

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
<p>No Impact: No known paleontological resources or sites or unique geologic features are known within the project area.</p>				
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>				
<p>VI. GEOLOGY AND SOILS: Would the project:</p>				
<p>a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:</p>				

	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
<p>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.</p>				
<p>VII. GREENHOUSE GAS EMISSIONS: Would the project:</p>				
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"/>
<p>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.</p>				
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
<p>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.</p>				
<p>VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:</p>				
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
<p>No Impact: The proposed project would not result in the routine transport, use, or disposal of hazardous materials.</p>				
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.

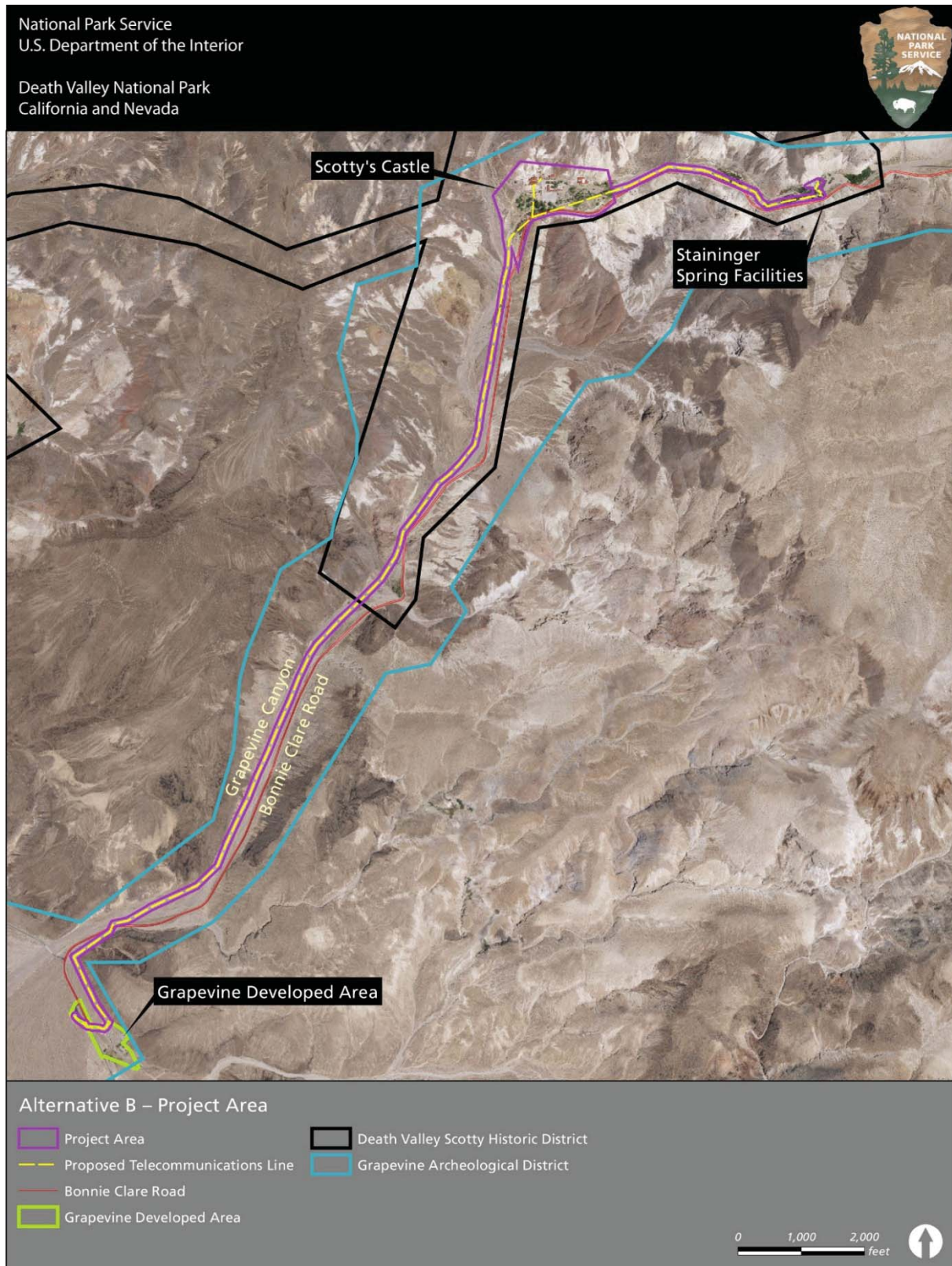


Figure 1. Scotty's Castle project area vicinity.

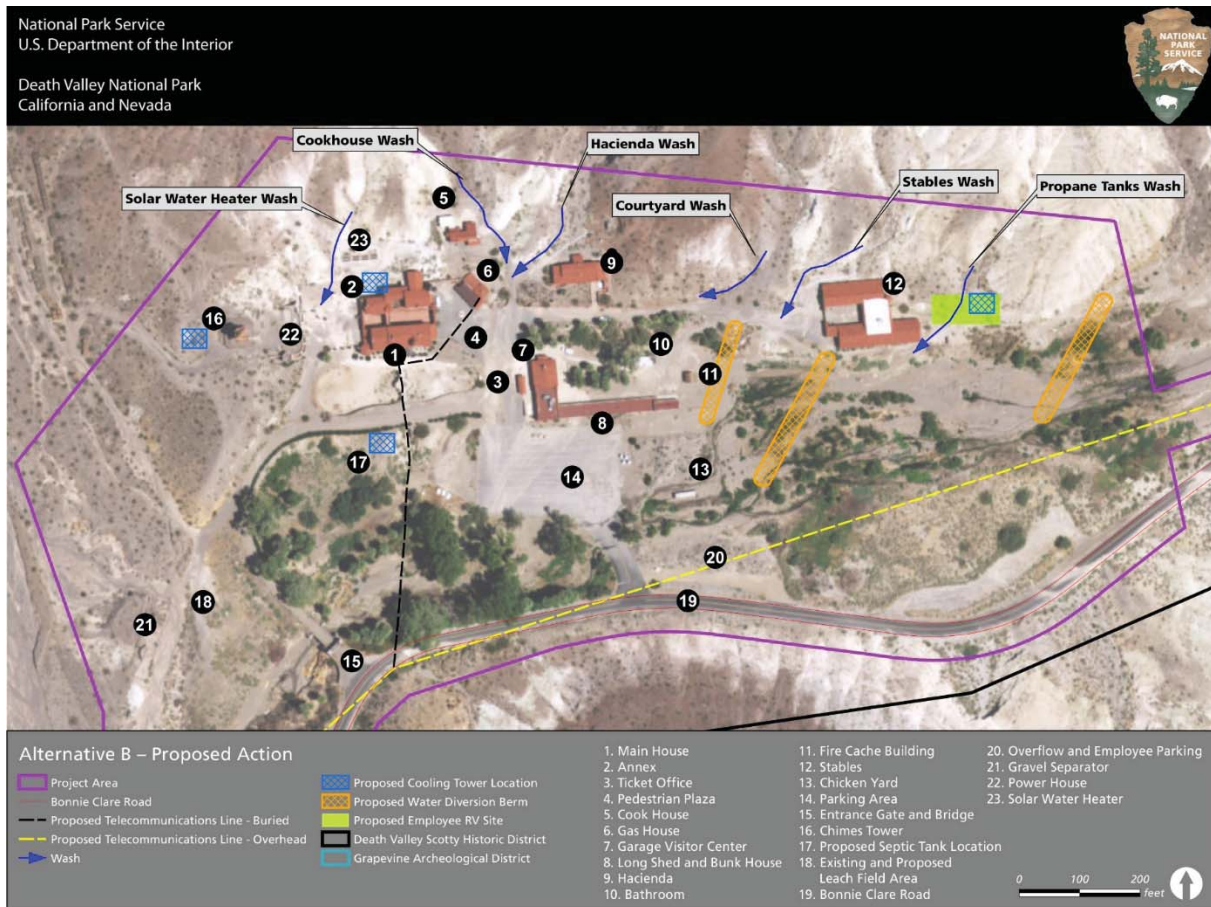


Figure 2. Scotty's Castle project area, showing flood control structures.

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.

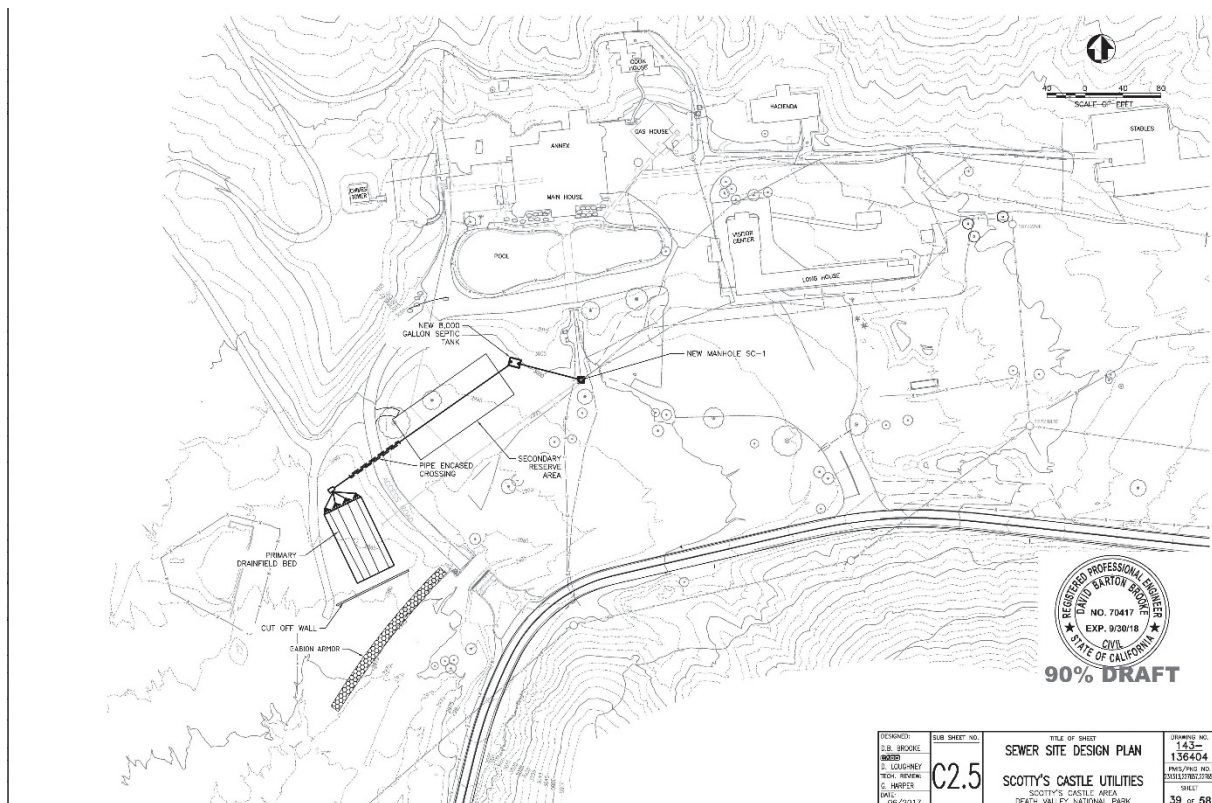


Figure 4. Septic system and leachfield.

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.

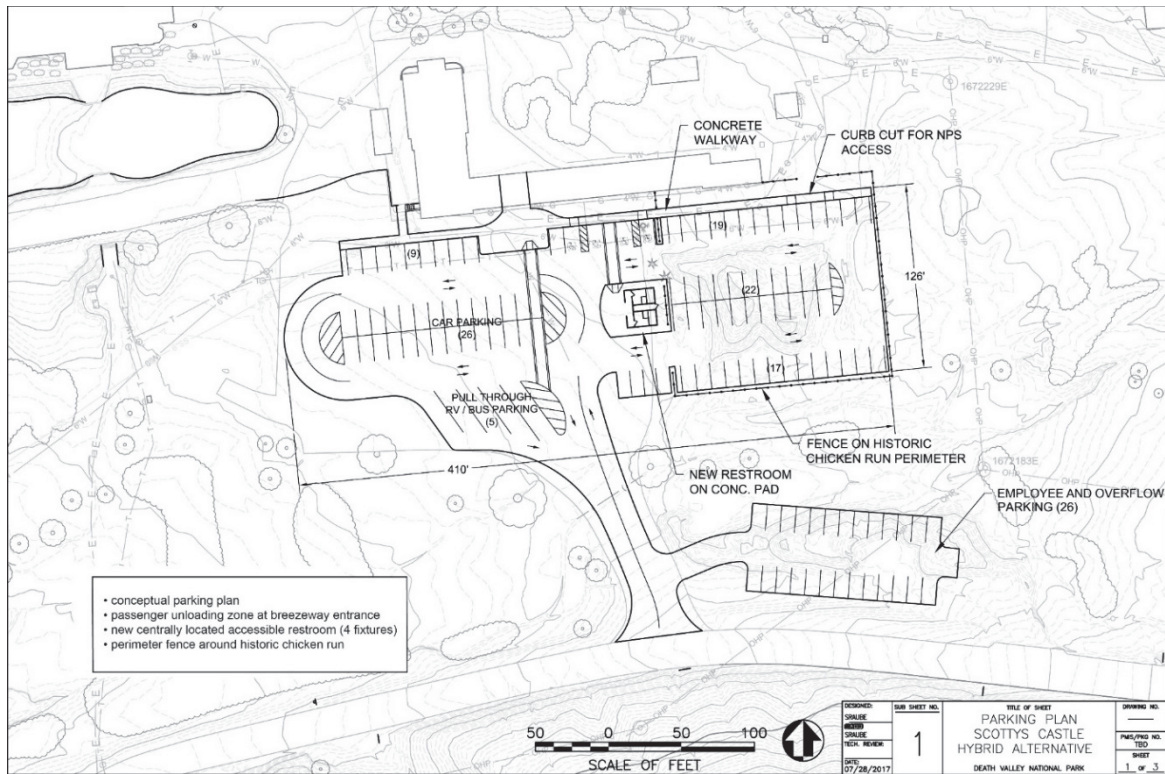


Figure 5. Conceptual parking plan.

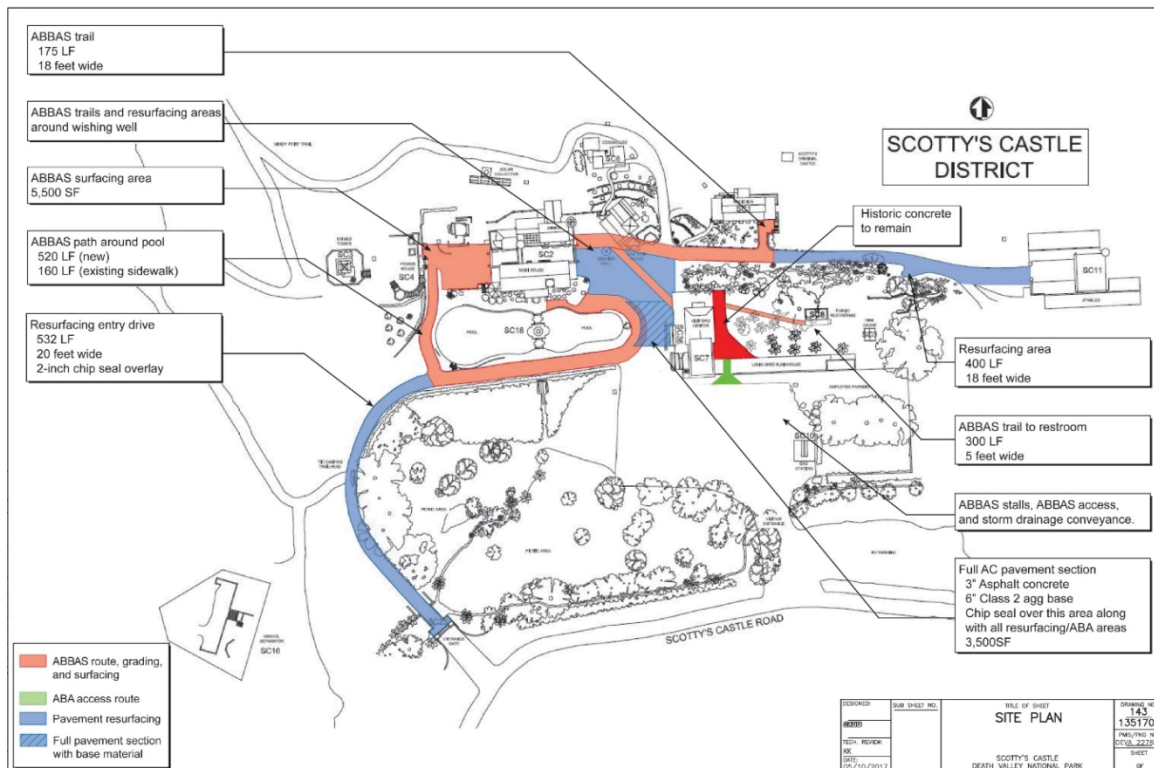


Figure 6. Pedestrian areas resurfacing.

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.

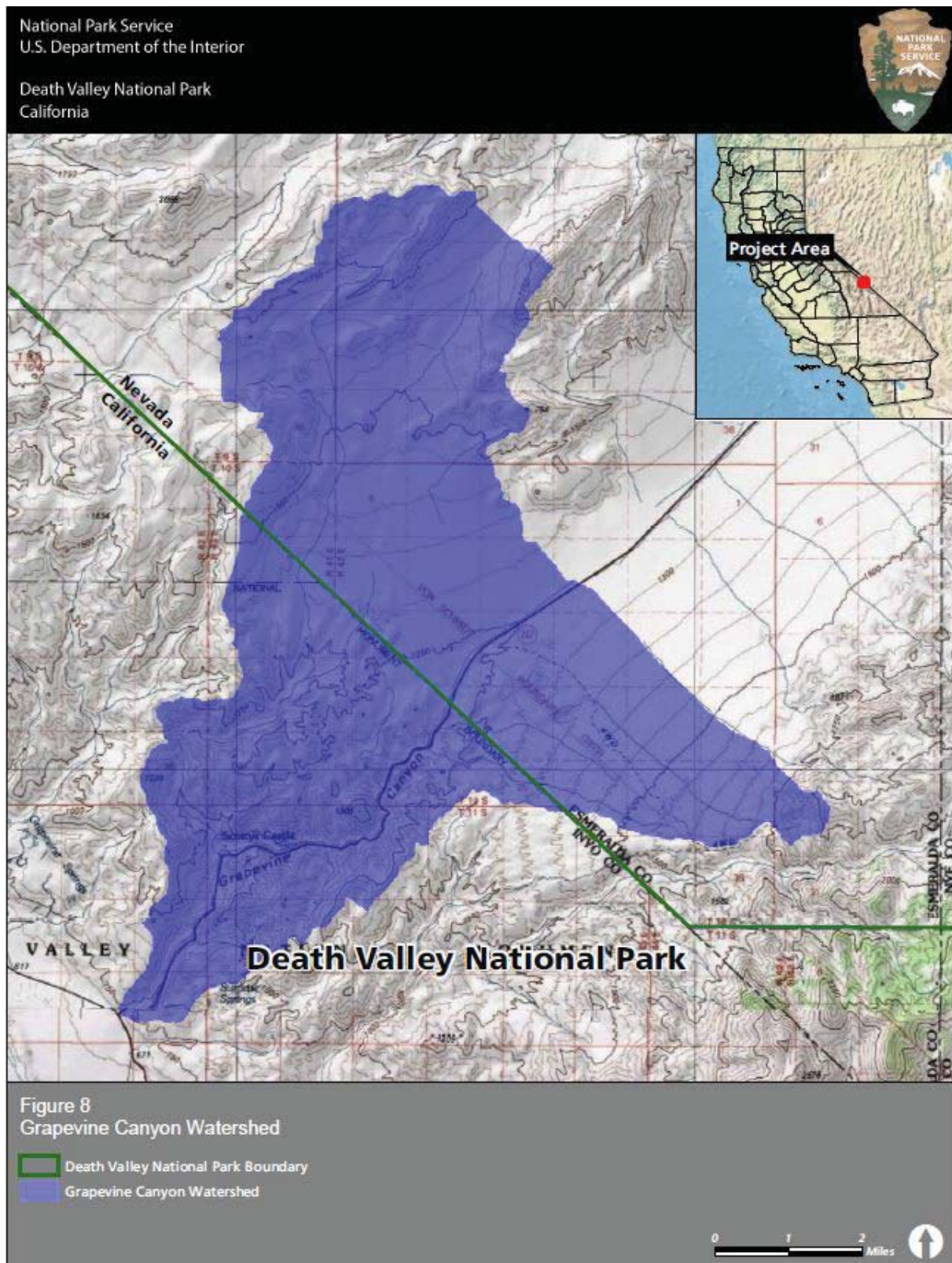


Figure 8. Grapevine Canyon watershed.

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.

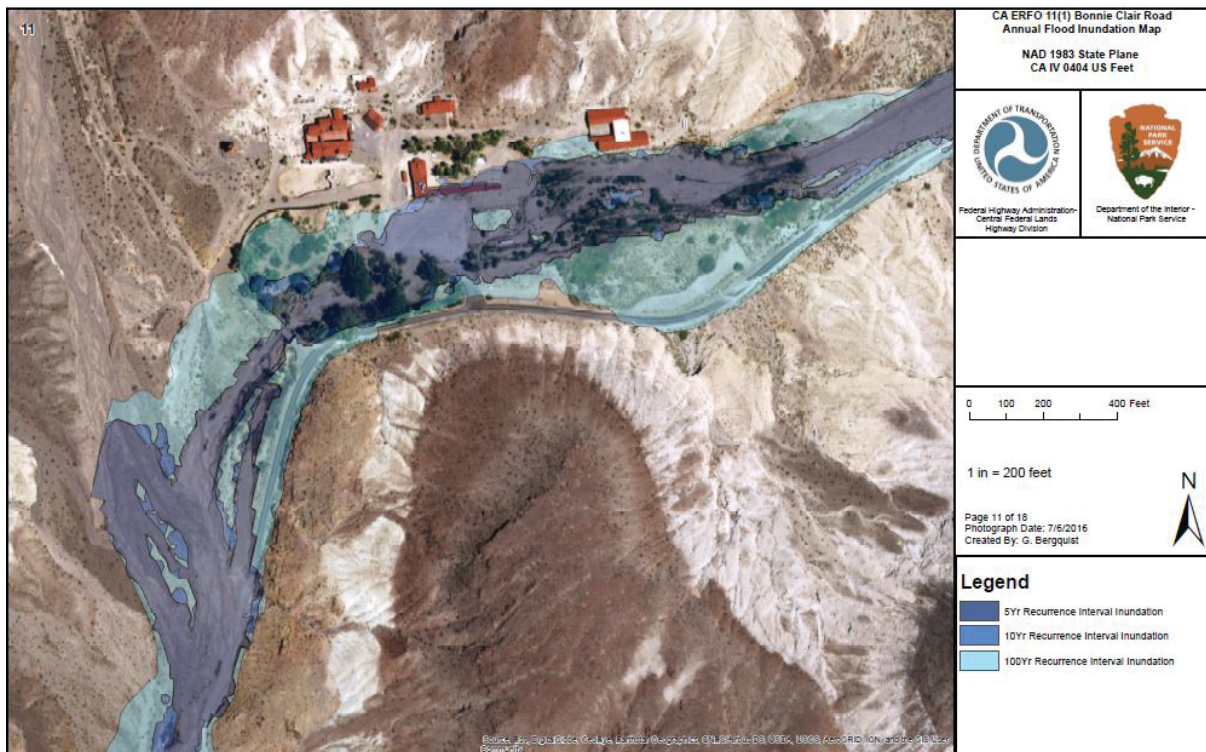


Figure 9. Flood inundation map for Scotty's Castle.

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.

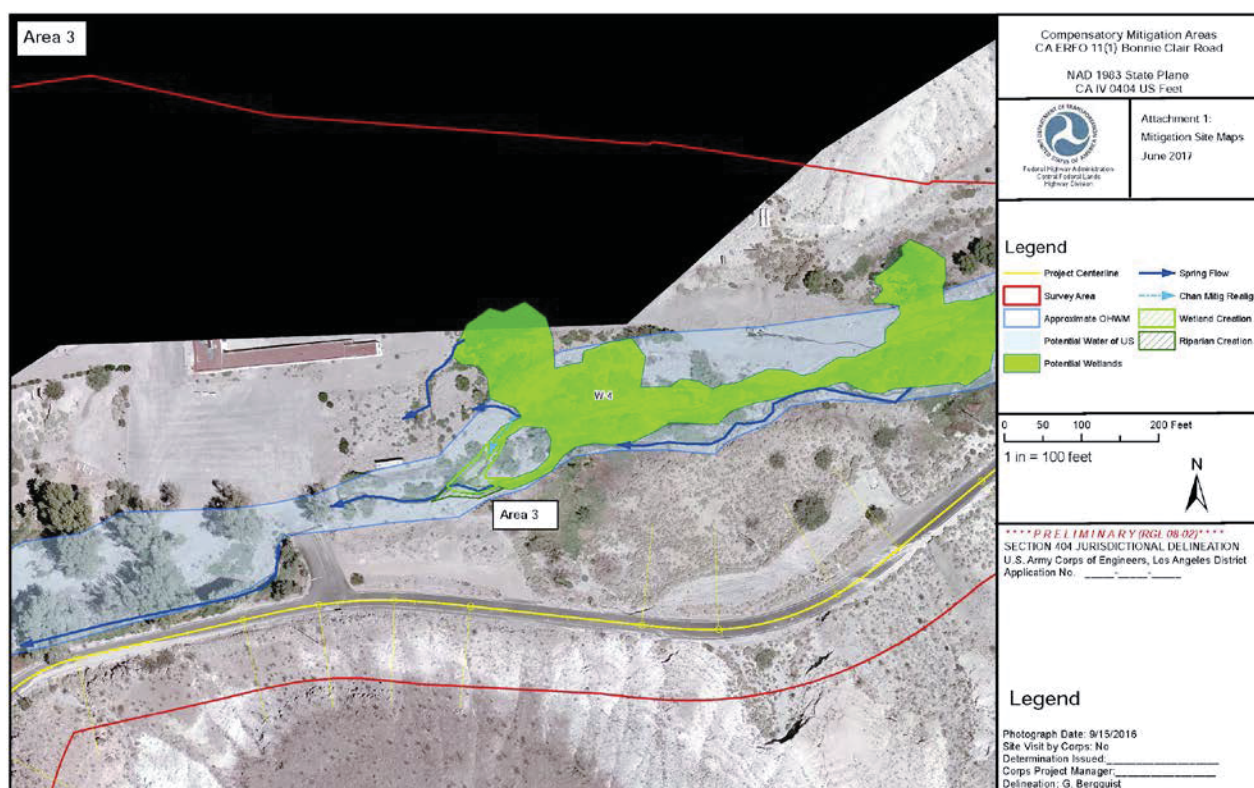


Figure 10. Scotty's Castle wetland compensation plan

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

Survey Area

Approximate OHWM

Potential Water of US

Potential Wetlands

Spring Flow

Delin. Data Point

Upland

Wetland


Photo Location

OHWM X-Section

0 100 200 400 Feet

1 in = 200 feet

N



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

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 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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U.S. Department of the Interior

Death Valley National Park
California



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