or potential impacts follow those descriptions.

Four cooling tower locations were chosen based on their potential to hide the cooling tower behind landforms or walls that would hide the noncompatible structure. Those four locations include the picnic area south of the entrance drive and swimming pool, near Chimes Tower, near the northwest corner of the Annex, and east of the Stables (Figure 3). Two important views

which include Chimes Tower are identified in the CLR. One is of Chimes Tower from Bonnie Clare Road, and the other is from Chimes Tower toward Tin Mountain. Though no explicit treatment recommendations are contained in the CLR for these views, it is understood they should be protected and that the cooling towers should not be placed within those viewsheds. Views within the core of the property also need to be considered.

The removal of a wood addition to the Gas House, which was recommended in the CLR and would improve the integrity of this building, is proposed. In addition, a new shade structure would be erected in the footprint of the nonhistoric addition. Additions to the Gas House were not addressed in the CLR since they were not a recommendation. The NPS will work with the SHPO on the new shade structure's design to minimize its impacts.

The current 40,000-square-foot parking lot is not a contributing feature to the cultural landscape and the integrity of that portion of the landscape is not intact. The new parking area would expand the parking lot's footprint up to about 51,600 square feet and add an overflow/employee parking lot of about 8,000 square feet southeast of the main parking lot. The parking lot would use the same nonhistoric entrance road that served visitor parking prior to the 2015 flood. A new restroom building would be added to the center of the parking lot area, and the boundary of the historic Chicken Yard would be marked and interpreted. The CLR recommends rehabilitating the nonhistoric parking lot to meet contemporary needs in a way that is visually compatible with the cultural landscape's historic character including reducing pedestrian-vehicular conflicts by installing a planting island at grade, placing removable wood bollards between the parking lot and historic turnaround, providing ABAAS-compliant parking spaces, and enhancing the visual character of the parking lot by removing asphalt and replacing it with a chip seal to create a more historic gravel-like appearance.

One replacement and three new berms are proposed as future flood protection structures at Scotty's Castle. The Existing Berm that is being replaced is not historic. The reconstructed Existing Berm, Courtyard Berm, and additional smaller berms are proposed to be large reinforced earthen structures in the landscape that are 4.5 to 6 feet tall and 125 to 175 feet long. The installation of new berms or treatment of the existing berm were not addressed in the CLR.

Impacts and potential impacts of the four primary actions described above are addressed below in terms of their relationship to identified cultural landscape characteristics and features.

Views

The main impact of these actions would be on the views in and around Scotty's Castle. Views would be impacted by the proposed cooling tower location near the picnic area and the Chimes Tower. The other two locations, as outlined in the project description (Figure 3), have a high potential to impact the views in the cultural landscape even though they are not in the corridor of significant views identified in the CLR as they are visible from core areas of the property. The HVAC cooling tower near the picnic area or near Chimes Tower would adversely affect views because it would be prominently placed within the core of Scotty's Castle with walls and landforms that are inadequate in size and location to provide a visual buffer. While outside identified historic viewsheds, the other two locations are visible from core areas of the property.

The NPS would work with the SHPO to refine the design of the new shade structure on the Gas House to minimize impacts on the views of this area. Impacts would be minimized by

incorporating like material, color, and orientation so that it is historically compatible with other built elements in the area.

Impacts on internal property views would be minimized by shifting parking to the east away from the historic core of Scotty's Castle, by moving bus parking from a location just south of the eastern end of the entrance road within the primary viewshed of the Main House to a location that is further south and east, and by not including permanent parking on the west end, closest to the historic central patio and turnaround area of Scotty's Castle. However, constructing a new restroom building in the center of this once historic open space would have an adverse effect on the views within this area and of Long Shed and Bunkhouse from the nonhistoric entrance. Therefore, the location of the restroom would have an adverse effect on Scotty's Castle's internal views.

Though new berms of greater scale (4.5 to 6 feet tall and 125 to 175 feet long) and dimensions (height in relationship to width) would be added to the property than have previously existed, they would be located outside the view of the cultural landscape and, therefore, would have no adverse effect on the views. Impacts can be further minimized by mimicking natural landforms in the area, such as the hastate or spearhead shaped foothills that are formed between the washes surrounding Scotty's Castle. For example, the berms would have gentle rounded edges instead of typical engineered hard edges or geometric forms. Native plantings, which match the plantings around each berm location, would also help blend the forms into the surrounding landscape.

Spatial Organization

The new restroom building would be designed to match the orientation and scale of other outbuildings around Scotty's Castle and would be in the center of the visitor parking lot. Its location in the center of a historic open space, the Chicken Yard, would impact the spatial organization of the cultural landscape. Relocating the gas pumps would restore the spatial organization around the Gas House, which is a recommendation in the CLR.

Circulation

Removing or relocating the gas pumps would restore the historic circulation around the Gas House, which is a recommendation in the CLR. Continuing to use the nonhistoric entrance to access the visitor and staff parking areas would continue to protect the historic entrance from having to absorb modifications that would potentially impact its width, alignment, materials, and relationship to Bonnie Clare Road.

Small-Scale Features

Marking the Chicken Yard boundaries along the parking lot boundary to denote its location and historical association would benefit the cultural landscape by interpreting a missing feature associated with the property's historical uses. Work to rehabilitate or mothball the Wishing Well would not affect the cultural landscape. Removing or relocating the gas pumps and removing the associated noncontributing concrete footing would help restore the historic character of the area around the Gas House.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscape contributing characteristics and features include reconstruction of Bonnie Clare

Road in 2013; future reconstruction of Bonnie Clare Road to repair flood damage; undertakings covered under streamlined Section 106 review; and future landscape improvements at Scotty's Castle as described above under *Cumulative Impact Scenario*, including replacing the Chicken Yard fence, repairing the historic perimeter fence, repairing the picnic area, and installing safety fence around the swimming pool. Although these past, present, and reasonably foreseeable future actions would result in temporary adverse effects on the cultural landscape during construction, they would repair and rehabilitate the overall cultural landscape character. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize adverse impacts on the cultural landscape and restore historic conditions. As previously described, the preferred alternative would contribute long-term adverse effects on the cultural landscape from the addition of a cooling tower in one of four identified locations, expansion of the visitor and staff parking areas, and addition of a new restroom building in a previously historic open space associated with the Chicken Yard. In addition, Alternative B would add flood protection measures that would prevent further erosion and deterioration from storm events. When the effects of the preferred alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the cumulative effect on the cultural landscape would be adverse, but would be minimized by rehabilitation and restoration of Scotty's Castle, which would contribute long-term beneficial effects on the cultural landscape.

Special Status Wildlife Species

Affected Environment

Special status wildlife species include animal species listed as threatened, endangered, or as candidates for listing under the Endangered Species Act (federally listed species) and species listed by the state of California as endangered, threatened, or species of special concern (state listed species). The analysis area for species status wildlife species is the Bonnie Clare Road corridor within Grapevine Canyon from the water diversion facilities at Staininger Spring to just downstream of Scotty's Castle, including the buildings and facilities at Scotty's Castle. Most of the special status wildlife species are found in riparian areas, and the analysis area would likely include most of their habitat within the canyon. Special status wildlife species with the potential to occur in or near the analysis area based on surveys, staff knowledge, USFWS data, available habitat, and known range are presented in Table 5.

No designated critical habitat for any federally listed species is present in the park. The affected environment for special status species in the Bonnie Clare Road corridor prior to flooding in 2015 is described on pages 63-65 of the 2012 EA for reconstruction and resurfacing of Bonnie Clare Road (2012 EA; NPS 2012). Changes since the 2012 EA have resulted primarily from habitat loss and damage resulting from flash floods that occurred in the analysis area in October 2015.

Table 5. Special status wildlife species with the potential to occur in the analysis area.

Species Common and Scientific Name	Status ¹	Potential to Occur	Habitat Description and Range
BIRDS			
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE, SE	Yes	Riparian habitats. Bell's vireo has been documented nesting in Grapevine Canyon near Staininger Spring (NPS 2016b). Due to the geographic isolation of the four subspecies of Bell's vireo, it is presumed that all Bell's vireo documented in Death Valley are the least Bell's subspecies.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE, SE	Yes	Riparian habitats. This subspecies is rarely observed in the park and has not been confirmed in the analysis area (NPS 2012). Due to the difficulty of field identification of the subspecies, it is not possible to determine if past sightings of willow flycatcher near the analysis area are of the southwestern subspecies.
Willow flycatcher <i>Empidonax traillii</i>	SE	Yes	Riparian habitats. This species has been documented at several locations in the park, including at Scotty's Castle (NPS 2012).
Loggerhead shrike <i>Lanius ludovicianus</i>	SC	Yes	Riparian and other habitats. This species has been documented at several locations in the park, including near Grapevine Canyon (Halterman 2005).
Yellow-breasted chat <i>Icteria virens</i>	SC	Yes	Riparian areas. This species has been documented at several locations in the park, including near Bonnie Clare Road (Halterman 2005).
Yellow warbler <i>Setophaga petechia</i>	SC	Yes	Spends the breeding season in thickets and riparian areas. This species has been documented at several locations in the park, including near Bonnie Clare Road (Halterman 2005).
REPTILES			
Desert tortoise <i>Gopherus agassizii</i>	FT, ST	Yes	Mojave and Sonoran Deserts. A small population occurs in the southern half of the park. This species has not been documented in the analysis area (NPS 2012).
Panamint alligator lizard <i>Elgaria panamintina</i>	SC	Yes	Dense vegetation near damp soil and rocky talus near riparian areas. This species has not been documented in the analysis area (NPS 2012).

The USFWS species list was determined based on informal consultation with USFWS (2017) and species not having the potential to occur were excluded from further review with a no effect determination.

¹**Status Codes:** **FE**=federally listed endangered; **FT**=federally listed threatened; **SE**=state endangered; **SC**=state species of special concern.

The landscape around the buildings and facilities at Scotty's Castle consists of paved walkways, landscaped areas, and other disturbed areas that are not habitat for special status wildlife species, with the exception of riparian and wetland habitat along Grapevine Canyon Wash. As described in the 2012 EA, surveys were conducted for amphibians, reptiles, birds, mammals, lepidopterans, microbenthic invertebrates, and plants between 2005 and 2010 within the Bonnie Clare Road corridor, including the riparian habitat at Scotty's Castle, and no state or federally listed endangered, threatened, or candidate species were detected.

Additional preconstruction surveys for southwestern willow flycatcher and least Bell's vireo detected a nesting pair of least Bell's vireos in a patch of riparian vegetation near the water collection system at Staininger Spring in 2013 (NPS 2016b). The riparian vegetation at this site

was impacted by the flood in 2015. A post-flood habitat assessment determined that while the riparian vegetation at Staininger Spring was still present, the amount of habitat had been reduced from 6.90 acres pre-flood to 3.49 acres post-flood, a reduction of 51% (NPS 2016b). The habitat assessment also found that least Bell's vireo habitat at Scotty's Castle was reduced to widely scattered trees and vegetation following the flood, and is likely unsuitable habitat for least Bell's vireo. Prior to the flooding in 2015, the analysis area contained extremely limited breeding habitat for southwestern willow flycatcher, and only marginal habitat that could be used during migration (Sloan, pers. comm. 2017). Similar to the loss of habitat for the least Bell's vireo, impacts from the 2015 flood also reduced the amount of suitable habitat for the southwestern willow flycatcher and willow flycatcher.

Riparian areas within Grapevine Canyon provide habitat for loggerhead shrike, yellow-breasted chat, and yellow warbler. These species were documented in the Grapevine Canyon area in past surveys (Halterman 2005). Although habitat for these species has been affected by flood damage, as described above, which resulted in a reduction in the amount of available habitat, these species could potentially occur near the analysis area.

Based on consultation with the USFWS in September 2012 for the Reconstruction of Bonnie Clare Road, Grapevine Ranger Station Parking Lot and Sidewalks, and Resurfacing Mesquite Spring Campground Road (NPS 2012), the desert tortoise has not been observed in the analysis area and the potential for this species to occur in the analysis area is extremely low (USFWS 2012). The previous consultation found that the project was not likely to adversely affect the desert tortoise and no mitigation for the tortoise was required (USFWS 2012). The analysis area generally consists of sparsely vegetated, steep, rocky terrain; disturbed and landscaped areas at Scotty's Castle; and riparian areas that are not optimal habitat for the desert tortoise (NPS 2012). Potential habitat for the Panamint alligator lizard occurs in the analysis area in riparian areas dominated by cottonwood and wild grape, and on adjacent roads and talus slopes. Habitat for Panamint alligator lizard has likely been degraded by flooding in 2015, as described for the least Bell's vireo and southwestern willow flycatcher. Desert tortoise and Panamint alligator lizard were not detected during reptile surveys conducted for the 2012 EA.

Environmental Consequences

Impacts of Alternative A—No Action

Under the no action alternative, there would be no new impacts on special status wildlife. No repairs or improvements to the facilities would be implemented beyond the initial debris and mud removal that has already occurred. Riparian vegetation that provides habitat for least Bell's vireo, southwestern willow flycatcher, and Panamint alligator lizard in the Staininger Spring area and at Scotty's Castle would recover from flood damage over time but would continue to be vulnerable to damage from future floods; thus, there would be no to negligible impacts on special status wildlife species.

Cumulative Impacts

Past actions such as replacing the waterline supplying water to Scotty's Castle, reconstructing Bonnie Clare Road, reconstructing the Grapevine Ranger Station parking lot and sidewalks, and resurfacing Mesquite Spring Campground Road resulted in impacts on special status wildlife species from temporary disturbance during construction and temporary impacts on riparian vegetation. Present and reasonably foreseeable future actions such as the reconstruction of Bonnie Clare Road to repair flood damage, future landscape improvements at Scotty's Castle, and other future flood repairs and maintenance, as described above under *Cumulative Impact Scenario*, would similarly result in short-term disturbances to special status wildlife and removal of small amounts of riparian habitat. Overall, adverse cumulative impacts from past, present, and reasonably foreseeable future actions would be short-term and small. As previously described, the no action alternative would contribute no to negligible adverse effects on special status wildlife species from continued erosion and potential loss of small amounts of habitat. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on special status wildlife would be adverse, with a negligible adverse incremental contribution from the no action alternative.

Impacts of Alternative B— Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

Potential direct and indirect effects on least Bell's vireo and southwestern willow flycatcher could result from increased noise and activity during construction and disturbance from vibrations and dust generation. About 0.086 acre of vegetated wetlands that could provide foraging habitat for these two species would be removed by reconstruction of a berm that was destroyed by the flood in 2015. These wetlands recently formed following flooding in 2015 and do not contain trees or shrubs that could provide nesting habitat. Loss of this habitat would be mitigated by providing wetland compensation as described in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017b) and in the Floodplain and Wetland Statement of Findings (Appendix B). No potential least Bell's vireo or southwestern willow flycatcher breeding habitat would be removed. The riparian habitat near the analysis area has been degraded and reduced in area by catastrophic flooding, and likely is no longer nesting habitat for least Bell's vireo. The riparian habitat near the analysis area is likely only used by southwestern willow flycatchers during migration. The proposed action would result in an increase in human activity and noise associated with construction for a period of a year or longer which could temporarily displace individual least Bell's vireos and southwestern willow flycatchers if they were in the area during construction. Impacts on least Bell's vireo and southwestern willow flycatcher would be minimized by conducting preconstruction surveys for these species prior to work within 0.25 mile of suitable habitat between April 10 and August 15 as described under *Mitigation Measures*. No incidental take of these species is expected as a result of the proposed action. For these reasons, the proposed action may affect, but is not likely to adversely affect, the least Bell's vireo or southwestern willow flycatcher.

Potential adverse effects on willow flycatcher, loggerhead shrike, yellow-breasted chat, and yellow warbler would result from increased noise and activity during construction and disturbance from vibrations and dust generation and from the loss of 0.086 acre of vegetated wetlands. The loss of vegetated wetlands would be replaced by implementing the *Compensatory*

Mitigation and Monitoring Plan (FHWA 2017b). The increase in human activity and noise associated with construction would persist for a year or longer and would potentially affect individuals, or small numbers of individuals, potentially causing them to temporarily leave the area during construction. Impacts would cease after the completion of construction. No nesting habitat for these species would be removed. Impacts would likely be negligible because these species are unlikely to occur due to the limited amount of remaining riparian habitat for these species in the analysis area.

Desert tortoises are extremely unlikely to occur in the analysis area and no desert tortoises were observed during past reptile surveys. For this reason, the proposed action would have no effect on this species.

As with the other species described above, potential adverse impacts on Panamint alligator lizards, if present in the analysis area, would result from increased noise and activity during construction and disturbance from vibrations and dust generation. The potential also exists for individual lizards to be crushed or buried by construction equipment, although this species is likely to temporarily leave the area to avoid increased human disturbance. Impacts on this species would be slight and adverse, and would end after completion of construction.

Cumulative Impacts

As described under the no action alternative, the impacts of past, present, and reasonably foreseeable future actions on special status wildlife species have been and would continue to be small and adverse. As previously described, impacts on least Bell's vireo and southwestern willow flycatcher would be avoided or mitigated with implementation of mitigation measures and no effects on desert tortoise are expected. Impacts on willow flycatcher, loggerhead shrike, yellow-breasted chat, yellow warbler, and Panamint alligator lizard would be slight and would end after construction. When the effects of Alternative B are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on special status wildlife species would be small and adverse, with a small adverse incremental contribution from Alternative B.

Floodplains and Wetlands

Affected Environment

Floodplains

The analysis area for floodplains is the Grapevine Canyon Watershed. Scotty's Castle is about one-third of the way up Grapevine Canyon near the mouth of Tie Canyon, the major tributary. Grapevine Canyon drains the steep western slope of the Grapevine Mountains, which form part of the eastern boundary of Death Valley. The Grapevine Canyon watershed is fan shaped, trends northeast to southwest, and has a drainage area of about 30 square miles at Scotty's Castle. Elevations in the watershed range from 7,008 feet at Helmet Peak to 2,992 feet at Scotty's Castle (U.S. Geological Survey (USGS) 1990) (Figure 8). Tie Canyon has a drainage area of about 14.5 square miles and constitutes the northwestern part of the Grapevine Canyon basin. There is

an abundance of poorly consolidated erodible material in the canyons and a likelihood of landslides and debris falling from the canyon walls. The 100-year floodplain mapped by the USGS (1990) is about 200 feet wide in both Grapevine and Tie Canyons near Scotty's Castle and widens to about 400 feet where the Tie and Grapevine Canyons join (Appendix B).

Some of the proposed activities in the analysis area would be within the Grapevine Canyon and Tie Canyon 100-year floodplains, including rehabilitation of the Garage Visitor Center, Long Shed, and Bunkhouse; installation of flood-protection structures; restoration of the water system; reconstruction of the wastewater system; expansion and reconstruction of the parking lots and pedestrian plaza and walkways; installation of a new telecommunications line; and construction of access and staging areas.

Wetlands

The analysis area for wetlands is the Bonnie Clare Road corridor within Grapevine Canyon from the water diversion facilities at Staininger Spring to just downstream of Scotty's Castle, including the buildings and facilities of Scotty's Castle. Wetlands existing in the analysis area prior to the October 2015 flood are described in detail on pp. 65-77 of the 2012 EA (NPS 2012), based on wetland delineations conducted in 2005 and 2011. Post-flood wetland boundaries were mapped in March 2017 (FHWA 2017c). The post-flood wetland survey identified riverine wetlands and five small vegetated wetlands (FHWA 2017c). Vegetated wetlands are a small component of the total wetland area, covering only about 2.75 acres. The analysis area is estimated to contain about 50 acres of riverine wetlands.

Wetland resources in the analysis area include Grapevine Canyon Wash, an ephemeral riverine wetland, other ephemeral riverine wetlands that are tributaries to Grapevine Canyon Wash, spring-fed-riverine wetlands within the Grapevine Canyon Wash channel, and vegetated wetlands. Wetland boundaries are shown in the Floodplain and Wetland Statement of Findings (Appendix B) and in the *Waters of the U.S. Delineation Report* (FHWA 2017c).

Ephemeral riverine wetlands exist throughout the length of Grapevine Canyon in the analysis area. Grapevine Canyon Wash is an ephemeral riverine wetland with a dry sandy channel that was substantially altered by the flood events in October 2015. The 2015 flood widened the channel and removed much of the channel braiding that existed prior to the flooding (FHWA 2017c). The 2015 flood removed nearly all indicators of the low-flow channels that existed prior to the flooding, and the wash is actively reestablishing these low-flow channels. Numerous side drainages enter Grapevine Canyon, and these ephemeral riverine wetlands were not damaged as extensively by flooding as the main channel of Grapevine Wash.

Additional riverine wetlands in the analysis area include five spring-fed riverine wetlands within Grapevine Canyon Wash. These wetlands are typically about 2 to 3 feet wide and have a total length of about 4,000 feet. These wetlands occur where groundwater emerges to the surface and provides surface flow from the highest elevation spring at Staininger Spring, through Scotty's Castle, to just down-drainage of Cottonwood Corner, where it likely seeps into the groundwater table. Since the flood event, the spring-fed riverine wetlands have been slowly reforming, assisted by the mineralization and algal growth on the channel bottom, which prohibits percolation into the alluvial soils. The spring-fed riverine wetlands are currently very dynamic

and have shifted their flow path at several locations. Additionally, wetland vegetation is present both within the spring-fed riverine wetlands and along their banks.

Five vegetated wetlands with a total area of 2.75 acres are present in the analysis area (FHWA 2017c). Each of these palustrine wetlands consist of both emergent and scrub-shrub habitat types. These wetlands are associated with near-surface groundwater and groundwater surface discharges within Grapevine Canyon. Wetland plants in the analysis area include arroyo willow (*Salix lasiolepis*), narrow-leaf cattail (*Typha angustifolia*), three-square bulrush (*Schoenoplectus pungens*), sedges (*Carex* sp.), black cottonwood (*Populus balsamifera*), common reed (*Phragmites australis*), and desert wild grape (*Vitis girdiana*). All five of the vegetated wetlands show evidence of flood damage from the October 2015 flood, ranging from scour to deposition of about 4 to 16 inches of sediment, which has resulted in alteration of the soil profile and damage to vegetation.

Environmental Consequences

Impacts of Alternative A—No Action

Floodplains

Under the no action alternative, no additional repairs or improvements would be made to the facilities. There would be no new construction within the 100-year floodplain. BMPs would not be used for drainage and sediment control to minimize degradation of the floodplain. No flood-control structures would be constructed within the main drainage of Grapevine Canyon or in the ephemeral drainages on the north side of Scotty's Castle, so flood flows would not be altered at Scotty's Castle. This would maintain natural floodplain function at the DVSHD. Future flood flows would erode the floodplain, remove vegetation, destabilize the channel, and further damage the DVSHD, which could block the flow of water. Existing facilities within the floodplain would be at risk of additional flood damage. Visitors to the DVSHD and park staff would continue to be at risk from flash flooding.

Wetlands

Under the no action alternative, no direct impacts on wetlands would occur. Water would not be diverted from Staininger Spring, and base flow in the spring-fed riverine wetlands within Grapevine Canyon Wash would be greater, resulting in increased growth of wetland vegetation in these areas. The remaining vegetated and riverine wetlands within the analysis area would continue to be vulnerable to vegetation loss, erosion, downcutting, and deposition of sediments resulting from future floods. Flood flows in 2015 left several vegetated wetlands with reduced connection to surface flows, resulting in drying and reduced wetland vegetation. Under the no action alternative, downcutting would likely continue to lower the channel elevation adjacent to vegetated wetlands, resulting in continued loss of wetland vegetation and adverse effects on wetlands. Impacts on vegetated wetlands would be small (only 2.75 acres of vegetated wetlands are identified in the analysis area), and would likely be offset by increased flow in the spring-fed riverine wetlands.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect floodplains and wetlands in the analysis area include replacement of the waterline to Scotty's Castle, completed in 2011; reconstruction of Bonnie Clare Road in 2013; future reconstruction of Bonnie Clare Road to repair flood damage; future landscape improvements at Scotty's Castle; and other future flood repairs and maintenance as described above under *Cumulative Impact Scenario*, including removing flood debris at Scotty's Castle, repairing landscaping, and redirecting Grapevine Canyon Wash into the historic channel to protect historic structures from water damage. Although these past, present, and reasonably foreseeable future actions would result in temporary adverse effects on floodplains and wetlands, they would maintain natural floodplain values and benefit water resources by maintaining natural floodplain processes over time. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize adverse impacts on natural floodplain values and wetlands. As previously described, the no action alternative would contribute adverse effects on floodplains and wetlands from continued erosion, scour, and potential loss of vegetation. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on floodplains and wetlands would continue to be beneficial, with a small adverse incremental contribution from the no action alternative.

Impacts of Alternative B— Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

Floodplains

Some of the project would be constructed within the floodplains of Grapevine and Tie Canyons. BMPs would be used for drainage and sediment control to minimize alteration and degradation of the floodplain, and minimize erosion and sedimentation during construction activities. The floodplain would be negatively impacted during construction due to the presence of staging areas, construction equipment, and materials in the floodplain. Erosion may occur from bare soils prior to revegetation. Eight of the nine flood-control berms would be newly constructed, two of which would be located within the Grapevine Canyon floodplain and six would be constructed at the base of six ephemeral drainages to Grapevine Canyon Wash. The berms would alter the direction of flood flows to prevent damage to the buildings and other facilities at Scotty's Castle. The diversion of water by the berms would result in focused flow and increased erosive energy near the berms. The berms would effectively narrow the floodplain and focus flow toward the south side of the canyon, diminishing the energy-dissipating capacity of the floodplain. Some of the other new or expanded facilities would be located within the floodplain, such as the parking lot, pedestrian areas, and possibly a trailer pad, and would interfere with natural floodplain functions. However, effects on the floodplain due to the berms and new or expanded facilities would be localized, and natural floodplain function would resume below the DVSHD. Local modifications to the floodplain at and immediately downstream of Scotty's Castle would be miniscule (much less than 1%) compared with the watershed area of Grapevine Canyon. To the extent possible, natural contours would be preserved, and the project would be completed in such a way as to leave the Grapevine Canyon and Tie Canyon Washes in a stable condition. It would not be possible to move parts of Scotty's Castle that are within the 100-year

floodplain out of the 100-year floodplain, but any potential new adverse impacts on the floodplain would be minimized and the natural values would be restored and preserved where possible.

Installing permanent signs would reduce risks to human safety and health by warning park visitors of the potential for flash flooding to occur during precipitation events. Developing a flood warning and evacuation plan for visitors and park staff and implementing an evacuation plan would also reduce health and safety risks to visitors and staff.

Wetlands

Impacts on wetlands would occur from constructing the new Water Meter Vault Berm south of the southwest corner of the stables, reconstructing the Existing Berm east of the Stables, and replacing the existing underground outlet pipes and control valves at both water tanks and the Spring House. Wetland impacts are summarized in Table 6. Maps of impacted wetlands are presented in the Floodplain and Wetland Statement of Findings (Appendix B).

Table 6. Impacts on wetlands.

Wetland Type	Cowardin Classification	Permanent Impacts - New Construction (acres)	Permanent Impacts - Reconstruction of Previously Serviceable Structure* (acres)	Temporary Impacts - Restored to Preconstruction Elevations (acres)
Vegetated wetlands	Palustrine emergent	0	0.086	0
Ephemeral riverine wetlands	Ephemeral, R6	0.034	0.042	0.098
TOTAL		0.034	0.128	0.098

*Excerpted from wetland mitigation requirements under NPS policies under Director's Order #77-1 (NPS 2016a).

Permanent impacts on wetlands would occur from construction of a new berm (the Water Meter Vault Berm) to deflect future flood flows away from structures at Scotty's Castle. Alternative B would result in the permanent loss of 0.034 acre of ephemeral riverine wetlands.

Compensation for permanent impacts on wetlands would be accomplished by reestablishing 0.061 acre of vegetated wetlands and 0.003 acre of ephemeral riverine wetlands on-site and adjacent to the proposed project (see Floodplain and Wetland Statement of Findings in Appendix B). This would result in a mitigation ratio of about 2 to 1 for permanent wetland impacts of 0.034 acre. The wetland compensation measures have been designed to replace the functions and values of the aquatic resources lost as a result of this project. Additionally, the mitigation actions were designed to reestablish the high-value aquatics habitats that were destroyed during the 2015 flood event. The realignment of the spring-fed riverine wetlands would result in long-term beneficial effects by reestablishing these habitats in more sustainable locations. Additionally, the reestablishment of wetland, riparian, and floodplain vegetation would dissipate energy, capture sediments, moderate groundwater flow, and provide diverse wildlife habitats. Additional information on wetland compensation is provided in the Floodplain and Wetland Statement of Findings (Appendix B) and the *Compensatory Mitigation*

and Monitoring Plan (FHWA 2017b). Location maps of the proposed compensation sites are presented in Appendix B.

Temporary wetland impacts would result from construction access needed to reconstruct the berm and from replacement of the existing pipes and valves at the water tanks at Staininger Spring. A total of 0.098 acre of wetlands would be temporarily disturbed. Impacts would consist of driving across ephemeral riverine wetlands with equipment and other actions as necessary to access the Water Meter Vault Berm construction site (0.051 acre) and excavation and trenching to expose the pipes and valves at the outlet of the water tanks (0.047 acre). Wetlands affected by temporary construction access consist of ephemeral riverine wetlands only; no vegetated wetlands or spring-fed riverine wetlands would be affected. These wetlands consist of loose unconsolidated sand and gravel sediment, and would be restored to preconstruction contours following construction. Temporary impacts would be mitigated in place by restoring preconstruction contours after construction is complete. Restored wetland functions would include groundwater recharge/discharge, floodflow alteration, sediment/toxicant removal, nutrient removal, and visual quality/aesthetics.

Certain types of activities are excepted from the requirements to compensate for wetland impacts under Director's Order #77-1. Reconstruction of the "Existing Berm" in the same location is an excepted activity, because the berm was a previously serviceable structure prior to being destroyed by the flood, and the berm would be reconstructed along its previous location with some changes in design as needed to improve the resilience of the berm against future flood events. About 0.086 acre of vegetated wetland and 0.042 acre of ephemeral riverine wetlands would be filled by reconstructing the berm in its pre-flood location. The wetlands that would be filled formed after the berm was destroyed as a result of the flooding in October 2015. In summary, 0.128 acre of impacts on newly formed vegetated and ephemeral riverine wetlands would result from reconstruction of the berm, and is excepted from wetland mitigation requirements under NPS policies.

The analysis area for wetlands contains about 50 acres of riverine wetlands and 2.75 acres of vegetated wetlands. The preferred alternative would result in permanent loss of 0.086 acre of vegetated wetlands and 0.076 acre of ephemeral riverine wetlands, which represents about 0.3% of the wetlands in the analysis area. This impact would be negligible at the local scale and regional scale, especially when compensatory mitigation to replace the lost wetlands is considered. Over the long term, the project would provide some benefits to wetlands by reducing the potential for future flood-related erosion and restoring functions lost during the flooding in 2015. After completion of the project, including compensatory mitigation measures, the wetland area in the analysis area and the functions provided by wetlands would be similar to before the 2015 flood.

Cumulative Impacts

As described above for the no action alternative, past, present, and reasonably foreseeable future actions have had, and would continue to have, long-term and beneficial cumulative effects because their intent is to minimize adverse impacts on natural floodplain values and wetlands. Although it would not be possible to move parts of the project out of the floodplain, the adverse effects of Alternative B on floodplains and wetland functions and values would be small when mitigation measures are taken into account, as previously described in this EA. When the effects

of Alternative B are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on floodplains and wetlands would be beneficial, with a small adverse incremental contribution from Alternative B.

Visitor Use and Safety

Affected Environment

Scotty's Castle is the main attraction in the northern part of the park. Scotty's Castle Visitor Center (the Garage Visitor Center) is one of only two visitor centers in the park, serving more than 120,000 visitors annually before closure due to flood damage. Of these 120,000 visitors, about 55,000 per year toured the inside of the Scotty's Castle before it was closed in 2015. Most visitors visit Scotty's Castle between mid-October and the end of April. During this season, up to 600 people per day toured the castle. The parking lot, with about 70 parking spaces, was often at capacity during peak visitation days.

When Scotty's Castle was open, visitors were free to explore the grounds of Scotty's Castle, including the Garage Visitor Center, snack bar, and gift shop. Prior to the flood, the Death Valley Natural History Association sold interpretive items, food, and beverages in the gift shop. The Garage Visitor Center also served the function of orienting visitors (which reduces unsafe behavior) and providing a place for visitors to contact park staff in case of an emergency. Because there is no entrance station at the California/Nevada state line, the Garage Visitor Center provided the first opportunity for visitors entering via US-95 and NV-267 to be oriented to the park.

Public tours led by a staff of 22 park interpreters (9 permanent and 13 seasonal) were available. Costumed park interpreters conducted guided tours of the Main House and Annex. The Johnson's original furnishings could be seen by visitors, including a music room with a working organ. An underground tour was also available for visitors wishing to visit the system of tunnels under the building. Tickets for the tours were sold in the Garage Visitor Center. The Main House and Annex tour was ABAAS accessible, but the underground tour of the tunnels was not.

The exhibits displayed in the Garage Visitor Center prior to the flood were two-dimensional panels that did not meet ABAAS. Several feet of mud were deposited in the Garage Visitor Center during the flood, and the exhibits and other furnishings were removed during the initial post-flood cleanup of the building. A portion of the wall on the south side of the Long Shed at the breezeway opening suffered substantial damage from the 2015 flood with a section of the wall pushed off its foundation by flood waters, creating a potential safety hazard. In addition, the Garage/Long Shed/Bunkhouse is not structurally fortified to withstand the intensity of a seismic event that could occur in the area.

The walking route from the parking area, through the Garage Visitor Center, to the Main House and Annex is not ABAAS compliant. In recent years, there have been three employee injuries due to slips, trips, and falls on the Scotty's Castle pedestrian walkway. Visitors have fallen a few times per year, usually because of loose gravel on steep paved surfaces. The 2015 flash flood made the condition of pedestrian walkways worse by creating trenches and holes where the flood scoured away material. The pedestrian walkways are currently not safe to open to the

public. In addition, the current configuration of the Wishing Well poses a safety risk from potential falls.

The electrical and fire protection systems at Scotty's Castle are aging and the risk of system malfunction poses a threat to visitor and employee health and safety. The telephone and alarm systems are not currently functioning. Restoration of the water system is needed to restore important visitor and safety facilities to Scotty's Castle by restoring potable water for visitor and employee use and providing water for fire suppression to protect park visitors, staff, museum collections, and historic assets.

Environmental Consequences

Impacts of Alternative A—No Action

If repair and rehabilitation of Scotty's Castle were not implemented, safety concerns would prevent Scotty's Castle from reopening to the public, which would adversely affect the visitor experience. The NPS likely would not be able to reopen Scotty's Castle to visitors beyond the occasional tours of about 13 people per week that currently occur. The telephone and alarm systems would not be repaired, and the resulting safety risks would continue. Without a functioning visitor center at Scotty's Castle, visitors entering the park from the north would have to drive an additional 55 miles further into the park to the Furnace Creek Visitor Center to receive basic orientation to the park. Providing opportunities for the public to experience important historic resources such as Scotty's Castle is an important purpose of the park, and loss of access to Scotty's Castle would permanently affect the visitor experience for thousands of visitors who would otherwise visit Scotty's Castle every year.

Cumulative Impacts

The impacts of past actions on visitor use and safety have resulted from past reconstruction of Bonnie Clare Road, reconstruction of the Grapevine Ranger Station parking lot and sidewalks, and resurfacing of Mesquite Spring Campground Road. Impacts from present and reasonably foreseeable future actions would result from future actions including reconstruction of Bonnie Clare Road to repair flood damage, future landscape improvements at Scotty's Castle, and other future flood repairs and maintenance as described above under *Cumulative Impact Scenario*. Collectively, these actions have had, and would continue to have, beneficial cumulative impacts on visitor use and safety. As previously described in this EA, the direct and indirect impacts of the no action alternative on visitor use and safety would be adverse from continued closure of Scotty's Castle to the public. When the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impact on visitor use and experience would be adverse, with a relatively large contribution from the no action alternative.

Impacts of Alternative B— Rehabilitate, Repair, and Replace Facilities at Scotty's Castle (Proposed Action and Preferred Alternative)

Construction traffic along roads leading to the Scotty's Castle area would result in increased noise and dust, which could adversely affect the visitor experience. Because Bonnie Clare Road and Scotty's Castle are closed and would continue to be closed during construction, the number of visitors affected by increased construction traffic would be small, and these impacts would end after construction is complete. If reconstruction of Bonnie Clare Road is completed before the Scotty's Castle project is completed, visitors could experience some delays along Bonnie Clare Road; however, delays would be limited to 30 minutes or less as described under *Mitigation Measures*.

Implementing Alternative B would allow the NPS to reopen Scotty's Castle to the public. After reopening Scotty's Castle, visitor use would likely return to pre-flood levels, with about 120,000 visitors per year, including about 55,000 visitors taking guided tours. Increasing the number of parking spaces at Scotty's Castle could lead to an increase in the number of visitors at peak times. Numerous improvements would improve the visitor experience, including increased parking capacity, increased number of restrooms, and improved walking surfaces. The upgraded HVAC system would improve visitor comfort. Visitors with mobility impairments would have a route to the Visitor Center, Scotty's Castle, and public restrooms from the parking lot that meets ABAAS. Reopening the Visitor Center would improve the visitor experience by providing exhibits that would have visual, tactile, and auditory components to address multiple learning styles and would allow visitors entering the park from the north to have a basic orientation to the park. Death Valley Natural History Association would again be able to sell interpretive items, food, and beverages in the gift shop. Providing the public opportunities to experience important historic sites such as Scotty's Castle is an important purpose of the park; thus, reopening Scotty's Castle would substantially improve the visitor experience compared to existing conditions.

Following rehabilitation, repair, and replacement of facilities at Scotty's Castle, public and employee safety would also be improved. The utilities would be upgraded, repaired, or replaced, including the electrical and fire suppression systems, resulting in improved safety. Existing hazards from unsafe walking surfaces would be addressed by resurfacing walkways. Facilities would be upgraded where needed to meet ABAAS, resulting in improved safety and experience for visitors. Seismic stabilization of the Garage Visitor Center, Long Shed, and Bunkhouse also would result in improved visitor and park staff safety. Repairs and upgrades to the HVAC system, telephone and alarms, water and wastewater systems and construction of the flood diversion berms would improve safety conditions for visitors and staff.

In addition, as described in the *Floodplains and Wetlands* section, installing permanent signs would reduce risks to human safety and health by warning park visitors of the potential for flash flooding to occur during precipitation events. Developing a flood warning and evacuation plan for visitors and park staff and implementing an evacuation plan would also reduce health and safety risks to visitors and staff.

Cumulative Impacts

As described above for the no action alternative, past, present, and reasonably foreseeable future actions have had, and would continue to have, beneficial cumulative impacts on visitor use and safety. As previously described in this EA, the direct and indirect impacts of Alternative B on visitor use and safety would be beneficial over the long term by allowing access to Scotty's Castle, an area of the park that is currently closed to visitors, and from improved services and safety conditions for visitors and staff. The incremental impacts of Alternative B would contribute substantially to the beneficial impacts that are already occurring.

CONSULTATION AND COORDINATION

Scoping

The park initiated public scoping with a press release that was sent via email to several media sources in the Death Valley area and was published in the *Inyo Register* and *Pahrump Valley Times*. A scoping announcement was posted on Facebook on April 20, 2017 and to the NPS Planning, Environment, and Public Comment (PEPC) website and park website on April 19, 2017. In addition, a newsletter describing the project, alternatives under consideration, and opportunities for public comment was published to the PEPC website on April 19, 2017. The scoping period was defined as April 19 through May 18, 2017.

Three public meetings were held: on April 24, 2017 in Beatty; on May 1, 2017 in Pahrump; and on May 4, 2017 at the Furnace Creek visitor center in the park. The park received three correspondences during the 30-day comment period. Two correspondences were posted to the PEPC website and one was received as a handwritten note during the April 24 public meeting. No other comments were received from the public by the end of the scoping period. All three written comments supported reopening Scotty's Castle, including two comments that suggested the park should seek out additional sources of funding for the project.

Internal scoping was conducted by an interdisciplinary team of professionals from the park, Denver Service Center, Pacific West Regional Office, FHWA, and consultants. Internal scoping included value analysis workshops held on February 1-2, 2017 and July 18-19, 2017. Team members met multiple times from 2015 through 2017 to discuss the purpose and need for the project, various alternatives, potential environmental impacts, reasonably foreseeable actions that may have cumulative effects, and mitigation measures. Over the course of the project, team members have conducted numerous individual site visits to view and evaluate the project area.

Consultation

SHPO and Tribal Consultation

Consultation with the California SHPO under Section 106 of the National Historic Preservation Act is ongoing separately from the NEPA process. Consultation with the SHPO was initiated on June 28, 2017. The NPS also requested that in the event the U.S. Army Corps of Engineers needs to issue a permit under Section 404 of the Clean Water Act, the NPS will act as the lead federal agency for Section 106. To reduce duplication of effort, the FHWA also has agreed to designate the NPS as lead agency for Section 106 compliance. A letter was received from the SHPO on August 1, 2017 to formally initiate consultation (SHPO 2017), which has been ongoing. In their response letter on August 1, 2017, the SHPO recommended that because of the number of projects proposed at Scotty's Castle, and the possibility of adverse effects, a PA may be appropriate to clarify the manner in which consultation would proceed. On August 24, 2017, the NPS formally invited the SHPO and Advisory Council on Historic Preservation (ACHP) to be signatories for the implementation of a PA to plan for and resolve potential adverse effects on

historic properties (NPS 2017). A copy of this EA will be forwarded to the SHPO for review and comment.

The NPS also initiated tribal consultation with the Timbisha Shoshone Tribe, Pahrump Paiute Tribe, Lone Pine Paiute Shoshone Reservation, Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Kern River Paiute Council, Fort Independence Community of Paiute, Bishop Paiute Tribe, and Big Pine Band of Owens Valley via letter on June 28, 2017. The Timbisha Shoshone Tribe was invited to be a concurring party for the PA on August 24, 2017 (NPS 2017). Tribal consultation is ongoing and copies of this EA will be forwarded to the tribes for review and comment.

U.S. Fish and Wildlife Service

A scoping letter was sent to the USFWS in May 2017 to inform them of the project and solicit input on federally listed species. An email response was received from the USFWS on May 18, 2017 (USFWS 2017). The email requested additional project details, which the park provided, and indicated that if work were conducted outside of the nesting season, the USFWS would have no concerns. As described in the *Special Status Wildlife* section of this EA, the NPS has determined that the proposed action may affect, but is not likely to adversely affect, the Bell's least vireo, southwestern willow flycatcher, and desert tortoise. A copy of this EA will be provided to the USFWS for review and concurrence.

U.S. Army Corps of Engineers

The NPS and FHWA have agreed that FHWA would be the lead agency for compliance with Section 404 of the Clean Water Act. FHWA would obtain a permit from the U.S. Army Corps of Engineers for the project.

Lahontan Regional Water Quality Control Board

The NPS and FHWA have agreed that FHWA would be the lead agency for compliance with Section 401 of the Clean Water Act. FHWA would obtain a Section 401 Water Quality Certification permit from the Lahontan Regional Water Quality Control Board (RWQCB) for the project. The RWQCB would also determine whether the project would have a significant impact on the environment under CEQA (Appendix A).

Additional Agencies and Persons Consulted

The following agencies, organizations and libraries received notice of the public scoping period and will receive a notice of the availability of this EA:

- Amargosa Conservancy
- Amargosa Valley Library
- Beatty Chamber of Commerce
- Beatty Town Advisory Board
- Bishop Branch Library
- Bureau of Land Management
- California Department of Fish and Wildlife
- California Highway Patrol
- California Native Plant Society
- California State Clearinghouse
- California State Historic Preservation Officer
- California Water Resources Control Board
- Death Valley 49ers, INC
- Death Valley Chamber of Commerce
- Death Valley Conservancy
- Death Valley Natural History Association
- Esmeralda County Commissioners
- Great Basin Unified Air Pollution Control District
- Historical Society of the Upper Mojave Desert
- Inyo County Board of Supervisors
- Inyo County Free Library
- Inyo County Planning Department
- Lahontan Regional Water Quality Control Board
- Lone Pine Branch Library
- Lone Pine Chamber of Commerce
- National Parks Conservation Association
- Nye County Commissioners
- Pahrump Community Library
- Panamint Springs Resort
- Ridgecrest Branch Library
- Sierra Club
- U.S. Fish and Wildlife Service
- Xanterra Parks and Resorts, Inc.

The following American Indian tribes were also contacted and were invited to participate in the planning process:

- Timbisha Shoshone Tribe

- Fort Independence Community of Paiute
- Big Pine Band of Owens Valley
- Lone Pine Paiute Shoshone Reservation
- Bishop Paiute Tribe
- Pahrump Paiute Tribe
- Kern River Paiute Council
- California Native American Heritage Commission

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APPENDIXES

Appendix A

California Environmental Quality Act Compliance

California Environmental Quality Act Initial Study

This appendix contains an analysis of the impacts that may result from construction and implementation of the preferred alternative (described in the *Alternatives* section) pursuant to the California Environmental Quality Act (CEQA). The basic purposes of CEQA are to (AEP 2015):

1. Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities.
2. Identify the ways that environmental damage can be avoided or significantly reduced.
3. Prevent significant avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
4. Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

This Initial Study (IS) is included as an appendix to the EA because a Clean Water Act Section 401 water quality permit will be required from the Lahontan Regional Water Quality Control Board (Water Board). The IS has been prepared to assist the Water Board in determining whether the project may have a significant effect on the environment, which is defined under CEQA as a “substantial adverse change in the physical conditions that exist in the area affected by the proposed project.”

If the IS shows there is no substantial evidence that the project may have a significant effect, the lead agency prepares a Negative Declaration. If the project would not result in a significant effect because revisions in the project have been made by or agreed to by the project proponent, the lead agency prepares a Mitigated Negative Declaration. The analysis that follows is based on the affected environment described in the *Affected Environment and Environmental Consequences* section, and adheres to the Environmental Checklist Form that comprises Appendix G of the 2015 CEQA Statutes and Guidelines. The checklist is used to meet the requirements for an IS (AEP 2015).

CEQA Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: One of the four proposed locations of the cooling tower would have an adverse effect, one may have an adverse effect, and two would not have adverse effects on the views within Scotty's Castle. Though the proposed locations were chosen based on their potential to hide the cooling tower behind landforms or walls that would be compatible with the historic landscape, the location near the picnic area and south of the entrance drive and swimming pool is too prominent to hide a 15-foot structure. The elements used to hide the tower in that location would likely have an impact as well. The location near Chimes Tower may have an adverse effect, but that could likely be mitigated by careful siting of the tower outside the prominent viewsheds both to Scotty's Castle from Bonnie Clare Road and within Scotty's Castle. The other two locations, as outlined in the project description (Figure 3), would not be highly visible. The flood-control berms would be visible from Scotty's Castle, but would be designed to blend in with the surrounding landscape to the extent possible as described under <i>Mitigation Measures</i> .				
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not substantially damage scenic resources including trees, rock outcrops, and/or historic buildings.				
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: The preferred alternative would result in some changes to the visual quality of the site as described above under a), but would not substantially degrade visual character.				
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not involve installation of new lighting.				
II. AGRICULTURE AND FOREST RESOURCES: Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is not present within the analysis area.				
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The analysis area does not contain agricultural lands; therefore, the Williamson Act does not apply.				
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No lands within the project area are designated or zoned as forest lands, timberland, or Timberland Production lands.				
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: There are no forest lands in the project area nor would the proposed project result in the conversion of forest lands.				
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is limited in scope to the reconstructed road corridor. The proposed project would not result in the conversion or change in the existing environment.				
III. AIR QUALITY: Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: No additional travel lanes or increase in capacity are proposed. The preferred alternative would not affect traffic volumes or increase capacity on any road or result in other actions that would affect air quality over the long term.				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>The project area is in the Great Basin Unified Air Pollution Control District, as established by the State of California. This district is classified as a California state nonattainment area for particulate matter (fine dust) less than 10 microns in diameter. The general trend in upper air movement carries pollutants to the park from metropolitan areas, industrial areas, and transportation corridors to the west. In the summer, surface winds flow from the southwest, where sources that contribute to air pollution in the park include major population centers, industrial areas, and a dry lakebed. In winter, surface winds flow from the northeast. Because northeast winds comprise an air mass that originates in less developed areas, the air quality of the park is generally better in the winter.</p> <p>Less than Significant Impact with Mitigation: Should the preferred alternative be selected, local air quality would be temporarily affected by dust and construction vehicle emissions. Hauling construction and fill material and operating equipment during the construction period would result in increased vehicle exhaust and emissions (hydrocarbons, nitrogen oxide, and sulfur dioxide emissions), which would be expected to rapidly dissipate.</p> <p>Fugitive dust plumes from construction equipment would intermittently increase airborne particulates in the area near the project site, but loading rates are not expected to be considerable; water sprinkling to abate fugitive dust would occur during construction. Overall, there would be a slight and temporary degradation of local air quality due to dust generated from construction activities and emissions from construction equipment. These effects would last only as long as construction occurred; impacts would be negligible and short-term.</p> <p>Measure 1: Fugitive dust plumes would be reduced by water sprinkling the soil during earth-disturbing activities. Possible sources of water for construction would Scotty's Castle or Beatty, Nevada.</p> <p>Measure 2: Unnecessary construction vehicle engine idling would be limited to reduce noxious emissions.</p>				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not result in a net increase in any of the criteria pollutants.				
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Less Than Significant Impact: During construction, the release of additional emissions associated with construction vehicles and equipment is anticipated. This effect would be temporary and limited in scope to the project area, which is not near residential or heavily used areas of the park.				
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: During construction, the use of diesel-fueled equipment may result in the release of objectionable odors, but would be limited to the period of construction and limited to the project area.				
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Eight special-status wildlife species including six bird species and two reptile species have potential to occur in the project area. No special status plant species have potential to occur in the project area. Please refer to the <i>Special Status Wildlife Species</i> section of this EA for detailed description of these species.</p> <p>Less than Significant Impact with Mitigation: The preferred alternative could directly impact or indirectly impact special status species and/or their habitats due to project-related construction disturbances including noise disturbance, increased dust, and disturbances from vibrations. Most of the potential special status species could occur in the riparian area in Grapevine Canyon, south of Scotty's Castle. The increase in human activity, mainly from construction equipment, and noise associated with construction would persist for one year and could result in individuals potentially leaving the area during construction. The proposed action is anticipated to permanently impact about 0.086 acre of vegetated wetlands that could provide foraging habitat for riparian-dependent special status bird species. Potential adverse effects on southwestern willow flycatcher and least Bell's vireo could occur; however, impacts from the 2015 flood event significantly reduced the amount of suitable habitat for both species. Potential habitat occurs in Grapevine Canyon for loggerhead shrike, yellow-breasted chat, willow flycatcher, and yellow warbler, which could be potentially adversely affected during construction due to noise disturbances and from loss of 0.086 acre of wetlands. Adverse effects would be minimized with the implementation of mitigation measures listed below:</p> <p>Measure 1: Beginning April 10, all construction activities would cease in areas within a 0.25-mile buffer of suitable habitat and a qualified biologist would conduct surveys for least Bell's vireo and southwestern willow flycatcher. Surveys would be based on the USFWS's most recent survey guidelines and protocols for the least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al. 2010). The NPS would not conduct surveys during the third survey period, as outlined in southwestern willow flycatcher survey protocol, unless birds were detected during the first two survey periods. If neither species is detected during surveys, construction activities would resume in areas adjacent to suitable habitat. However, if either species is detected, and surveys confirm that birds are nesting or nesting is a possible outcome, then the NPS would resume construction activities adjacent to suitable habitat after (1) the avian nesting and breeding season ends (i.e., August 16); or (2) it has been determined by a qualified biologist that the birds are not attempting to nest again or any young have fledged</p> <p>Measure 2: Compensatory mitigation would be constructed as described in detail the Floodplain and Wetland Statement of Findings (Appendix B) and in the <i>Compensatory Mitigation and Monitoring Plan</i> (FHWA 2017b).</p>				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Sensitive natural communities associated with wetland habitats occur within the project area. Riparian habitats occur adjacent to riverine wetlands at Scotty's Castle. Refer to the <i>Floodplains and Wetlands</i> section of this EA for detailed descriptions riparian habitats. Riparian areas also provide habitat for several special status wildlife species, as described in the <i>Special Status Wildlife</i> section of this EA.</p> <p>Less than Significant with Mitigation: The preferred alternative would result in beneficial effects on riparian vegetation within the project area over the long term. The reestablishment of aquatic resources that were lost during the 2015 flood would result in a net benefit for riparian areas. The mitigation measures for wetlands (described below) would also benefit riparian areas. Mitigation measures for special status wildlife, described above, also would reduce impacts on these areas.</p>				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Sensitive natural communities associated with wetland habitats occur within the project area. Wetland resources include Grapevine Canyon Wash, an ephemeral riverine wetland; other ephemeral riverine wetlands within tributaries of Grapevine Canyon Wash; spring-fed riverine wetlands within Grapevine Canyon Wash; and vegetated wetlands. Refer to the <i>Floodplains and Wetlands</i> section for detailed descriptions of wetland and riparian habitats.</p> <p>Less than Significant with Mitigation: Impacts on wetlands would occur from constructing the new Water Meter Vault Berm south of the southwest corner of the Stables, reconstructing the Existing Berm east of the Stables, and from replacing the existing underground outlet pipes and control valves at both water tanks and the Spring House. The preferred alternative would result in the permanent loss of 0.162 acre of vegetated and ephemeral riverine wetlands and temporary impacts on 0.098 acre of ephemeral riverine wetlands. Impacts on wetlands and waters of the U.S. would be less than significant with implementation of the mitigation measures below.</p> <p>Measure 1: Compensation for permanent impacts on wetlands would be accomplished by reestablishing 0.061 acre of vegetated wetlands and 0.003 acre of ephemeral riverine wetlands on-site and adjacent to the proposed project area (see Floodplain and Wetland Statement of Findings in Appendix B).</p> <p>Measure 2: Impacts on wetlands would be minimized by relocating flood-control berms out of wetlands to the greatest extent possible, as described in greater detail in the Floodplain and Wetland Statement of Findings (Appendix B) and the Compensatory Mitigation and Monitoring Plan (FHWA 2017b).</p> <p>Measure 3: BMPs for wetlands would be implemented as required in Appendix 2 of the NPS Procedural Manual #77-1: Wetland Protection (NPS 2016a). These BMPs are listed in the Floodplain and Wetland Statement of Findings (Appendix B).</p>				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? .	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Native resident or migratory wildlife are likely to move along drainages and riparian areas within the project area; however, no distinct resident or migratory wildlife corridors have been identified within the project area. No native wildlife nursery sites are known within the project area.</p> <p>Less than Significant with Mitigation: Short-term disruption of wildlife movement may occur during construction activities lasting up to one year; however, the preferred alternative would not substantially or permanently alter wildlife movement along potential wildlife corridors. Implementation of the mitigation measures listed below would reduce potential short-term adverse impacts.</p> <p>Measure 1: See a) – Measure 1 above.</p>				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No ordinances or policies apply to the project area.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No Habitat Conservation Plan, Natural Community Conservation Plan, or other conservation plan applies to the project area.				
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Less than Significant with Mitigation: As described in this EA in the <i>Historic Structures and Districts</i> section, adverse effects would occur on historic buildings in the DVSHD, but would not affect the characteristics of buildings that contribute to the eligibility of the historic district and would not affect the eligibility and significance of the entire historic district. Implementation of the mitigation measures listed below would reduce potential adverse impacts.</p> <p>Measure 1: Work areas would be protected as needed with floor coverings (plastic or canvas tarps). Any sawing of wood or metal grinding would be restricted from interior spaces except in the carpentry shop, with dust and sawdust collection. Secretary of the Interior Standards protection methods would apply to all materials cleaning.</p> <p>Measure 2: All project activities would be restricted to the Area of Potential Effect, as defined in the Section 106 consultation initiation letter submitted to the California SHPO on June 28, 2017.</p> <p>Measure 3: All actions would be completed in compliance with the Secretary of the Interior Standards for the Treatment of Historic Properties.</p> <p>Measure 4: A programmatic agreement to resolve the adverse effects on historic properties would be developed with the SHPO, American Indian tribes, and other consulting parties. All stipulations would be adhered to as part of this project.</p> <p>Measure 5: If during construction, identified cultural landscape characteristics and features are damaged or destroyed, all work in the immediate vicinity would be halted until the resources are documented, their condition assessed, and a historical landscape architect is consulted to develop a mitigation strategy.</p> <p>Measure 6: The exterior form of flood-control berms would mimic and blend with surrounding landscape topographic forms and would not be geometric in appearance. The edges of the berms would be rounded and blend into the surrounding grade with curves and slopes that match those in the immediate area. Berms would mimic adjacent natural landforms such as the hastate- or spearhead-shaped foothills that are formed between the washes. Native plantings would be added at the edges of the berms to match those found around each berm location.</p>				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Archeological resources in the project area are described in the <i>Impact Topics Dismissed from Detailed Analysis</i> section. Ground-disturbing activity would occur during construction at Scotty's Castle; however, this activity would be limited to previously disturbed areas. Based on previous archeological surveys, no known archeological sites would be directly affected.</p> <p>Less than Significant with Mitigation: No archeological sites would be directly affected by the project. Mitigation measures, such as marking and avoiding known sites and monitoring by a qualified archeologist during construction, would be implemented to avoid unintentional impacts.</p> <p>Measure 1: All project activities would be restricted to the Area of Potential Effect for direct effects, as defined in the Section 106 initiation letter submitted to the SHPO on June 30, 2017.</p> <p>Measure 2: Temporary fencing would be placed between the construction limits and known archeological sites to prevent inadvertent damage to sites during construction.</p> <p>Measure 3: Prior to construction, the archeologist would flag areas to avoid during construction, including defining the project limits at Staininger Spring, along the proposed access route and staging area for the wastewater system, and along the access road for the proposed telecommunications system.</p> <p>Measure 4: Ground-disturbing activities would be monitored by a qualified archeologist and a tribal monitor.</p> <p>Measure 5: In the unlikely event that previously undocumented archeological features are encountered during project implementation, all necessary steps would be taken to protect them, and work in that location should be immediately suspended until the park compliance archeologist or another archeologist meeting the Secretary of the Interior Standards has evaluated the find.</p> <p>Measure 6: In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's NAGPRA Inadvertent Discovery Plan are completed and the NAGPRA is followed.</p>				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No known paleontological resources or sites or unique geologic features are known within the project area.				
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Less than Significant with Mitigation: No known human remains occur in the project area. In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's NAGPRA Inadvertent Discovery Plan are completed and the NAGPRA is followed (see Measure 6 above for archeological resources).</p>				
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not cross or rupture a known earthquake fault as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map.				
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No new below ground structures are proposed. Excavation would be required for replacement of existing below ground structures such as the septic tank and utility lines. No activities that could result in seismic ground shaking would occur.				
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No improvements to vertical alignments, slopes, or culverts would occur, and no new structures, such as rockery walls, would be constructed. Because only minor changes to the road would occur, the proposed action would not expose people and structures to the adverse impacts of liquefaction compared to existing conditions.				
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant Impact: Hazards related to slope instability and landslides are generally associated with foothill areas and mountain terrain, as well as steep riverbanks. The portion of the project area north of Scotty's Castle is hilly with eroded drainages, sandstone outcrops, and small valleys. However, the majority of the analysis area is in an area with few, if any, past landslides.				
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Less than Significant with Mitigation: Impacts on soils would occur from surface grading and excavation. Impacts on soils would be minimal and further minimized through implementation of the following mitigation measures.</p> <p>Measure 1: BMPs for drainage and sediment control, as identified and used by the NPS, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) locating waste and excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.</p>				
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
<p>Soil survey mapping has not been conducted for the Grapevine Canyon / Mesquite Spring Campground areas of the park where low soil development characteristics exist (sparse vegetation cover, steep slopes, and large volumes of erosion). Canyon soils on the actively eroding slopes are thin and generally classed as entisols derived from breakdown of the geologic exposures (volcanic and sedimentary rocks and other materials) and vegetation establishment (NPS 2012). Deposition of sediments washed from the up-drainage landscape and canyon slopes also represent entisols. Soils developed on slopes are thin and deposit on ledges and in depressions while sediments deposited as alluvium on the canyon floor and in Death Valley Wash are relatively deep. Annual flooding adds new sediments and redistributes and mixes them with existing deposits, producing a sand and gravel texture with little organic material.</p> <p>Less than Significant Impact: The project area does not contain known soils with a known risk of landslides or liquefaction. The project would not increase the risk of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.</p>				
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The project area does not contain known expansive soils.				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The septic system and leachfield at Scotty's Castle would be reconstructed with new materials in the same location they were previously located prior to being destroyed by the 2015 flood, as described in the <i>Alternatives</i> section. The existing leachfield would be excavated to a depth of up to 6 feet to remove the old materials and to place engineered fill. Existing leachfield piping and leachfield material would be removed and salvaged for potential reuse or disposal. Construction would be limited to previously disturbed areas within the footprint of the existing wastewater system.				
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant Impact: During construction, the preferred alternative would generate greenhouse gas emissions. Construction emissions would be temporary and would be generated due to the use of heavy equipment such as excavators, graders, dump trucks, cranes, and paving equipment. However, the preferred alternative would not increase the overall capacity of any road or increase traffic to Scotty's Castle. Therefore, long-term effects are anticipated to remain unchanged from existing conditions.				
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not conflict with the greenhouse gas reduction goals set forth in California Assembly Bill 32. No other plans or policies related to greenhouse gas emissions are applicable to the project.				
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not result in the routine transport, use, or disposal of hazardous materials.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Less than Significant Impact: The potential for unintended release of hazardous materials from construction equipment would be reduced through BMPs and implementation of a Spill Prevention, Control, and Countermeasure Plan.				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located within 0.25 mile of an existing or proposed school.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, thus, would not create a significant hazard to the public or environment.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located with an airport land use plan or within 2 miles of a public airport or public use airport.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located within the vicinity of a private airstrip.				
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: The construction of the proposed project could result in road closures, which could temporarily affect emergency vehicle response times.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Wildland areas are not present within the proposed project area.				
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Less than Significant with Mitigation: No site-specific water quality standards are applicable to the water bodies in the project area and the preferred alternative does not include waste discharge to a water body. With implementation of the mitigation measures below, the project would have a less than significant impact on water quality.</p> <p>Measure 1: BMPs for drainage and sediment control, as identified and used by the NPS, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) locating waste and excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.</p> <p>Measure 2: A SWPPP would be prepared as required by the state of California and implemented throughout the construction period.</p> <p>Measure 3: A hazardous spill plan would be in place, stating the actions to be taken in the case of a spill, notification measures, and preventive measures to be implemented, including the placement of refueling facilities, storage, and handling of hazardous materials.</p> <p>Measure 4: All equipment on the project would be maintained in a clean and well- functioning state to avoid or minimize contamination from automotive fluids. All equipment would be inspected daily.</p>				
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The proposed project would not deplete or interfere substantially with groundwater recharge resulting in a net deficit in aquifer volume or lowering of the groundwater table.				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: c) through e) - Portions of the preferred project area are within the Grapevine Canyon and Tie Canyon 100-year floodplains. The preferred project incorporates the construction of flood protection structures, which would divert flood flows away from structures. The structures would redirect, but not increase, surface runoff or adversely affect water quality.				
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less than Significant with Mitigation: With implementation of the mitigation measures for Water Quality, described above, the project would have a less than significant impact on water quality.				
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No new housing is proposed as part of the preferred alternative. The preferred alternative would include flood-control berms to divert flood flows away from structures, reducing the risk of flood damage to occupied or unoccupied buildings.				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Less than Significant Impact: The preferred alternative would involve the replacement or rehabilitation of structures and utilities located within the 100-year flood hazard area associated with Grapevine Canyon and Tie Canyon 100-year floodplains, including a new restroom. Flood protection structures are proposed to redirect flows away from structures, which would result in a reduction of flood hazards.				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: The only structures in or downstream from the project area are Bonnie Clare Road, the water diversion facilities at Staininger Spring, and the buildings and other facilities at Scotty's Castle. The preferred alternative would include flood-control berms to divert flood flows away from structures, reducing the risk of flood damage. The project would not increase the risk of flooding at Scotty's Castle.				
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No impact: The project is not in an area prone to seiche, tsunami, or mudflow.				
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No established communities occur within the project area.				
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No applicable land use plan, policy, or regulation of an agency with jurisdiction over the project applies to the project or project area.				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No applicable habitat conservation plan or natural community conservation plan applies to the project area.				
XI. MINERAL RESOURCES: Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No known mineral resources occur within the project area.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No known mineral resources occur within the project area.				
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: Temporary noise disturbances associated with project construction are anticipated but no long-term changes in noise levels would occur under the preferred alternative because it would not change the overall use of the area.				
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: The upgraded HVAC cooling tower could increase noise levels in the Main House and Annex. To reduce noise, the cooling tower model with the lowest decibels would be used and the tower would be shielded by landforms or walls compatible with the historic district. The potential cooling tower locations were selected to be near the existing tunnel system and to minimize visual and audible impacts.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: The upgraded HVAC cooling tower could increase noise levels in the Main House and Annex. To reduce noise, the cooling tower model with the lowest decibels would be used and the tower would be shielded by landforms or walls compatible with the historic district. The potential cooling tower locations were selected to be near the existing tunnel system and to minimize visual and audible impacts.				
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The preferred alternative would result in temporary increases in ambient noise due to construction but the increases would not be substantial.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not be located within an airport land use plan or within 2 miles of a public airport or public use airport.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not be located in the vicinity of a private airstrip.				
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is located within a national park where new development of residential homes or businesses is not permitted.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No existing housing structures are located within the proposed project area.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No existing housing structures are located within the proposed project area				
XIV. PUBLIC SERVICES:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
No Impact or Less than Significant: The preferred alternative would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities. However, given the location of the proposed project, within a national park, temporary, but not substantial, impacts on response times within the project area of the park would occur during construction.				
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: The proposed project would not increase the capacity of the road, but would incorporate increased parking capacity, which would allow for increased use and access to Scotty's Castle. This impact is anticipated to provide a positive effect for visitors of the facilities.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant: The proposed project would not result in the construction of new recreation facilities, but would incorporate increased parking capacity and increased number of restrooms to accommodate more visitors, in addition to improved walking surfaces and improvements to existing structures and utilities. The potential effect would be beneficial for visitor use and would result in less than significant impacts on the environment.				
XVI. TRANSPORTATION/TRAFFIC: Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not affect transportation in the park.				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No congestion management program exists within the project area.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative includes no measures that would change air traffic patterns.				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative does not include design features that would affect transportation.				
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Emergency vehicles would be permitted to pass through the project area during construction without delay.				
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES:				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less than Significant with Mitigation: a) and b) - Work would occur within the Grapevine Canyon Archeological District, which was designated by the park in 2012. Ethnographic resources of importance to the Timbisha Shoshone Tribe have been identified within the Grapevine Canyon Archeological District and are listed as contributing features to the archeological district, as described in this EA. Impacts on tribal cultural resources would be minimized by implementing the mitigation measures described above for <i>Cultural Resources</i> , including requiring the presence of tribal monitors during construction.				
XVIII. UTILITIES AND SERVICE SYSTEMS:				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not produce wastewater and, therefore, would not exceed any wastewater treatment requirements.				
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The preferred alternative would reconstruct a waterline and the septic system and leachfield at Scotty's Castle with new materials in the same location they were located prior to flood damage from the 2015 flood. The leachfield would be excavated to remove old materials and place fill. New infiltration piping would be installed to construct the leachfield. Construction would be limited to the previously disturbed areas within the footprint of the existing infrastructure.				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant Impact: The preferred alternative incorporates stormwater drainage improvements such as increasing the opening size at the Long House breezeway, improving surface drainage around the existing buildings, improving drainage from the parking lot, and installing flood protection and drainage structures, as described in the <i>Alternatives</i> section. Constructing the berms would affect aesthetics and hydrology, but would not cause significant environmental effects, as described in this checklist under <i>Aesthetics and Hydrology and Water Quality</i> .				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant Impact: Water may be required for dust suppression during construction and would be acquired by the contractor.				
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not produce wastewater.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would be served by a landfill with sufficient permitted capacity, which would be identified by the contractor prior to construction.				
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would comply with federal, state, and local statutes and regulations related to solid waste.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less than Significant with Mitigation: As described above in this chapter, the preferred alternative has the potential to substantially impact air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and tribal cultural resources. However, all potential impacts from the preferred alternative would be mitigated to less than significant levels through implementation of the mitigation measures described throughout this chapter.				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than Significant Impact: As discussed in this EA, the proposed project has the potential for impacts on air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and tribal cultural resources. However, these would be site-specific impacts and, therefore, would not be considered cumulatively considerable. In addition, mitigation measures have been proposed that would reduce all impacts to less than significant levels. All other impacts are considered less than significant and would not be cumulatively considerable. Therefore, this impact would be less than significant.				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would result in beneficial impacts on visitors and park employees by allowing access and improving safety.				

Determination

On the basis of this initial evaluation:	
<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature:	Date:
Printed Name:	For:

Appendix B

Floodplain and Wetland Statement of Findings

APPENDIX B: STATEMENT OF FINDINGS

**STATEMENT OF FINDINGS FOR
EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT
AND
EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS**

**DEATH VALLEY NATIONAL PARK
SCOTTY'S CASTLE FLOOD REHABILITATION
ENVIRONMENTAL ASSESSMENT**

Recommended: _____
Superintendent, Death Valley National Park Date

Certification of Technical Adequacy and Servicewide Consistency:

Chief, Water Resources Division Date

Concurred: _____
Pacific West Regional Safety Officer Date

Approved: _____
Director, Pacific West Region Date

SCOTTY'S CASTLE FLOOD REHABILITATION DEATH VALLEY NATIONAL PARK

FLOODPLAIN AND WETLAND STATEMENT OF FINDINGS

INTRODUCTION

The National Park Service (NPS) is proposing to rehabilitate various historic and nonhistoric features in the Death Valley Scotty Historic District (Scotty's Castle or DVSHD). The proposed project is needed because buildings and facilities at Scotty's Castle were damaged by extensive flooding on October 18, 2015 following a major rainstorm and subsequent flash flood. The flood caused catastrophic loss of roads and utilities and extensive damage to many of the buildings and landscapes that comprise DVSHD. Scotty's Castle is currently closed to the public until flood damage can be repaired and made safe for visitors. Repairs and rehabilitation are needed to bring buildings, facilities, and the landscape into compliance with current codes and standards.

Executive Order (EO) 11988, "Floodplain Management" requires the NPS and other agencies to evaluate the likely impacts of actions in floodplains. It is NPS policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. If a proposed action is in an applicable regulatory floodplain, then flood conditions and associated hazards must be quantified and a formal Statement of Findings (SOF) must be prepared. The NPS *Procedural Manual* #77-2, *Floodplain Management* provides direction for the preparation of a floodplain SOF. EO 11990, "Protection of Wetlands" directs the NPS to minimize the loss or degradation of wetlands, preserve and enhance the beneficial values of wetlands, and avoid direct or indirect construction in wetlands unless there are no practicable alternatives to such construction and the preferred alternative includes all practicable measures to minimize harm to wetlands. This combined SOF for floodplains and wetlands has been prepared to comply with EO 11988, EO 11990, NPS *Procedural Manual* #77-2, and NPS Wetland Protection Guidelines, Director's Order (DO) #77-1 (NPS 2016).

Project improvements would include repairing flood-damaged buildings and landscape features within DVSHD; replacing or upgrading electrical systems, communication systems, water utilities, and climate control facilities; and improving safety and accessibility. The project components are described in more detail below.

The floodplain would be temporarily impacted during construction. The project would use design and construction methods to minimize long-term impacts on the floodplain. Overall, the project would have localized effects on floodplain values, but within the entire Grapevine Canyon watershed would not substantially affect floodplain functions. The project would not increase the risk of flooding in Grapevine Canyon; would minimize the impact of floods on property, human safety, health, and welfare; and would increase resilience against flooding in accordance with EO 11988.

LOCATION

The project area is located in Grapevine Canyon and Tie Canyon in the northeast portion of Death Valley National Park (park; Figure 1). Some of the project area is within the Grapevine Canyon and Tie Canyon 100-year floodplains (Figures 2, 3, 4, 5, and 6).

PROJECT DESCRIPTION

The proposed action includes numerous actions to rehabilitate, repair, and replace facilities in DVSHD, as described below and shown in Figure 2 through Figure 6. Work would occur at the Scotty's Castle Campus, at the Staininger Spring facilities, and within a utility corridor from the Grapevine Developed Area to Staininger Spring. The proposed action would reduce the risk of future flooding by minimizing placement of facilities in the Grapevine Canyon Wash floodplain and by diverting flood waters away from historic structures. No housing would be constructed in the floodplain and the value of the contents of structures in the floodplain would be minimized by not returning the collections to the Stables building. The proposed action would also include nonstructural flood-risk reduction measures such as warning signs and developing evacuation plans. The proposed action is described in detail in the Environmental Assessment (EA).

BUILDING AND OTHER FACILITY REPAIRS

Some buildings and other facilities to be rehabilitated and restored (Figure 2), although damaged in the October 18, 2015 flood, are outside the 100-year floodplains of Grapevine Canyon and Tie Canyon (Federal Highway Administration and NPS (FHWA and NPS 2017)). These facilities include the Main House and Annex, Wishing Well, Gas House, Hacienda, Fire Cache Building, and Cook House. The Garage Visitor Center, Long Shed, and Bunkhouse are within the 100-year floodplain of Grapevine Canyon. Repairs to the Long House and Bunkhouse would not change the footprint of these structures within the floodplain. The historical nonfunctioning gas pumps at the Garage Visitor Center would be removed and relocated outside of the floodplain. The underground storage tank at the gas pumps would be remediated. New parking and other improvements at the entrance to the Visitor Center would be constructed partially within the 100-year floodplain. The larger breezeway structure to be built at the entrance to the Visitor Center would be widened to improve stormwater or flood water drainage.

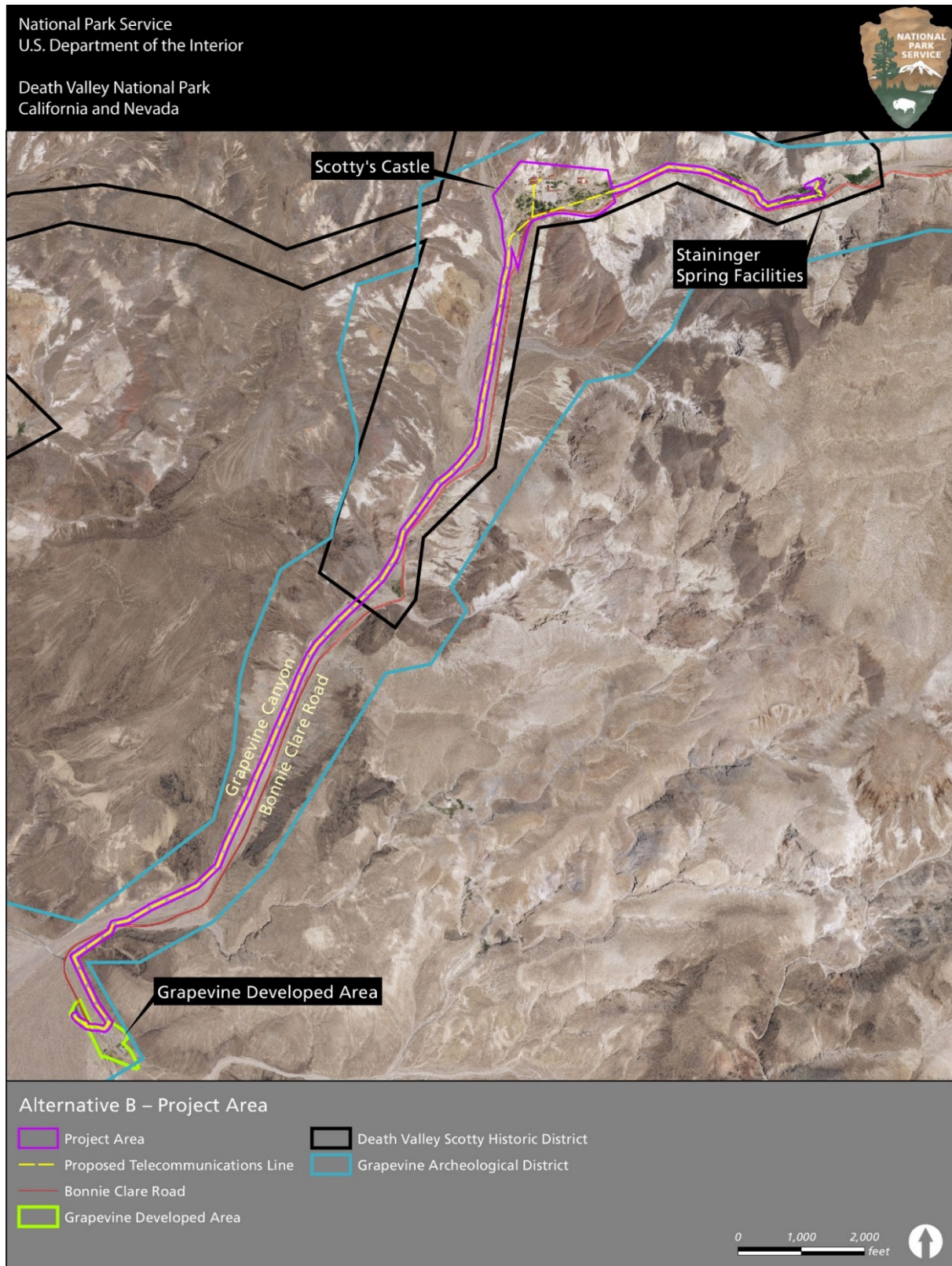


Figure 1. Scotty's Castle project area vicinity.

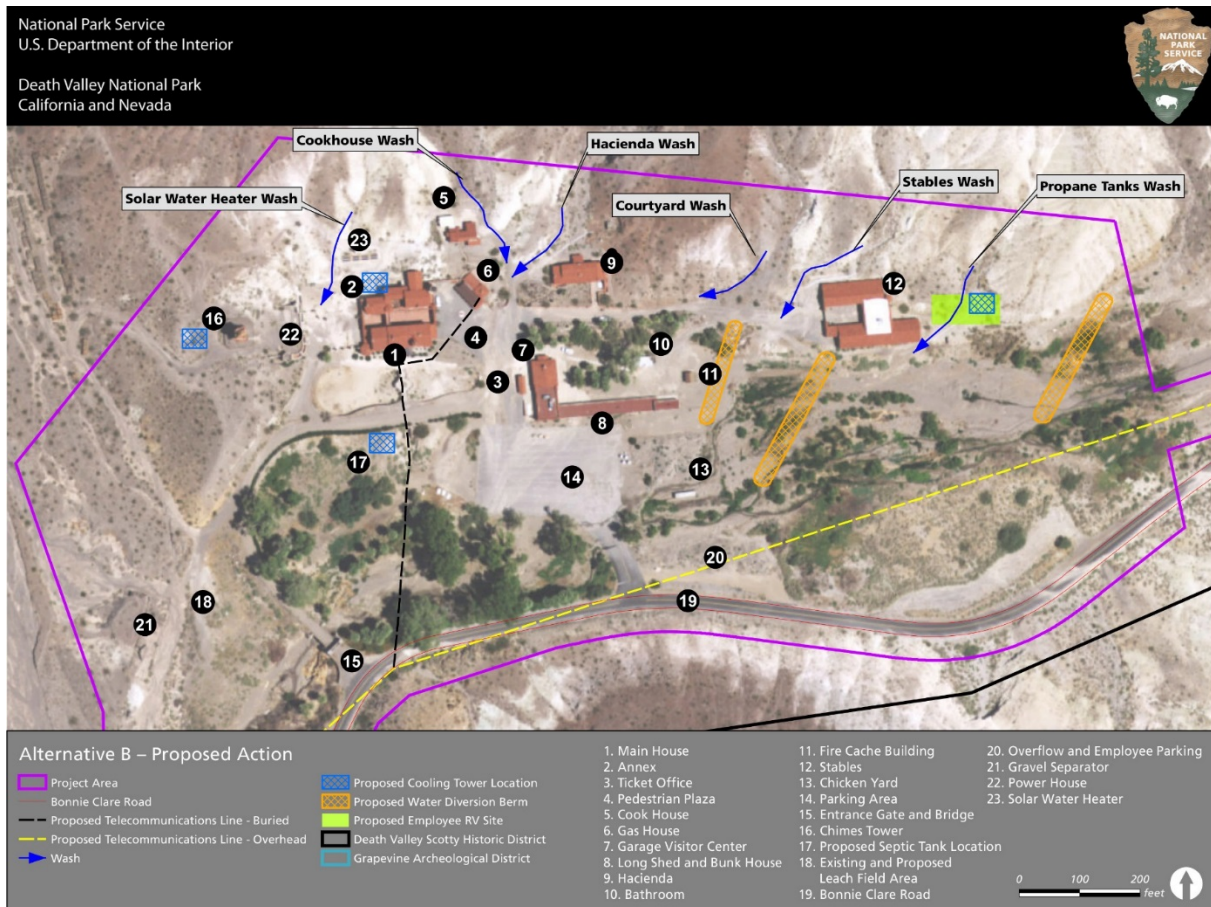


Figure 2. Scotty's Castle project area, showing flood control structures.

FLOOD PROTECTION STRUCTURES

Three flood-control berms would be constructed within the 100-year floodplain of the main drainage at Scotty's Castle (Figure 2). These three berms are proposed based on historical flood studies observations of existing conditions. The proposed berm locations and descriptions are conceptual and are based on hydrological modeling conducted by FHWA (FHWA 2017a). A second hydrological study of the potential berm locations is also underway by the NPS, and the berm locations and dimensions would be refined before construction. The berms would be constructed of gabions stacked across the drainage. Constructing the berms would require excavation to about 2 to 3 feet below grade. Local and imported rock and sand materials would be used to construct and protect the berms and maintain a soil appearance consistent with the existing environment. Local materials would be removed from areas of recent alluvial deposition along the edges of Scotty's Castle. The berm structures would have low profiles that would contour and not extend outside the existing drainage and, therefore, the berms have low potential to create a visual impact on the surrounding landscape. Conceptual descriptions of the berms follow.

Courtyard Berm

This berm would be constructed in the drainage northeast of the Bunkhouse and Long Shed and would be approximately 15 feet wide, 5 feet tall, and 125 feet long.

Existing Berm

This berm, originally constructed in the 1980s, would be rebuilt south of the southwest corner of the Stables and would be 30 feet wide, 6 feet tall, and 175 feet long. This berm existed prior to the October 2015 flood, was constructed from earth, and was completely destroyed by the flood.

Water Meter Vault Berm

This berm would be constructed east of the Stables and Water Meter Vault and would be 21 feet wide, 4.5 feet tall, and 150 feet long.

Additional Smaller Berms (Site Drainage)

Additional smaller berms would be constructed outside of the 100-year main Grapevine Canyon floodplain at the base of six ephemeral drainages located north of Scotty's Castle to redirect water flow away from buildings and other historic features (Figure 2). The ephemeral drainages would be contoured with swales and berms with gabion baskets partially below grade. The berms would be up to 6 feet tall and constructed of the alluvial materials removed from the north side of Scotty's Castle. Excavation would be needed to remove accumulated alluvial sediments from the past 50 to 100 years from the bases of the drainages and from around the Main House, Annex, Cook House, Gas House, Hacienda, and Stables. The berms would have dimensions up to 12 feet long and 10 feet wide and would be designed to blend in with the landscape to the best extent possible.

NONSTRUCTURAL FLOOD-RISK REDUCTION MEASURES

Permanent signs would be installed warning park visitors of the potential for flash flooding to occur during precipitation events. A flood warning and evacuation plan would be developed for visitors and park staff. The plan would include maps and descriptions of areas vulnerable to flooding and nearby areas of safe refuge, a description of the flood risk, and an evacuation plan for quickly moving visitors and staff to safe refuge areas.

WATER SYSTEM

The existing water diversion system at Staininger Spring is shown on Figure 3. These facilities are within the 100-year floodplain of Grapevine Canyon. Repairs and reconstruction of the facilities would not change the footprint of these structures within the floodplain.



Figure 3. Staininger Spring facilities.

WASTEWATER SYSTEM

The septic system and leachfield at Scotty's Castle would be reconstructed with new materials in the same general location as they were previously prior to being destroyed by the 2015 flood (Figure 4). These facilities are located within the 100-year floodplain of Grapevine and Tie Canyons. The existing leachfield would be excavated to a depth of up to 6 feet to remove the old materials and place engineered fill. Existing leachfield piping and leachfield material would be removed and salvaged for potential reuse or disposal. The existing septic tank, vaults, manholes, and piping would be removed. Approximately 3,000 linear feet of infiltration piping would be installed to construct the leachfield. A new septic tank, two new manholes, and new sewer pipes would be installed south of the swimming pool. The new leachfield would be smaller than the leachfield that currently exists and construction would be limited to previously disturbed areas; following construction, these areas would be regraded and revegetated to preconstruction conditions.

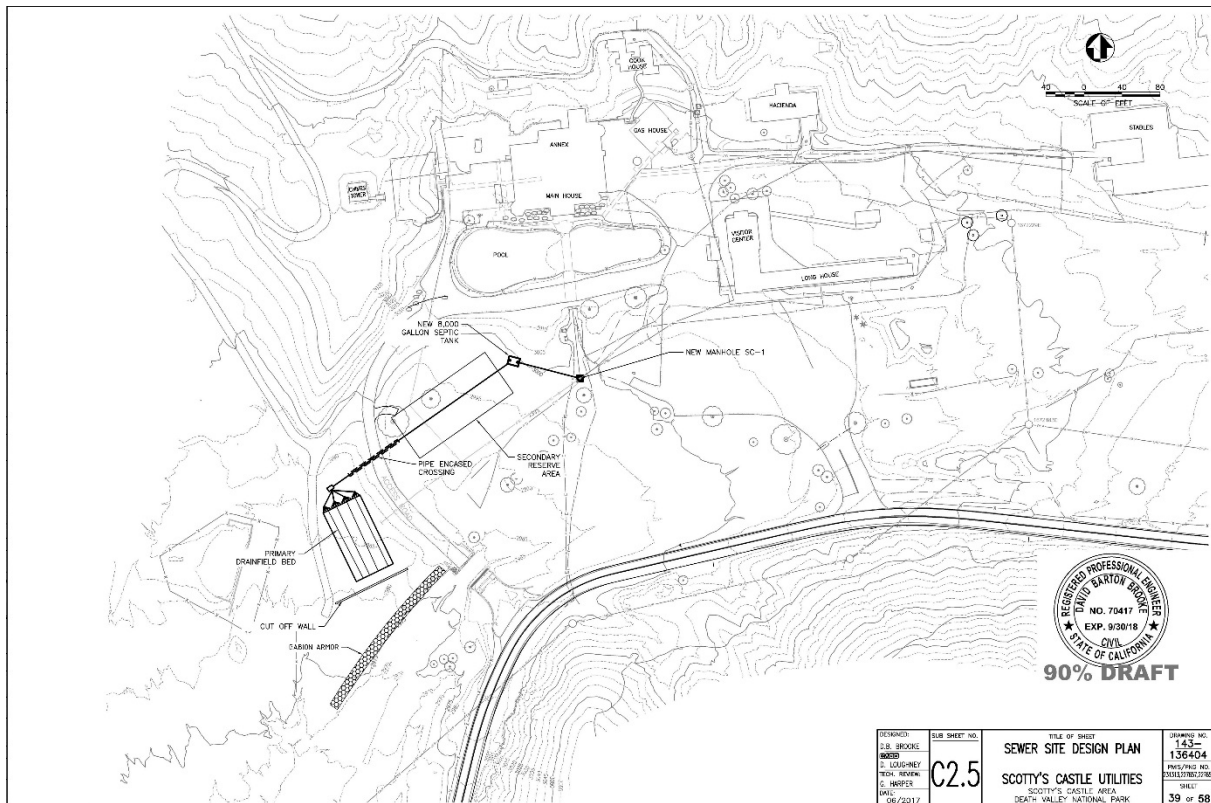


Figure 4. Septic system and leachfield.

PARKING, ACCESSIBILITY, AND CIRCULATION

The parking lots would be expanded and reconstructed (Figure 5) and would be located within the 100-year floodplain of Grapevine Canyon (FHWA and NPS 2017). The parking lot would be expanded and reconstructed to accommodate more parking, improve circulation and access, and improve drainage (Figure 6). The existing approximately 40,000-square-foot

parking area would be reconfigured and expanded to the east. The reconfigured parking area would be about 51,600 square feet. An additional existing unpaved parking area would be paved with up to about 8,000 square feet and would be potentially available as overflow or employee parking. The east boundary of the existing visitor parking lot would be expanded up to 200 feet east into the area previously occupied by the unpaved Chicken Yard. The new area to the east would be paved and expansion would require grading to a depth of about 12 feet to facilitate installation of a level road base and provide additional space for safe access, ABAAS-compliant parking, and a restroom. The proposed design would expand the main parking area by increasing the number of paved delineated parking spaces from about 70 to up to 93 (including 4 ABAAS spaces) and 5 pull-through bus or recreational vehicle (RV) spaces. The exact number and configuration of parking spaces would be determined during final design. The Chicken Yard boundaries would be reconstructed or interpretively identified along the parking lot boundary to denote its location and historical association. The changes to parking would be completed in phases, as funding is acquired; the accessible spaces would likely be completed first, in 2018.

The reconfigured parking area could also include separate passenger unloading zones, separate bus passenger drop-off and turnaround, and a swale for floodwater diversion. A new accessible restroom building would also be constructed in the parking area. In addition, improvements would be made to the detached employee/overflow lot on the side of the current parking lot entrance within the current parking lot boundaries. The overflow or employee parking area would have about 26 parking spaces. The visitor entrance to Scotty's Castle parking area would remain the same.

Approximately 72,000 square feet of deteriorated nonhistoric asphalt used in the pedestrian plaza and for walkways in the visitor pavilion area would be replaced with a surface that is compatible with the DVSHD and would address current concerns with safety, accessibility, drainage, and the integrity of the cultural landscape (Figure 5). The walkways were in poor condition before the 2015 flood and are completely unusable after the flood damaged and removed sections of the surface and would be repaired with asphalt. The pedestrian walkways from the Garage Visitor Center to the Main House and Annex would be upgraded to provide an ABAAS-accessible route for visitors to enter the Visitor Center and take tours of Scotty's Castle. An access ramp would be installed in the parking lot adjacent to the Garage Visitor Center, Long Shed, and Bunkhouse. New concrete flatwork would be installed to provide access from the parking lot through the open breezeway in the Long Shed. The proposed action also would include preparing the subsurface by excavating old remnants of landscaping (palm tree root balls) and compaction.

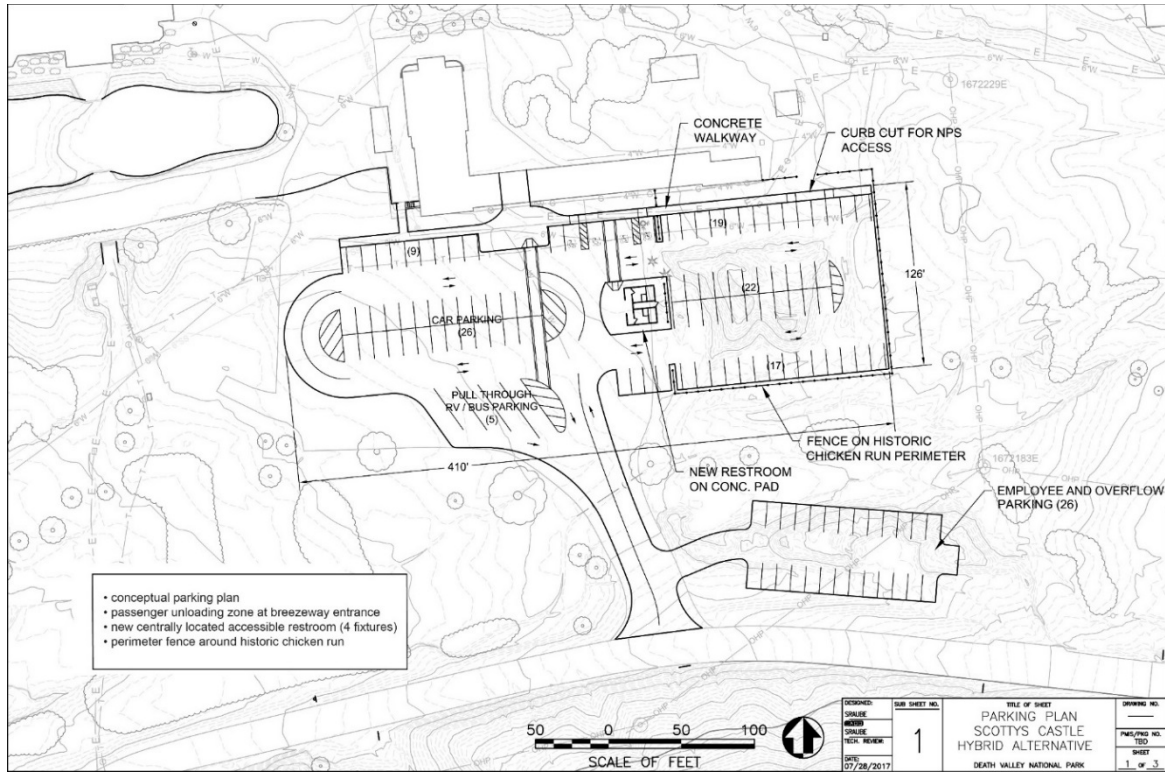


Figure 5. Conceptual parking plan.

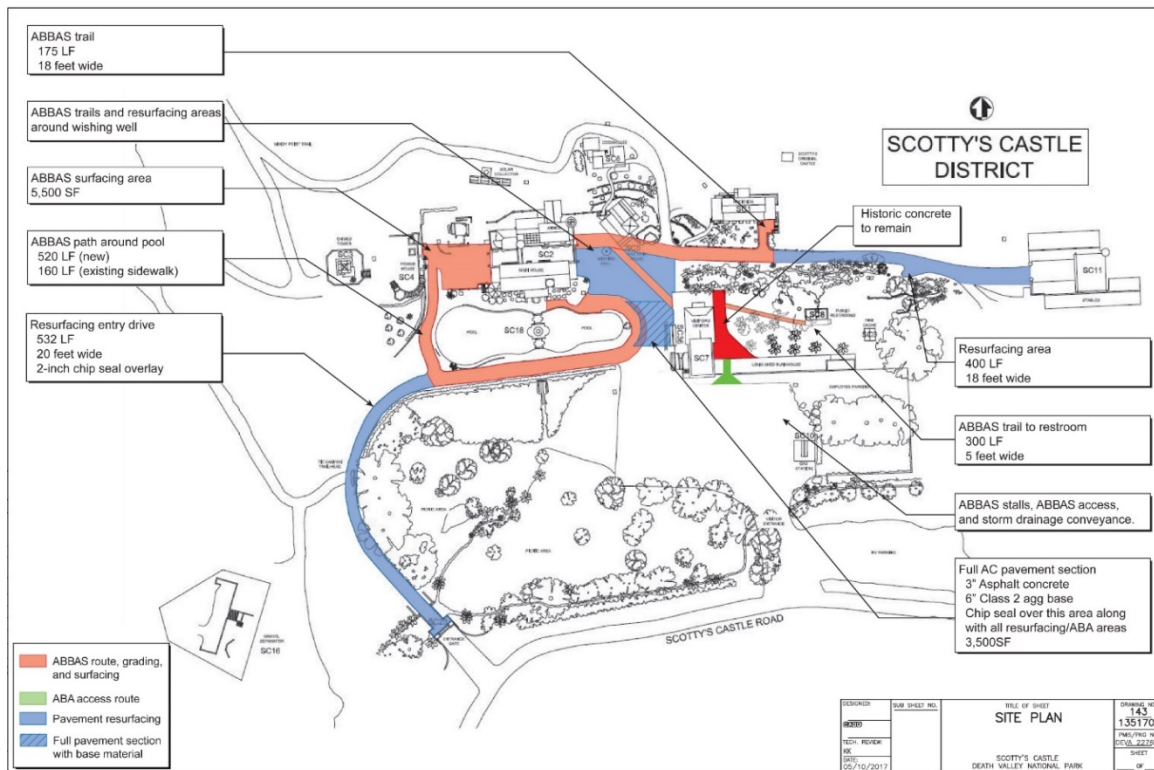


Figure 6. Pedestrian areas resurfacing.

TELECOMMUNICATIONS SYSTEM

A new mostly aboveground telecommunications line would be constructed from the Grapevine Ranger Station to the Main House at Scotty's Castle and the Chlorination Building at the Staininger Spring facilities (Figure 7). The line would be about 4 miles long and would be installed and accessed along the existing Southern California Edison right-of-way within the Grapevine Canyon floodplain. From the Grapevine Maintenance Building, the line would be hung on existing poles that roughly parallel the east side of Bonnie Clare Road for a distance of 4 miles to the Chlorination Building; one new pole would be placed in proximity to the Chlorination Building. To connect with Scotty's Castle, the proposed line would be directionally drilled from an existing pole on the south side of Bonnie Clare Road at the bridge to Scotty's Castle to the north side of the road, then placed in an open trench (up to 2 feet wide and 4 feet deep) to connect with existing electrical building systems at the tunnel into the Main House.

STAGING AND CONSTRUCTION ACCESS

The main staging area for work at the Scotty's Castle Campus would be the existing parking area, which is within the 100-year floodplain of Grapevine Canyon (FHWA and NPS 2017). Access to this staging area would be from Bonnie Clare Road. Access to utility lines and corridors (water, wastewater, electrical, propane, and telecommunications) would be along the alignments of the components of each utility corridor and from previously disturbed or historic access points. General staging would also occur as needed at the Grapevine Ranger Station outside of the Grapevine Canyon floodplain.

Staging for the work at the Staininger Spring water collection facilities would be in the existing disturbed area south of the Chlorination Building (Figure 3). Access would be via the existing access road from Bonnie Clare Road. Staging and access for reconstructing the leachfield and wastewater system would be from the south and west along Tie Canyon and would tie into an existing disturbed area just west of the leachfield. Staging and access would all be within the 100-year floodplain of Grapevine Canyon or Tie Canyon.

Contractor vehicle travel and parking would be designated as necessary to existing roads and pedestrian areas at Scotty's Castle. Heavy equipment used for the project would include small, medium, and large excavators; medium and small front-end loaders and backhoes; medium and small dozers; a directional boring machine; a skid steer; trenchers; delivery trucks; and water trucks. A 20- to 30-ton crane would be used for precast concrete work at the water tank and Spring House and for the septic tanks. Dump trucks would be used for hauling sand and rock for berm work, gabion baskets, and engineered sand for the leachfield. Equipment at the directional boring sites would include a directional boring machine and supporting equipment such as mud holding tanks, water tanks, and vehicles to carry drilling equipment and pipe. Staging area locations are shown in the EA.



Figure 7. Proposed telecommunications line.

INVESTIGATION OF ALTERNATIVE SITES

MOTHBALLING ALTERNATIVE

If this option were implemented, the buildings and facilities in DVSHD would be mothballed for 10 years or longer following the preservation and stabilization procedures for historic buildings outlined in NPS Preservation Brief #31: Mothballing Historic Buildings (Park 1993). Preservation and stabilization work would, in part, occur within the floodplain of Grapevine Canyon. There would be less disturbance and alteration of the floodplain than would occur under the preferred alternative, but the mothballing alternative would not meet the project purpose and need to repair and rehabilitate DVSHD while making it safe for the public.

ALTERNATIVE SITES OUTSIDE THE FLOODPLAIN

Various alternatives were investigated for siting the flood protection structures, water system, wastewater system, parking area, and telecommunications system; however, no alternative sites outside the floodplain were identified for these facilities.

FLOODPLAINS

The Grapevine Canyon and lower Tie Canyon 5-year, 10-year, and 100-year floodplains were mapped by the FHWA and NPS in 2017 (FHWA and NPS 2017). Flows in these canyons result during precipitation events sufficiently intense to create runoff from Slate Ridge, Bonnie Clare Flat, and Sarcobatus Flat occurring on adjacent Bureau of Land Management-managed land, and from the Grapevine Mountain slopes. Flows in Grapevine and Tie Canyons are tributary to Death Valley Wash, which is tributary to Salt Creek.

Grapevine Wash is narrow at the east end and noticeably widens below the springs emerging near Scotty's Castle, where a smaller wash (Tie Canyon) to the north flows into Grapevine Canyon. The 100-year floodplain mapped by the FHWA and NPS (2017) is about 300 to 500 feet wide in both Grapevine and Tie Canyons near Scotty's Castle and widens to about 650 feet where the Grapevine and Tie Canyons join. The west end of the Grapevine Canyon Wash is a wide alluvial fan and valley characterized by a deep layer of loose rock and soil deposited by flows from the higher eastern elevation of the wash.

HYDROLOGY AND FLOOD HISTORY OF GRAPEVINE CANYON AT DVSHD

Scotty's Castle is about one-third of the way up Grapevine Canyon near the mouth of Tie Canyon, the major tributary (Figure 8). Grapevine Canyon drains the steep western slope of the Grapevine Mountains, which form part of the eastern boundary of Death Valley. The Grapevine Canyon watershed is fan shaped, trends northeast to southwest, and has a drainage area of about 30 square miles at Scotty's Castle. Elevations in the watershed range from 7,008 feet at Helmet Peak to 2,992 feet at Scotty's Castle (U.S. Geological Survey

(USGS) 1990) (Figure 8). Tie Canyon has a drainage area of about 14.5 square miles and constitutes the northwestern part of the Grapevine Canyon basin. There is an abundance of poorly consolidated erodible material in the canyons, and a likelihood of landslides and debris fall from the canyon walls.

Most precipitation occurs during November to March, with winter storms typically bringing relatively light precipitation and little or no runoff. Less frequently, intense convective storms occur during the summer and early fall and may result in damaging flash flood flows (USGS 1990). Thunderstorms result in slopewash, sediment deposition, and rockfall and have caused several washouts and landslides over many years. At Furnace Creek, where precipitation has been measured since 1911, average annual precipitation is about 2 inches. Mean annual precipitation increases by about two-thirds of an inch for each 1,000-foot increase in elevation (USGS 1990). Precipitation in the mountains can be significantly greater than on the valley floor.

Prior to 2015, the most significant flood peak in recent years occurred in July 1976 because of an intense convective storm in the Grapevine Mountains; National Park Service personnel estimated a discharge of 2,900 cubic feet per second (cfs) in Grapevine Canyon near Scotty's Castle. No precipitation was measured during this event at Scotty's Castle.

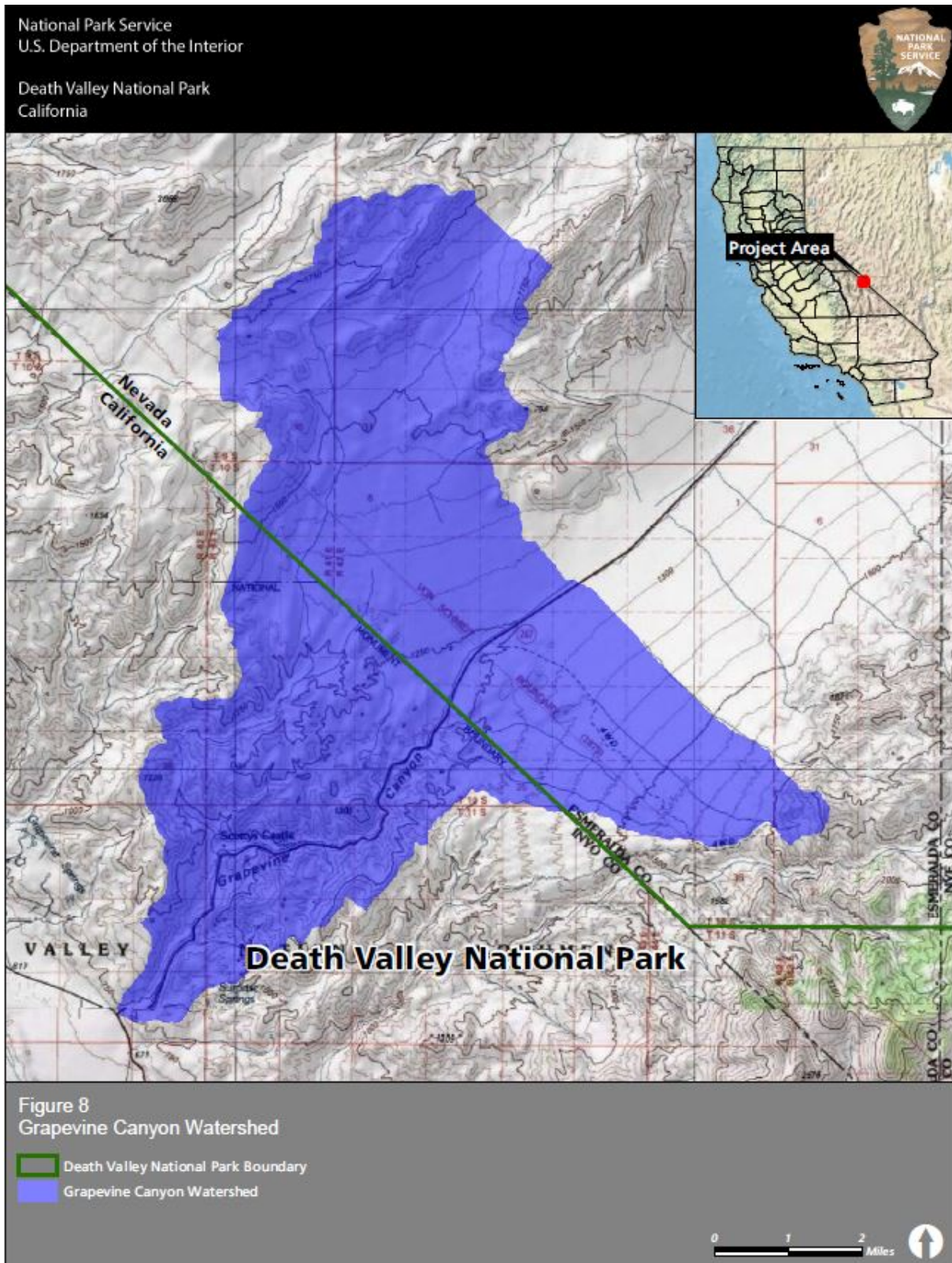


Figure 8. Grapevine Canyon watershed.

During a two-week period in October 2015, a series of storms dropped a total of 1.3 inches of precipitation at Furnace Creek. On the evening of October 18, 2015, after the ground was already saturated from recent days of rain, a storm event produced 3 inches of rain in five hours in Grapevine Canyon in the vicinity of Scotty's Castle. This resulted in a flash flood, with the maximum flow estimated at 3,200 cfs. The flood deposited mud, rock, and debris more than 10 feet high. The inundation level reached the USGS-estimated maximum flood level (USGS 1990) at Scotty's Castle.

Historical flood peaks have not been measured in the Grapevine Canyon basin. Floods for Grapevine Canyon were estimated by the FHWA using equations developed by the California Department of Transportation (Caltrans 2007). Calculated flood discharges near Scotty's Castle are provided in Table 1 (FHWA 2017b). A flood inundation map prepared by the FHWA and NPS (FHWA and NPS 2017) is shown in Figure 9. Based on the FHWA estimated flood volumes, the July 1976 and October 2015 floods were approximately 25-year events. Even 5-year flow events would cover the south end of the Garage Visitor Center, Long Shed, Bunkhouse, water diversion system at Staininger Spring, and the parking lots and pedestrian areas south of the Visitor Center. High velocity flows of water and debris could scour and damage the facilities. Other hazards from flood flows include the flow of water and debris from the steep canyon walls, and flood flow, channel scour, and debris deposited at the mouths of the six ephemeral drainages on the north side of Scotty's Castle.

Table 1. Estimated Grapevine Canyon flood flows.

Recurrence Interval	Flow (cfs)	
	Upstream of Scotty's Castle	Near Scotty's Castle below Confluence with Tie Canyon
10-year	1,689	2,459
25-year	3,580	5,335
50-year	5,073	7,660
100-year	7,570	11,697

Source: FHWA 2017b.

CHARACTERIZATION OF AND EFFECT ON FLOODPLAIN VALUES

Grapevine Canyon and Tie Canyon natural floodplain values have been altered by human activities within the DVSHD. The effect of human structures on flooding in the canyons has not been quantified. Modifications to the floodplain due to building repairs, water system repairs, wastewater system reconstruction, and construction of the telecommunications lines would be small because the footprints of these facilities would be similar to the existing footprints compared with existing conditions in the floodplain prior to the October 2015 flood, so the overall effect on floodplain values would be small. Modifications to the floodplain due to the installation of flood protection structures, particularly the new berms, the larger parking lots, and improved pedestrian area would be greater. The footprint of the eight new berms within the floodplain would be up to about 5,200 square feet. The expanded parking lot would add more than 19,000 square feet of new facilities in the floodplain, and the pedestrian areas would also add more facilities in the Grapevine Canyon floodplain. There would be local modifications to the floodplain at and immediately downstream of Scotty's Castle due to these changes within the floodplain, but the overall footprint of the proposed

new facilities would be miniscule (much less than 1%) compared with the watershed area of Grapevine Canyon.

Within the park, the Grapevine Canyon and Tie Canyon floodplains, although altered, still have many natural values. The floodplains have higher soil moisture than the surrounding landscape and higher levels of soil nutrients. The high water table supports wetland and riparian areas that increase the biodiversity of the park. Plant species richness is greater in the floodplains than in surrounding areas, and the native vegetation provides habitat for a variety of aquatic and terrestrial wildlife species. The floodplains provide water storage and groundwater recharge, and also provide aesthetic pleasure and recreational and educational opportunities.

Installing permanent signs would reduce risks to human safety and health by warning park visitors of the potential for flash flooding to occur during precipitation events. Developing a flood warning and evacuation plan for visitors and park staff and implementing an evacuation plan would also reduce health and safety risks to visitors and staff.

It would not be possible to move parts of DVSHD that are within the 100-year floodplain out of the 100-year floodplain, but any potential new adverse impacts to the floodplain would be minimized, and the natural values would be restored and preserved where possible. The preferred alternative would have some localized adverse effects on the existing natural and beneficial values of the floodplain over the long term due to changing the direction of flood flows to reduce the potential for future flood damage in DVSHD. The addition of new facilities within the floodplain may also alter the direction of flood flows and affect local water storage and groundwater recharge in the floodplain. The floodplain would be negatively impacted during construction due to the presence of staging areas, construction equipment and materials in the floodplain and possible erosion from bare soils prior to revegetation. Construction would be halted during storms. Construction activities would be monitored and erosion and sediment control Best Management Practices (BMPs) would be implemented to prevent erosion and sediment movement from disturbed areas into undisturbed areas. After construction is completed, disturbed areas would be revegetated. The project would use design and construction methods to minimize long-term impacts on the floodplain. Overall, the preferred alternative would have localized effects on floodplain values, but within the entire Grapevine Canyon watershed would not substantially affect floodplain functions. The project would not increase the risk of flooding in Grapevine Canyon; would minimize the impact of floods on human safety, health, and welfare; and would increase resilience against flooding in accordance with EO 11988.

FLOODPLAIN MITIGATION MEASURES

Under the preferred alternative, the rehabilitation of the DVSHD would not increase the likelihood of flooding in the Grapevine Canyon watershed. Mitigation measures would incorporate methods for protecting life and minimizing damage through appropriate design and would include the following:

- BMPs would be used during and after construction for drainage and sediment control to prevent degradation of the floodplain and water quality.
- Permeable pavement would be used in the parking lot and any other paved areas within the 100-year floodplain to allow for groundwater recharge and minimize concentrated runoff from paved areas.
- Accelerated runoff caused by soil compaction, poor vegetation cover, or the unnatural conveyance of water from paved areas would be reduced or eliminated.
- Allow for the return of riparian and wetland vegetation that would help dissipate runoff energy, trap sediment, and prevent erosion.
- Construction debris would be immediately removed from the site.
- Disturbed areas would be vegetated.
- Any fill within the floodplain would be minimized.
- Natural drainage and natural contours would be preserved to the extent practicable.
- The project would be completed in such a way as to leave Grapevine Canyon and Tie Canyon floodplains in stable condition where lateral and elevational changes in the riverbed are minimized.

A Storm Water Pollution Prevention Plan would be prepared as required by the state of California, and implemented throughout the construction period. BMPs for drainage area protection would include all or some of the following actions, depending on site-specific requirements:

- Completing construction as weather permits; should a rain or snow event be predicted, construction would cease and equipment moved from the floodplain. Construction would not restart after a storm event until after all storm runoff ceased and the ground surface dried.
- Keeping disturbed areas small to minimize the potential for erosion.
- Locating waste and excess excavated materials outside of the floodplain.
- Installing erosion control measures during construction, such as silt fences, straw wattles, temporary earthen berms, temporary water bars, sediment traps, check dams, fiber roll filter barriers, and erosion control on and surrounding stockpiled soils.
- Regularly inspecting erosion control measures.

The protection of people and property is of high priority to the NPS. Permanent signs would be installed warning park visitors of the potential for flash flooding to occur during precipitation events. A flood warning and evacuation plan would be developed for visitors and park staff. The plan would include maps and descriptions of areas vulnerable to flooding and nearby areas of safe refuge, a description of the flood risk, and an evacuation plan for quickly moving visitors and staff to safe refuge areas. The project would be designed to minimize adverse environmental impacts on natural floodplain values, minimize potential risk to lives and property, maintain the natural and beneficial floodplain values in the park, and keep the floodplain environment as close to its natural state as possible using all practicable means. Modifications to the floodplain would be small compared with existing

conditions in the entire Grapevine Canyon and Tie Canyon floodplains prior to the October 2015 flood, so the overall effect on floodplain values would be small. These mitigation measures would be in accordance with the NPS floodplain guidelines (NPS *Procedural Manual* #77-2) and EO 11988.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Some of the project would be constructed within the 100-year floodplains of Grapevine and Tie Canyons. The floodplain cannot be avoided for access to the construction area. DVSHD cannot be moved out of the floodplain. Maintaining the appearance of DVSHD grounds while adding structural flood mitigation measures is a difficult task. The intent of the project is to provide an adequate level of flood protection for structures and public safety and still maintain the historic scene. The project would use BMPs to minimize alteration of the floodplain and minimize erosion and sedimentation during construction activities. Construction would occur when the washes have little to no flow. Should a large precipitation event be predicted, construction would cease and equipment moved from the floodplain. Construction would not restart after a storm event until after all storm runoff had ceased and the ground surface dried. After construction was completed, all disturbed areas would be revegetated.

The preferred alternative would be constructed at the DVSHD in Death Valley National Park. The NPS concludes that there is no other practicable alternative for the preferred alternative. With the project designed to prevent or reduce flood damage, the risk to life and property would be minimized. There would be no significant negative effect on natural or beneficial floodplain values.

Mitigation would include good design through sustainable design principles, appropriate siting, and BMPs during and after construction. The NPS finds the proposal to be consistent with NPS *Procedural Manual* #77-2 and EO 11988.

WETLANDS

WETLAND RESOURCES

Wetlands in the project area were delineated on March 7, 2017 and March 21, 2017 (FHWA 2017c). Wetlands were delineated using the methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratories 1987), the *Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region Version 2.0* (U.S. Army Corps of Engineers (Corps) 2008), and the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2008).

Wetland resources in the project area include Grapevine Canyon Wash, an ephemeral riverine wetland; other ephemeral riverine wetlands that are tributaries to Grapevine Canyon Wash; spring-fed riverine wetlands within the Grapevine Canyon Wash channel; and vegetated wetlands. Wetland mapping for the project area is included in the wetland

delineation report (FHWA 2017c). A total of 29 ephemeral riverine wetlands and 5 vegetated wetlands were identified in the wetland survey area. Wetlands mapped in the project area are presented in Attachment A.

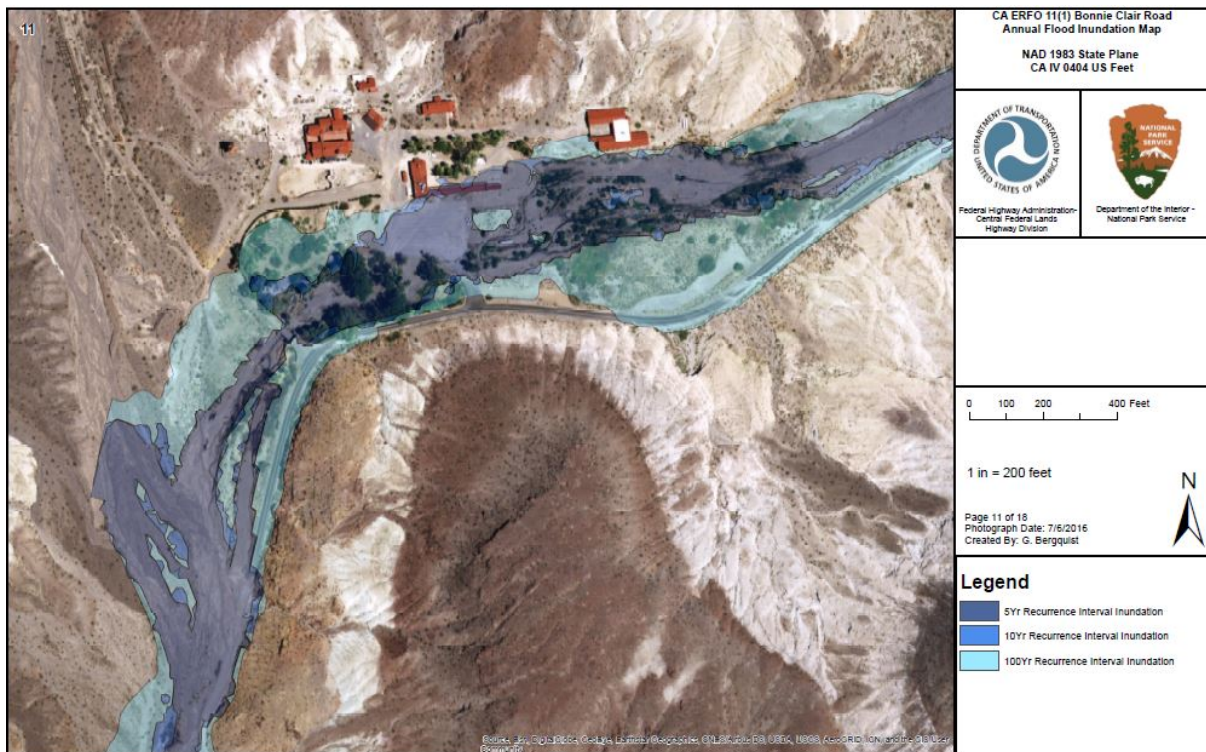


Figure 9. Flood inundation map for Scotty's Castle.

Ephemeral Riverine Wetlands

Ephemeral riverine wetlands exist throughout the length of Grapevine Canyon in the project area. Grapevine Canyon Wash is an ephemeral stream with a dry sandy channel that was substantially altered by the flood events in October 2015. The 2015 flood widened the channel and removed much of the channel braiding that existed prior to the flooding (FHWA 2017c). The 2015 flood removed nearly all indicators of the low-flow channels that existed prior to the flooding, and the wash is actively reestablishing these low-flow channels. Numerous ephemeral side drainages enter Grapevine Canyon, and these side drainages were not damaged as extensively by flooding as the main channel of Grapevine Canyon Wash.

Spring-Fed Riverine Wetlands

Additional riverine wetlands in the project area include five spring-fed channels within Grapevine Canyon Wash. These channels are present where groundwater emerges to the surface and provides surface flow from the highest elevation spring at Staininger Spring, through Scotty's Castle, to just down-drainage of Cottonwood Corner, where it likely seeps into the groundwater table. Since the flood event, the spring-fed riverine wetlands have been

slowly reforming, assisted by the mineralization and algal growth on the channel bottom, which prohibits percolation into the alluvial soils. The spring-fed riverine wetlands are currently very dynamic and have shifted their flow path at several locations. Additionally, wetland vegetation is present both within the spring-fed riverine wetlands and along their banks.

Vegetated Wetlands

Five palustrine emergent/scrub-shrub wetlands with a total area of 2.75 acres are present near the project area (FHWA 2017c). Each of the vegetated wetlands consists of both emergent and scrub-shrub habitat types. These wetlands are associated with near-surface groundwater and groundwater surface discharges within Grapevine Canyon. Wetland plants present include arroyo willow (*Salix lasiolepis*), narrow-leaf cattail (*Typha angustifolia*), three-square bulrush (*Schoenoplectus pungens*), sedges (*Carex* sp.), black cottonwood (*Populus balsamifera*), common reed (*Phragmites australis*), and desert wild grape (*Vitis girdiana*). All five of the vegetated wetlands show evidence of flood damage from the October 2015 flood, ranging from scour to deposition of about 4 to 16 inches of sediment, which has resulted in alteration of the soil profile and damage to vegetation.

WETLAND IMPACTS

Impacts on wetlands would occur from constructing the new Water Meter Vault Berm south of the southwest corner of the Stables, reconstructing the Existing Berm east of the Stables, and replacing the existing underground outlet pipes and control valves at both water tanks and the Spring House. Wetland impacts are summarized in Table 2. Maps of impacted wetlands are presented in Attachment B.

Table 2. Impacts on wetlands.

Wetland Type	Cowardin Classification	Permanent Impacts – New Construction (acres)	Permanent Impacts – Reconstruction of Previously Serviceable Structure* (acres)	Temporary Impacts – Restored to Preconstruction Elevations (acres)
Vegetated wetlands	Palustrine emergent	0	0.086	0
Ephemeral riverine wetlands	Ephemeral, R6	0.034	0.042	0.098
TOTAL		0.034	0.128	0.098

*Excepted from compensation requirements under NPS policies.

Permanent Wetland Impacts

Permanent impacts on wetlands would occur from construction of a new berm (the Water Meter Vault Berm) to deflect future flood flows away from structures such as Scotty's Castle. The impacts would result in the permanent loss of 0.034 acre of ephemeral riverine wetlands.

Excepted Actions – Reconstruction of Flood-Damaged Berm

Certain types of activities are excepted from the requirements to compensate for wetland impacts under DO #77-1. Reconstruction of the “Existing Berm” in the same location is an excepted action because the berm was a previously serviceable structure prior to being destroyed by the flood and the berm would be reconstructed along its previous location with some changes in design as needed to improve the resilience of the berm against future flood events. About 0.086 acre of vegetated wetlands and 0.042 acre of ephemeral riverine wetlands would be filled by reconstructing the berm in its pre-flood location. The wetlands that would be filled formed after the berm was destroyed as a result of the flooding in October 2015. In summary, 0.128 acre of impacts on newly formed vegetated and ephemeral riverine wetlands would result from reconstruction of the berm and is excepted from compensatory mitigation requirements under NPS policies.

Temporary Wetland Impacts from Construction Access

Temporary wetland impacts would result from construction access needed to reconstruct the berm and from replacement of the existing pipes and valves at the water tanks at Staininger Spring. A total of 0.098 acre of wetlands would be temporarily disturbed. Impacts would consist of driving across ephemeral riverine wetlands with equipment and other actions as necessary to access the Water Meter Vault Berm construction site (0.051 acre) and excavation and trenching to expose the pipes and valves at the outlet of the water tanks (0.047 acre). Wetlands affected by temporary construction access consist of ephemeral riverine wetlands only; no vegetated wetlands or spring-fed riverine wetlands would be affected. These wetlands consist of loose unconsolidated sand and gravel sediment, and would be restored to preconstruction contours following construction.

WETLAND FUNCTIONS AND VALUES

Wetland functions and values were evaluated subjectively using a descriptive approach. The following functions and values were evaluated: groundwater recharge/discharge, flood flow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and endangered species habitat.

Wetlands in the project area have been disturbed by the past construction of Bonnie Clare Road. The unvegetated riverine wetlands in the project area generally comprise one large connected wetland along Grapevine Canyon Wash. Vegetated wetlands would not be affected by the project and, thus, are not included in the discussion of wetland functions and values. Wetland functions and values and impacts on functions and values are presented in Table 3.

Table 3. Impacts on wetland functions and values.

Wetland Function or Value	Description	Summary of Impacts
Groundwater Recharge/ Discharge	Groundwater recharge is the movement of surface water (usually downward), whereas groundwater discharge is defined as the movement of groundwater into surface water (usually laterally or upward). Evaluation of this function includes observations of springs and seeps, and the presence of inlets and outlets. Ephemeral riverine wetlands in the project area are subject to occasional flooding during infrequent storm events and, therefore, are likely to contribute to groundwater recharge. Groundwater discharge occurs at Staininger Spring and provides surface flow for several spring-fed channels, one of which would be affected by the project. The wetlands and intermittent spring flows are entirely dependent on the shallow groundwater as their source of hydrology as opposed to precipitation.	The permanent loss of 0.034 acre of ephemeral riverine wetland would have an adverse effect on groundwater recharge and discharge, but this impact would be mitigated by restoring about 0.61 acre of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .
Flood Flow Alteration	Flood flow alteration is the ability of an area to provide temporary water storage capacity during flood events, reducing peak flows. The wetlands in the project area are subject to periodic flash floods following rainfall events and serve to disperse larger precipitation flow events and dissipate energy as flows move through.	As described above under <i>Characterization of and Effect on Floodplain Values</i> , the proposed berms would alter the direction of flood flows away from historic buildings, resulting in adverse effects on this function. In addition, expansion of the parking area would increase impervious surface area, potentially affecting flood flows. Impacts would be mitigated by implementing the measures for floodplains described under <i>Mitigation Measures</i> . Overall, the preferred alternative would not substantially affect floodplain functions or increase the risk of flooding in the Grapevine Canyon watershed.
Fish and Shellfish Habitat	This function is assessed based on the effectiveness of seasonal and permanent water bodies associated with the wetland for fish and shellfish habitat. The wetlands in the project area are primarily ephemeral and do not support fish habitat. No shellfish occur in wetlands in the project area.	No impacts are expected.
Sediment/ Toxicant Retention	Sediment/toxicant retention is the ability of an area to retain sediments, and retain and remove toxicants. Assessment of this function is based on the site's proximity to sediment/toxicant sources, transport potential of these constituents to the area via surface water, potential for the site to detain the constituents to the area via surface water, and the potential of the site to filter and/or process (uptake) the constituents. Wetlands in the project area have the potential to retain sediment and toxicants in runoff from nearby Bonnie Clare Road.	The permanent loss of 0.034 acre of ephemeral riverine wetland would have an adverse effect on this function, but this impact would be mitigated by restoring about 0.061 acre of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .

Wetland Function or Value	Description	Summary of Impacts
Nutrient Removal	Nutrient removal is the ability of an area to retain and remove nutrients. This assessment is based on the site's proximity to nutrient sources, transport potential of nutrients to the area via surface water, potential for the site to detain nutrients to the area via surface water, and potential of the site to filter and/or process (uptake) nutrients. No site-specific data are available for nutrient removal. Wetlands in the project area are generally unvegetated and likely provide only minimal nutrient removal functions.	Impacts on this function are expected to be minimal and would be mitigated by restoring about 0.061 acre of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .
Production Export	Production export is the potential of an area to produce and export food/nutrients for living organisms. Production export typically refers to the flushing of organic material from the wetland to downstream habitats or adjacent deeper waters (Adamus et al. 1991). No site-specific data are available for production export in the project area. The wetlands impacted by the project are mostly unvegetated and likely provide only minimal production export.	The permanent loss of 0.034 acre of ephemeral riverine wetland would have an adverse effect on this function, but this impact would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i> .
Sediment/ Shoreline Stabilization	Sediment/shoreline stabilization is the ability of an area to dissipate flow or wave energy to reduce shoreline erosion. This function only applies if the area occurs on or within the banks of a river, stream, or other natural or man-made drainage; or on the shoreline of a standing water body subject to wave action. The wetlands in the project area are mostly unvegetated and consist of loose unconsolidated sediments, likely providing minimal sediment/shoreline stabilization.	The project would not affect streambanks or shorelines.
Wildlife Habitat	Wildlife habitat is assessed based on the effectiveness of the wetlands to provide habitat for both resident and migrating wildlife species typically associated with wetlands. While not uncommon within Grapevine Canyon, wetland and riparian areas are two of the rarest and most biologically diverse habitat types in the Mojave Desert region. The wetlands, spring flows, and riparian areas in the project area provide habitat to multiple mammal, bird, reptile and amphibian species and is a locally reliable water source for larger mammals. Many plant and animal species have physiological or life history traits that force them to reside in or directly adjacent to permanent water sources.	Because the construction activities would occur within previously disturbed developed areas, adverse impacts on wildlife are expected to be minor. Impacts are expected to consist of temporary disturbance from construction noise and vehicles accessing the site and are discussed in greater detail in the EA under "Impact Topics Dismissed from Detailed Analysis –Wildlife." Permanent loss of 0.034 acre of ephemeral riverine wetlands would result in an adverse effect on this function, but this impact would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i> .
Recreation	Recreation potential is assessed based on the potential of an area to support recreational activities. The wetlands in the project area are not likely to be directly used for recreation; however, wetlands in the project area contribute to the recreational experience of visitors driving along the road.	Reconstruction of the road would allow reopening of the project area to visitors, which would benefit recreation. Impacts on recreation are described in greater detail in the EA in the "Visitor Use and Safety" section.
Educational/ Scientific Value	Educational/scientific value is the potential of an area to support educational activities or scientific research. The project area is within an area that could potentially be used for scientific research and is easily accessible.	Educational and scientific value of wetlands in the project area would be temporarily affected during construction, but no long-term impacts would occur.

Wetland Function or Value	Description	Summary of Impacts
Uniqueness/Heritage	Uniqueness is assessed based on the general uniqueness of an area relative to the abundance of similar sites occurring in the same major watershed basin, the replacement potential and habitat diversity of an area, and the degree of human disturbance in the area. Heritage includes cultural and archeological resources. The wetlands are located within the ancestral homeland of the Timbisha Shoshone. Several historic camps, once occupied by the Timbisha Shoshone, relied on the springs and wetlands in Grapevine Canyon as a water source and also an attractant for large game animals.	The permanent loss of 0.034 acre of ephemeral riverine wetland would have an adverse effect on this function, but this impact would be mitigated by restoring about 0.061 acre of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> . Measures to avoid impacts on archeological and ethnographic resources are described in the EA under "Impact Topics Dismissed from Detailed Analysis."
Visual Quality/Aesthetics	The wetlands in the project area are visible from the road. Wetlands in the project area contribute to the quality of the visitor experience from visitors using the park and driving along the road. The wetlands also contribute to the scenic quality of the project area.	Temporary visual impacts would occur during construction from the presence of construction equipment, materials, and ground disturbances; however, the project area would not be open to the public during construction. Temporarily impacted areas would be restored to preconstruction elevations following construction. No permanent impacts are expected.
Endangered Species Habitat	<p>Endangered species habitat relates to the effectiveness of the wetland and associated water bodies to support threatened and endangered species. Federal- and state -listed species potentially occurring in the project area are southwestern willow flycatcher, least Bell's vireo, loggerhead shrike, yellow-breasted chat, yellow warbler, desert tortoise, and Panamint alligator lizard. No designated critical habitat for any federally listed species is present in the park.</p> <p>Additional information about endangered species habitat is presented in the EA under "Special Status Wildlife Species."</p>	<p>Special status species in the project area use the vegetated wetlands in Grapevine Canyon, but are unlikely to use the unvegetated ephemeral riverine wetlands where most of the impacts would occur. The permanent loss of 0.034 acre of ephemeral riverine wetlands would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i>.</p> <p>Potential direct and indirect effects on federal- and state-listed species could result from increased noise and activity during construction and disturbance from vibrations and dust generation. Impacts are described in greater detail in the EA under "Special Status Wildlife Species." Impacts on the federally listed southwestern willow flycatcher and least Bell's vireo would be mitigated by conducting preconstruction surveys for these species as described in the EA.</p>

WETLAND MITIGATION MEASURES

Avoidance and Minimization of Wetland Impacts

Avoidance of all wetlands would not be possible because wetlands are present within and adjacent to the road alignment throughout the project area. Impacts on wetlands would be avoided in selected locations by realigning the road out of wetlands to the greatest extent possible during project design. In addition, directional drilling would be used to cross Grapevine Canyon Wash in two locations to construct the waterline, avoiding impacts on riverine wetlands from trenching.

Construction activities would be confined to the smallest area necessary to complete the work to minimize impacts. Impacts on existing wetlands outside of the construction area would be avoided by restricting ground disturbance outside of construction limits. No construction materials would be stockpiled in wetland areas.

Wetland Compensation

Approximately 0.098 acre of ephemeral riverine wetlands would be temporarily disturbed by construction. This temporary impact would be mitigated in place by restoring preconstruction contours after construction is complete. Restored wetland functions would include groundwater recharge/discharge, flood flow alteration, sediment/toxicant removal, nutrient removal, and visual quality/aesthetics.

Compensation for permanent impacts on wetlands would be accomplished by reestablishing 0.064 acre of wetland (0.061 acre of vegetated wetlands and 0.003 acre of ephemeral riverine wetlands) on-site and adjacent to the proposed project area (Table 4). This would result in a mitigation ratio of about 1.9 to 1 for permanent wetland impacts of 0.034 acre. The wetland compensation area is shown in Figure 10.

Table 4. Wetland compensation site description.

Site	Habitat Type	Mitigation Type	Activity	Potential Credit
Area 3: Spring Flow Channel	Vegetated wetland (PEM/PSS)	Reestablishment	Capture spring flows and redirect to relic wetland and riparian area.	62 LF (0.003 acre) riverine, 0.048 acre PEM, 0.013 acre PSS Total 0.064 acre

LF – Linear feet, PEM – palustrine emergent, PSS – palustrine scrub-shrub.

A spring-fed riverine wetland would be realigned to its historic alignment into an existing vegetated wetland (Figure 10 – Area 3). A meandering channel would be established approximately 1 foot wide and 4 inches deep. Willow stakes, salvaged herbaceous plugs, and vertical mulching would be planted within 10 feet of the realigned spring flow channel. The migrating channel is expected to widen the riparian corridor and further reestablish floodplain vegetation. It is expected that the wetland compensation area will re-establish approximately 0.064 acre of wetlands.

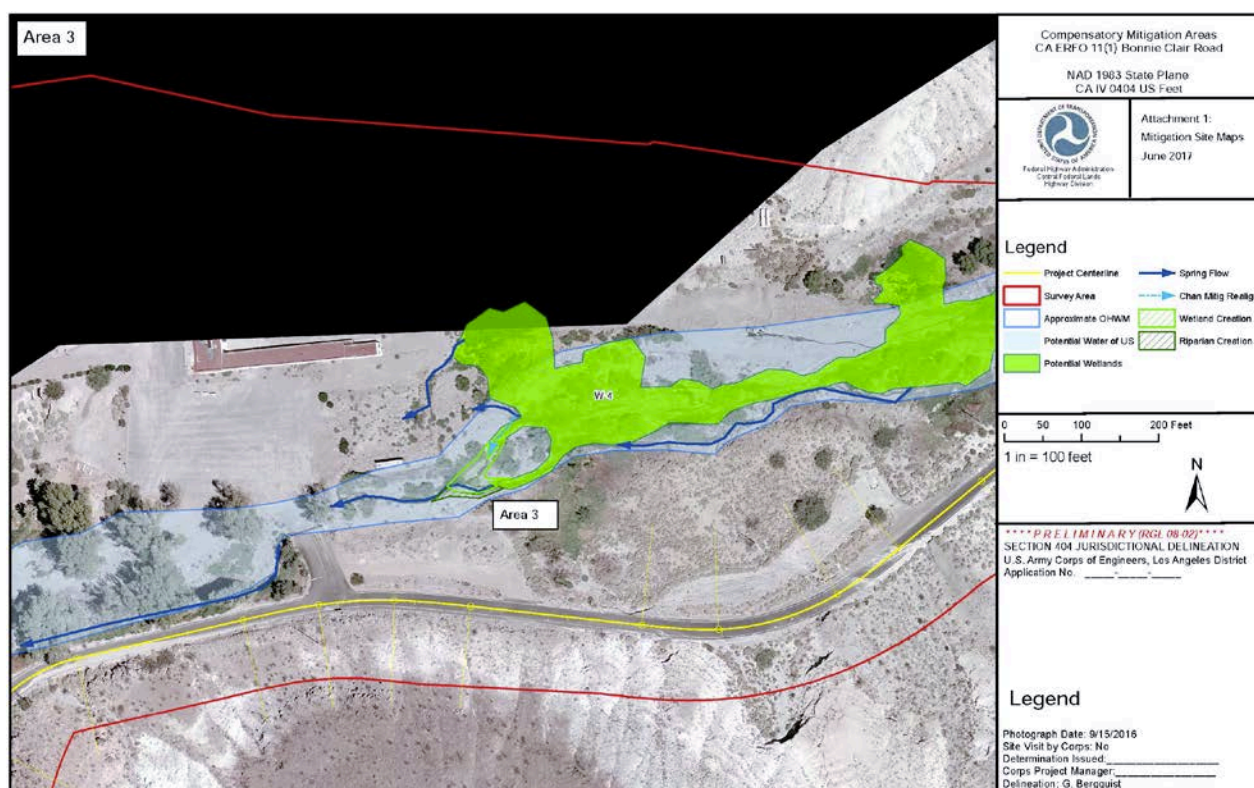


Figure 10. Scotty's Castle wetland compensation plan

Performance Standards and Monitoring

Ecological performance standards based on the California Rapid Assessment Method (California Wetlands Monitoring Workgroup 2017) would be used to track the success of wetland compensation, including structural patch richness, channel stability, sediment transport, number of plant layers, and number of co-dominant species. Performance standards and monitoring are described in detail in the *Compensatory Mitigation Plan* (FHWA 2017d).

Annual monitoring of the mitigation areas would extend for a period of five years or until all sites are considered successful. Baseline monitoring would occur immediately after mitigation site construction is completed. Baseline data would be collected, including photographic documentation, as-built specifications, and planting totals. Annual monitoring would occur during the growing season, but would not take place in the peak summer due to safety concerns.

Vegetative monitoring plots would be used to identify invasive species and evaluate their presence and extent. If it is determined through the monitoring plots the vegetative cover contains more than 5% noxious invasive species, then corrective actions would be required. Additionally, the entire site would be evaluated for invasive species by ocular assessment. If distinct populations of noxious-invasive species are identified, then corrective actions would be required. Individual invasive species identified in the project area would be hand pulled,

placed in a plastic trash bag, and disposed of properly. If distinct populations of invasive species have been identified, the individuals would be hand pulled and disposed of properly and the location of the population noted and monitored in subsequent years. Personnel would brush themselves thoroughly prior to leaving the site to prevent further dispersal of invasive species.

The wetland compensation measures have been designed to replace the functions and values of the aquatic resources lost as a result of this project. Additionally, the mitigation actions were designed to reestablish the high-value aquatic habitats that were destroyed during the 2015 flood event. The realignment of the spring-fed riverine wetlands would result in a direct adverse effect on these habitats during the restoration actions; however, the realignment would result in long-term beneficial effects by reestablishing these habitats in more sustainable locations. Additionally, the reestablishment of wetland, riparian, and floodplain vegetation would dissipate energy, capture sediments, moderate groundwater flow, and provide diverse wildlife habitats.

Additional Wetland Best Management Practices

The following BMPs for wetlands would be implemented as required in Appendix 2 of the *NPS Procedural Manual #77-1: Wetland Protection* (NPS 2016):

1. **Effects on hydrology and fluvial processes:** Action must have only negligible to minor new adverse effects on site hydrology and fluvial processes (e.g., flow, circulation, velocities, hydroperiods, water level fluctuations, sediment transport, and channel morphology). Care must be taken to avoid any rutting caused by vehicles or equipment.
2. **Effects on fauna:** Action must have only negligible to minor new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low-flow conditions.
3. **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
4. **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
5. **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
6. **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.

7. **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
8. **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their preexisting elevations; soil, hydrology, and native vegetation communities must be restored as soon as practicable.
9. **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
10. **Native plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
11. **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)
12. **Wild and Scenic Rivers:** If the action qualifies as a water resources project pursuant to Section 7(a) of the Wild and Scenic Rivers Act, then appropriate project review and documentation requirements under Section 7(a) are required.
13. **Coastal zone management:** Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
14. **Endangered species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see *NPS Management Policies 2006* and guidance on threatened and endangered species).
15. **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing on the National Register of Historic Places.

JUSTIFICATION FOR USE OF WETLANDS

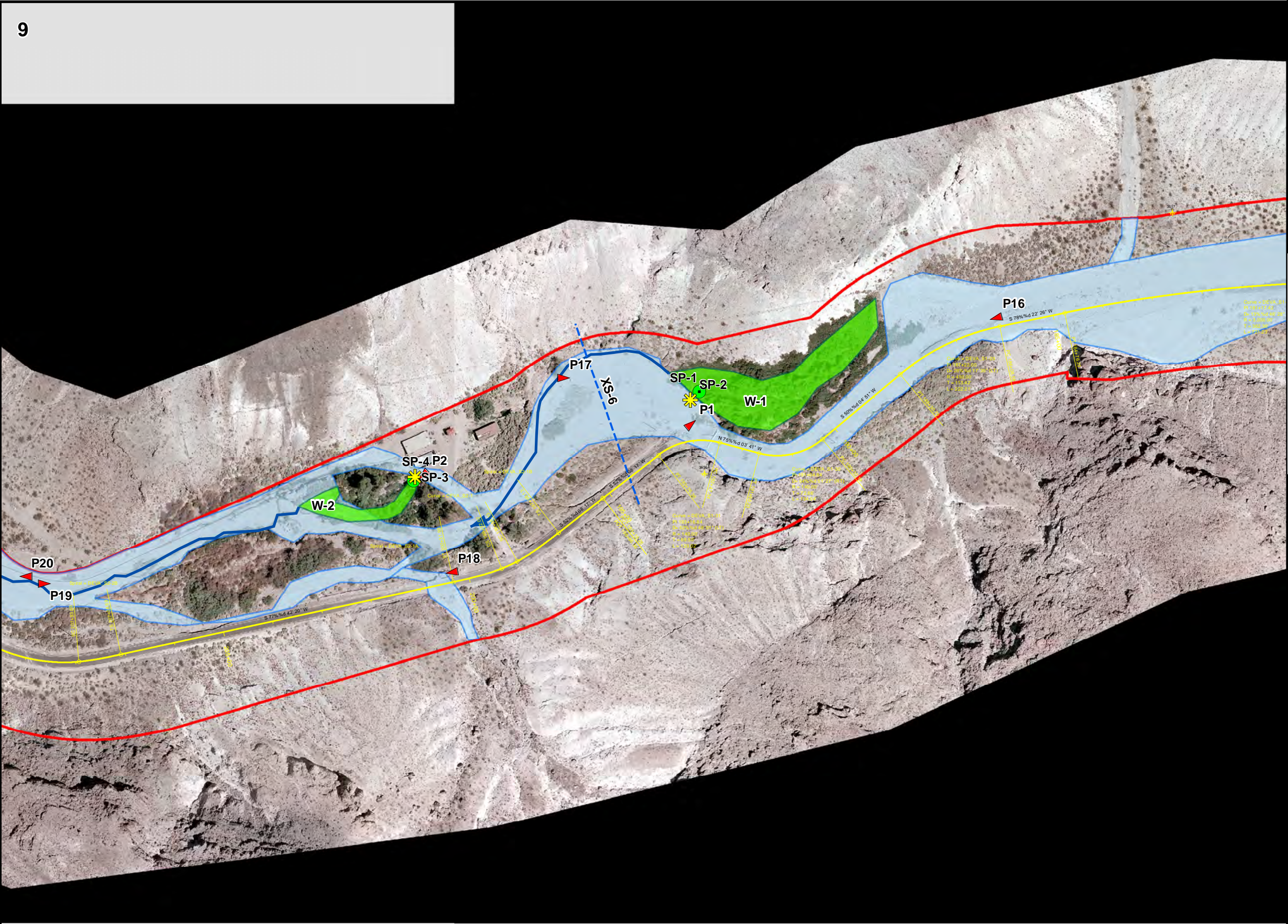
The NPS proposes to numerous actions to rehabilitate, repair, and replace facilities in DVSHD, including construction and reconstruction of berms and trenching needed to replace pipes and valves at the Staininger Spring facility. The NPS finds that there are no practicable alternatives to permanently filling approximately 0.034 acre of ephemeral riverine wetlands at Scotty's Castle and temporarily impacting a total of 0.098 acre of ephemeral riverine wetlands. An additional 0.128 acre would be disturbed but is excepted from the requirements to provide wetland mitigation because these impacts would result from reconstruction of a previously serviceable berm destroyed by flooding. Wetlands have been avoided to the maximum practicable extent, and the preferred alternative includes measures to minimize wetland impacts. With planned wetland restoration, unavoidable impacts on wetlands would be replaced at a ratio of about 1.9 to 1, which is consistent with the NPS no-net-loss of wetlands policy.

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ATTACHMENT A
Wetland Maps



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

- | | |
|-----------------------|--------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet



Page 9 of 18

*** **PRELIMINARY (RGL 08-02)** ***
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

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Figure 2:
Wetlands and
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April 2017

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| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
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| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet



Page 11 of 18

*** PRELIMINARY (RGL 08-02) ***

SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Scale: 1 in. = 200 ft. Photograph Date: 7/24/2014
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

ATTACHMENT B
Wetland Impacts

CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

1 in = 200 feet



Page 9 of 18

U.S. Army Corps of Engineers, Los Angeles District
Application No. SPL-2017-0051-GLH

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Note: Impacts from excavation and trenching to expose the pipes and valves at the outlet of the water tanks (shown as T-96) are part of the Scotty's Castle Flood Rehabilitation Project. Additional impacts from road reconstruction are part of the Bonnie Clare Road Reconstruction project, which is addressed under a separate statement of findings for floodplains and wetlands.



CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

1 in = 200 feet



Page 11 of 18

U.S. Army Corps of Engineers, Los Angeles District
Application No. SPL-2017-0051-GLH

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Bridge Abutment Scour
Protection/ Grade Control

Earthen Berm

Earthen Berm

Embankment Armoring

Note: Impacts from the two earthen berms are part of the Scotty's Castle Flood Rehabilitation Project. The buried waterline, bridge abutment scour protection, embankment armoring, and road reconstruction impacts are part of the Bonnie Clare Road Reconstruction project, which is addressed under a separate statement of findings for floodplains and wetlands.

Appendix C

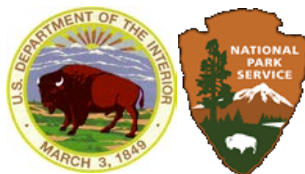
Best Management Practices

Appendix C

Best Management Practices

- Best management practices (BMPs) for drainage and sediment control, as identified and used by the NPS, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) locating waste and excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.
- A Storm Water Pollution Prevention Plan (SWPPP) would be prepared, as required by the state of California, and implemented throughout the construction period.
- A hazardous spill plan would be in place, stating the actions to be taken in the case of a spill, notification measures, and preventive measures to be implemented, including the placement of refueling facilities, storage, and handling of hazardous materials.
- All equipment used on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be inspected daily.
- All fuel, transmission, or brake fluid leaks, or other hazardous waste leaks, spills, or releases would be reported immediately to the designated safety officer. The contractor would be responsible for spill material removal and disposal to an approved off-site landfill and, if necessary, would notify the appropriate federal agency.
- Fueling project-related vehicles and equipment would take place away from water sources, and a contingency plan to control petroleum product spills during the project would be developed. Absorbent pads and containment booms would be stored on-site to facilitate cleanup of any accidental petroleum spills.
- Any soil exposed near water as a result of the project would be protected from erosion (with plastic sheeting, filter fabric, etc.) after exposure, and stabilized as soon as practicable (with vegetation matting, etc.). If erosion-control materials are used, only tightly woven fiber netting or nonbinding materials, e.g., rice straw would be used for erosion control or other purposes at the project site to ensure that small mammals and reptiles do not become trapped. No plastic-tied wattles would be used.
- Topsoil would be saved, stockpiled, and replaced in place after construction is completed. Stockpiles would be monitored for exotic, invasive vegetation.
- Disturbed areas would be returned to natural or historic conditions using active restoration to repair selected disturbed areas and control invasive species.

- Ground surface treatment would include grading to natural contours, and roughing/scarification and vertical mulching to promote natural seeding.
- All potential contaminants (rubbish or debris, introduction of nonnative species, etc.) would be excluded or removed from the environment.
- Contractors would be required to properly maintain construction equipment (i.e., mufflers) to minimize noise of equipment use.



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

NPS DEVA 143/140343 November 2017

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Death Valley National Park
California



Death Valley National Park
P.O. Box 579
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