National Park Service
U.S. Department of the Interior
Zion National Park
Springdale, Utah

Finding of No Significant Impact
Irrigation System Upgrade

Background

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine various alternatives and environmental impacts associated with the proposal to upgrade the irrigation system at Zion National Park, Utah (Zion). Currently, the irrigation system is comprised of a combination of potable and non-potable pressurized irrigation systems and open ditch systems which service visitor use areas and NPS staff residential areas. Leaves, vegetation, and silt often build up in open irrigation ditches, and campers traditionally like to play in, dam up, and reroute fingers of these ditches within the campgrounds. Park staff has to continually clear and maintain these ditches to keep them in operation. Operation of the existing irrigation system has presented a substantial workload to park staff because of the maintenance requirements. In addition, the open ditches experience evaporative loss and seepage and are not efficient in irrigating targeted landscaped areas, as the irrigation system does not provide flexibility as to how and where the park irrigates. The system also does not currently provide the flexibility to use river water for irrigation in areas where potable water is currently used.

The proposal to upgrade the irrigation system (Project) is needed in part to decrease the maintenance demands of the open irrigation ditches and increase the efficiency of water use within the park. The upgraded system is also needed to provide park staff the flexibility to use river water for irrigation of landscapes in areas where potable water is currently used. The proposed upgraded irrigation system will preserve the integrity of historic structures and the vegetation associated with historic ditches within the park.

Selection of the Preferred Alternative

Three alternatives were evaluated in the EA including Alternative A (No Action), Alternative B (Flanigan Diversion), and Alternative C (Oak Creek Diversion). Alternative B was selected by the National Park Service as the NPS Preferred/Selected Alternative for implementation because it best meets the purpose and need for the Project as well as the Project objectives to: 1) decrease the maintenance demands of the open irrigation ditches, 2) increase the efficiency of water use within the park, 3) provide flexibility to use river water for irrigation of landscapes in areas where potable water is currently used, and 4) preserve the integrity of historic structures and the vegetation associated with historic ditches within the park.

Under Alternative B, Zion will divert up to 1.38 cubic feet per second (cfs) of its total water right into a pressurized pipeline to irrigate the campgrounds, Visitor Center, and park staff residential areas. Zion has the capacity to irrigate about 142 acres; the Project will initially irrigate 82 acres and have room for modification to the system to irrigate

additional acreage in the future. Any unused water rights will be protected by converting them to non-use status.

Pressurized filtered river water will be provided for irrigation by taking water out of the Virgin River at the Flanigan Diversion. A new water intake will be constructed in the existing concrete wall of the Flanigan Diversion (next to the existing intake) that will pipe water to a new sluice structure, pump and filter station, and holding tank. A metal slide gate will be installed on the new opening to control flows in and out of the system. A 3- to 4-foot high grouted rock face berm will also be constructed above the existing concrete wall of the Flanigan Diversion to protect the sluice structure from overwash during large (i.e., 30-year or larger) flood events.

A summary of actions included in the Preferred/Selected Alternative is listed below.

Sluice Structure, Settling Tank, and Pump and Filter Station

A sluice structure (desanding structure) and settling tank will remove large-particle river sediment from the irrigation system. The structure will be located approximately 60 feet downstream of the Flanigan Diversion and east of the existing Springdale sluice. The sluice structure and settling tank will be accessible from the pedestrian path in this area and an existing dirt access road. The sluice structure will be approximately 30 feet long by 8 feet deep and vary in width from 14 feet to 18 feet, allowing the heavier sediment to settle before exiting the sluice. An outlet to the river will flush the larger sediment out from the desanding structure, and a 250,000-gallon concrete settling tank (located in an open area approximately 3,400 feet from the new sluice structure) will remove the finer silts and sands from the system. The tank will be approximately 50 feet long by 45 feet wide by 15 feet deep, and will be buried and located near the new pump station.

The water diverted from the sluice structure will be conveyed via a 12-inch pipe to a settling tank and pump and filter station that will be initially designed to pump 1.00 cfs, but expandable to the full water right of 1.38 cfs. The remaining 1.21 cfs will be retained at the Oak Creek Diversion and discharged through the existing open ditch system to irrigate ditch-side vegetation or will be protected in non-use status. The 12-inch pipeline from the sluice structure to the new settling tank and pump station will be a gravity-fed system. The settling tank will be located east of the bridge to the Watchman Housing Area. It will receive water from the sluice, remove fine sediment, and then water will be piped a short distance to a filter and pump unit. The pump system will be housed in a small building (approximately 25 feet long by 25 feet wide by 9 feet high). From there, the unit will pump water up Oak Creek Canyon to a holding tank that will provide some storage and a constant pressure for the distribution system. Above-ground facilities will be visually screened and designed to blend with the natural setting in the Project area.

Pressure Line and Holding Tank

New pipe (consisting of high density polyethylene pipe or polyvinyl chloride) will be laid from the new pump and filter station to a connection point (next to the Oak Creek Bridge) with the existing irrigation system that services the Emergency Operations Center. From there, the pipeline will continue up Oak Creek Canyon to a holding tank via an 8-inch pressurized pipeline (Oak Creek pipeline). The Oak Creek pipeline will follow the path of the service road upstream of the maintenance service buildings and will be aligned within the previously disturbed areas of the road boundary. The holding tank will be constructed up Oak Creek Canyon near the maintenance service area of the park that is not readily accessible to park visitors. The 30,000-gallon holding tank will be approximately 22.5 feet long by 12 feet wide by 15 feet high. Two-thirds (10 feet) of the

tank will be below ground and one-third (5 feet) will be above ground. The tank will not be visible from Oak Creek.

Irrigation Delivery

The delivery from the holding tank to bring water back down to use in park areas will be done via the same pipeline that supplies water to the holding tank. Initial demand for irrigation water will be supplied from the holding tank. Once the tank is drained to a pre-determined level, the pump will turn on and commence to fill the tank and supply pressurized water to the irrigation system. A lateral pipeline will branch from the mainline and run through South Campground, connecting to an existing pressurized irrigation system that serves the Visitor Center area and parts of Watchman Campground. A gravity-fed line will also be maintained to tie back in to the low-pressure line by the native plant nursery near Watchman Campground. An approximate 25-foot-wide construction corridor is anticipated for most pipeline construction activities. The pipeline will be bedded and buried to a minimum depth of 4 feet. Trenching, pipeline installation, and backfilling activities will be done in 100-foot segments to minimize the amount of open trench at any one time.

The irrigation line will provide the major trunk line for irrigation water in the park. It will be designed to provide flexibility for further modifications and expansion to currently non-irrigated areas, and to replace potable water irrigated areas with river water irrigated areas.

System Operation

The portions of the irrigation system that begin at the Flanigan Diversion structure and extend through the sluice and the settling tank will function well only when operated at a consistent flow rate. This is because their function will be dependent on water flow velocities that permit the settling of specific-sized sediment particles in the sluice and settling tank, and not in the pipeline. For this reason, the portion of the irrigation system that begins at the Flanigan Diversion structure and extends through the settling tank will generally be operated continuously at design capacity through the entire irrigation season, except when shut down during flood events, and water in excess of the immediate need will be discharged back to the river. The filter system, pump, and distribution system can be turned on and off or operated at a variable capacity, as needed.

Water from the 30,000-gallon tank will supply gravity-pressurized flow until the supply is drained to a point where the pump will turn on. Once the pump is turned on, it will pressurize the line and begin to fill the tank, as well as supply water to irrigated areas. When the tank is filled, the pump will shut off and the line will return to being pressurized by gravity.

The Oak Creek Diversion and Oak Creek Irrigation Ditch will be operated periodically as a flow-through system during the irrigation season to maintain ditch-side vegetation that has become part of the historic landscape.

Mitigation Measures

- To minimize the amount of ground disturbance, staging and stockpiling areas will be located in previously disturbed areas of the park, away from visitor use areas to the extent possible. Staging and stockpiling areas will be returned to pre-construction conditions following construction.

- Newly excavated soil will be shaped and blended with surrounding topography, and planted and seeded with native vegetation.
- Construction zones will be identified and fenced with construction tape or similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. Protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities outside of the construction area, as defined by construction zone fencing.
- If construction activities are scheduled within the nesting season for birds protected under the Migratory Bird Treaty Act (MBTA), generally April 1 through July 15, pre-construction surveys will be conducted for nests. No construction activities will be conducted in identified nesting areas until the young have fledged.
- Revegetation and recontouring of disturbed areas will take place following construction and will be designed to minimize the visual intrusion of structures. Revegetation efforts will strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native plants and seeds. Contractors will coordinate with Zion natural resources staff at least four weeks prior to construction to determine if plants within the construction area may be salvaged and used for restoration. Zion has its own native plant nursery where plants are grown and used to replenish park areas where native species have been damaged or destroyed. All disturbed areas will be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed.
- Weed control methods will be implemented and monitored to minimize the introduction of noxious weeds, including spraying off construction equipment that enters the park.
- Disturbed portions of park roads will be rehabilitated, especially in staging and laydown areas. The park will restore the roads to better than existing conditions. Disturbed areas will be returned to grade and any tracks from equipment will be raked out.
- To avoid compaction from heavy equipment to surrounding areas, to the extent practicable, equipment will be kept inside the construction footprint. Equipment will be located outside of the construction footprint, when necessary, only when soil is dry. Compacted soils will be "ripped" or decompacted post-construction to enable revegetation.
- If contaminated soil is found, it will be disposed of according to state regulations. The park will be notified of contaminated soil and will assess next steps.
- Following construction, flows in Oak Creek Irrigation Ditch will be managed to support the continued integrity of the historic structure and the vegetation associated with the historic ditch within the park.
- Because disturbed soils are susceptible to erosion, until revegetation takes place, standard erosion control measures (such as silt fences and/or sandbags) will be utilized to minimize potential soil erosion. Best Management Practices (BMPs) will be implemented to minimize erosion leading to sedimentation in drainage areas. Organic mulches, such as straw bales, will not be used due to the risk of introducing exotic weeds.

- Fugitive dust generated by construction activities and equipment will be controlled by wetting the construction site, if necessary.
- To reduce noise and air emissions, construction equipment will not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from construction equipment, contractors will regularly monitor and check construction equipment to identify and repair any leaks.
- Should construction unearth previously undiscovered cultural resources, work will be stopped in the area of any discovery and Zion will consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), as necessary, according to 36 Code of Federal Regulations (CFR) Section 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 will be followed.
- Ground-disturbing activities in archeologically-sensitive areas will be monitored by an archeologist and will meet the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Within known archeological site areas, surface disturbances and construction access corridors will be limited to previously disturbed areas and kept to a minimum.
- A minimum 10-foot buffer between the construction area and the staging and laydown area around the historic Flanigan Ditch will be observed to help ensure that historic resource is avoided during construction activities. Work in this area will be confined using protective fencing or similar material, and will be placed parallel to the Flanigan Ditch, to help prevent inadvertent "straying" of construction personnel and equipment during construction.
- The National Park Service will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, and historic properties. Contractors and subcontractors will also be instructed on procedures to follow if previously unknown paleontological or archeological resources are uncovered during construction.
- In the event that the historic Oak Creek Ditch is disturbed, the ditch will be restored to its original contour, elevation, and cross-section. Ditch restoration will be done in consultation with an NPS archeologist. The construction corridors of the Project will avoid the alignment of Flanigan Ditch such that there will be no impacts to this historic ditch.
- In the unlikely event that water to Springdale will require temporary shut off, Zion staff will coordinate details (such as timing) with the Town of Springdale and the Springdale Consolidated Irrigation Company.
- To minimize potential impacts to park visitors, variations on construction timing may be considered. One option includes conducting the majority of the work in the off-season (winter) or shoulder seasons. Another option includes implementing daily construction activity curfews, such as not operating construction equipment between the hours of 6:00 p.m. to 7:00 a.m. in the summer months (May through September), and 6:00 p.m. to 8:00 a.m. in the winter months (October through April). The

National Park Service will determine the construction schedule in consultation with the contractor.

- Visual screening will be utilized in highly visible areas to blend Project components with the natural setting. Screening may include the planting of trees and native shrub species, and the positioning of boulders to shield views of new above ground structures in the park (e.g., specifically in the area of the new Flanigan sluice structure). Cut slopes will be blended and restored to a more natural color, contour, and roughness. Details of any visual screening applied will be determined by Zion staff in coordination with a landscape architect and Project construction personnel.

Alternatives Considered

Three alternatives were evaluated in the EA, including the No Action Alternative and two action alternatives. Under Alternative A, No Action, the irrigation system would not be upgraded. Alternative B, Flanigan Diversion, is the Preferred Alternative, as described in the previous section. Under Alternative C, Oak Creek Diversion, the irrigation system layout would consist of diverting water from the historic Oak Creek Diversion and piping it to a proposed sluice structure and settling tank. The Oak Creek Diversion structure is located on the west side of the North Fork of the Virgin River and currently diverts water to a historic open channel ditch.

Environmentally Preferable Alternative

According to the Council on Environmental Quality (CEQ) regulations implementing NEPA (43 CFR 46.30), the Environmentally Preferable Alternative is the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The Environmentally Preferable Alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

Alternative B (Flanigan Diversion) is the Environmentally Preferable Alternative for several reasons: 1) the upgraded irrigation system will conserve water by enabling Zion to use the water in a targeted and on-demand manner, and there will be less evaporative loss of irrigation water; 2) the irrigation system will blend with the natural setting and will not degrade the outstanding remarkable values (ORVs) associated with either the North Fork of the Virgin River or Oak Creek, both designated Wild and Scenic rivers; and 3) the Oak Creek Diversion, Oak Creek Irrigation Ditch, and the Flanigan Ditch, all historic structures that are listed in the National Register of Historic Places (NRHP), will be maintained and preserved under Alternative B. For these reasons, the actions associated with Alternative B cause the least damage to the biological and physical environment and best protect, preserve, and enhance historical, cultural, and natural resources within the park.

Alternative C (Oak Creek Diversion) is not the Environmentally Preferable Alternative because although the upgraded irrigation system would conserve water, blend with the natural setting, and lessen the use of non-renewable resources, the proposed construction under Alternative C would not retain the integrity of the Oak Creek Ditch, a historic structure, in place. The irrigation ditch would have to be extensively disturbed and then restored under Alternative C.

Alternative A (No Action) is not the Environmentally Preferable Alternative because, although there would be no construction or ground-disturbing activities that would damage historic structures or previously undisturbed elements of the biological and physical environment, 1) the existing irrigation system does not use water efficiently; and 2) irrigation of residential and other areas of the park with potable water would continue.

Why the Preferred Alternative Will Not Have a Significant Effect on the Human Environment

As defined in 40 CFR Section 1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

Implementation of the Preferred/Selected Alternative will result in some adverse impacts; however, the overall benefit of the Project, particularly to park operations, outweighs the negative effects. The adverse effects are summarized below.

As a result of construction, staging, and laydown, soils, vegetation, water resources, Wild and Scenic rivers, and historic structures will be adversely affected. These effects will result from excavation, ground-disturbing activities, erosion, revegetation, and increases in water turbidity. Park operations and visitor use and experience will be adversely effected during construction as well, from increases in employee workloads and potential campground and trail closures.

Through Project design, protective measures, and mitigation measures, adverse impacts to park resources will be short-term and moderate or less in degree.

The overall benefit of implementing the Preferred/Selected Alternative is that park operations will be improved long-term to a minor degree because the pressurized system will reduce maintenance demands. In addition, the upgraded system will improve efficiency of water use within the park.

The degree to which the proposed action affects public health or safety

The construction and operation of the upgraded irrigation system will not compromise public health and safety. During construction, staging and stockpiling areas will be located in previously disturbed areas of the park, away from visitor use areas to the extent possible. Construction zones will be identified and fenced with construction tape or similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. With these protective measures in place, public health and safety will not be compromised.

Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas

The Preferred Alternative will not impact unique characteristics of the area, including park lands, prime farmlands, wetlands, or ecologically critical areas because these resources do not exist in the Project area. Consultation has occurred with appropriate regulatory agencies, and work will be completed in compliance with all permitting requirements.

Wild and Scenic Rivers within the Project area include the North Fork of the Virgin River and its tributary, Oak Creek. The Project will have a temporary, minor adverse effect on the scenic and recreational ORVs for these rivers during construction from the temporary

introduction of construction equipment and activities in the park. Construction activities will have an impact on scenic ORVs due to the visual obtrusions that will be introduced in to the park (i.e., construction equipment); and recreational ORVs due to temporary trail closings. However, these impacts will be temporary, lasting only as long as construction. Long-term, there will be no effects to these ORVs, including scenic views, because above ground facilities will be visually screened and designed to blend with the natural setting of the area, and will be constructed in previously disturbed areas of the park.

The historic Flanigan Ditch lies within the Project area. The irrigation pipeline will generally run parallel to Flanigan Ditch to Watchman Campground. In addition, the historic Oak Creek Irrigation Ditch is near the Project area. As discussed later in this document, implementation of the Preferred Alternative will not impact Flanigan Ditch or Oak Creek Irrigation Ditch nor the eligibility of these historic structure' listings in the NRHP.

The alignment of the Oak Creek pipeline will travel through the Oak Creek Historic District. The pipeline will be placed in areas of existing disturbance. The eligibility of the historic structures and districts at the park for listing in the NRHP will not be jeopardized by the Project.

There is one known archeological feature within the Project Area of Potential Effects (APE) that meets eligibility criteria for listing in the NRHP, and one archeological feature that has been determined not eligible for listing in the NRHP. As discussed later in this document, implementation of the Preferred Alternative will not adversely affect these archeological deposits.

The degree to which the effects on the quality of the human environment are likely to be highly controversial

Zion conducted public scoping prior to the preparation of the EA and the public was given an opportunity to comment on the completed EA. Based upon the input received during public scoping, there is no evidence that the effects of the Project will be highly controversial. At the conclusion of the 30-day public review and comment period, the park had received three comment s. Given the substance of those comments, there is no evidence that the effects to the quality of the human environment will be highly controversial.

The degree to which the possible effects on the quality on the human environment are highly uncertain or involve unique or unknown risks

The effects of upgrading the irrigation system are fairly straightforward and do not pose uncertainties. The environmental process has not identified any effects that may involve highly unique or unknown risks.

The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration

The construction and operation of the irrigation system will not result in significant adverse effects to the natural environment, cultural resources, or visitor experience. It will not set a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Cumulative effects were analyzed in the EA and no significant cumulative impacts were identified.

The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

One historic structure, Flanigan Ditch, lies within the Project area. The irrigation pipeline will generally run parallel to Flanigan Ditch to Watchman Campground. A minimum 10-foot buffer between construction areas and staging and laydown areas around the historic Flanigan Ditch will be observed to ensure that this historic resource is avoided during construction activities. In addition, work in this area will be confined using protective fencing placed parallel to the Flanigan Ditch, to help prevent inadvertent "straying" of construction workers and equipment during construction. Details of the design of the Project components have been reviewed by NPS historical architects and the Utah SHPO. With protective measures in place, construction activities associated with the Preferred Alternative will not disrupt the Flanigan Ditch and will not diminish those characteristics for which the property has been listed in the NRHP. In summary, there will be no adverse impacts to Flanigan Ditch.

The historic Oak Creek Irrigation Ditch is located near the Project area. Construction activities will not affect the historic portions of Oak Creek Irrigation Ditch. The diversion and ditch will remain intact and continue to operate in existing condition. Under the Preferred Alternative, there will be no impacts to Oak Creek Irrigation Ditch.

The alignment of the Oak Creek pipeline will travel through the Oak Creek Historic District. Pipeline placement within the boundaries of the existing service road within the park's historic district will not represent a change to the existing land use or structure types such that the overall integrity of the historic district will be degraded. The holding tank will be constructed up Oak Creek Canyon near the maintenance service buildings in the park. Although the holding tank will not be constructed within the boundary of the Oak Creek Historic District, there will be a temporary disruption of the historic scene during construction due to equipment, vehicular traffic, and construction crews both near and traveling through the Oak Creek Historic District. Although there will be temporary disruption of the historic scene within the historic district during construction, following construction, the landscapes within the historic district will be restored. Construction activities will not directly affect historic structures. Impacts will be adverse, indirect, short-term, and negligible. The eligibility of the historic structures and district at the park for listing in the NRHP will not be jeopardized by the Project.

There is one known archeological feature within the Project APE that meets eligibility criteria for listing in the NRHP, and one archeological feature that has been determined not eligible for listing in the NRHP. The eligible site within the APE spans an existing road corridor that has been extensively previously disturbed. The proposed pipeline alignment and associated construction activities will be located within the boundaries of the previously disturbed road corridor.

Because it is an NPS goal to avoid impacts to archeological resources, ground-disturbing activities in archeologically-sensitive areas will be monitored by an archeologist and will meet the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Within known archeological site areas, surface disturbances and construction access corridors will be limited to previously disturbed areas and kept to a minimum. Therefore, the Project will not impact these archeological deposits; however, appropriate steps will be taken to protect any archeological resources that are inadvertently discovered during construction.

A letter dated January 19, 2012 from the Utah SHPO concurs with the NPS determination of "no adverse effect" for archeological resources and "no adverse effect" for historic resources per Section 106 of the National Historic Preservation Act.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

Through the EA process it was determined that the implementation of the Preferred/Selected Alternative will have no effect on the following species: yellow-billed cuckoo (*Coccyzus americanus occidentalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), desert tortoise (*Gopherus agassizii*), Virgin River chub (*Gila seminude*), woundfin (*Plagopterus argentissimus*), and Shitwits milk-vetch (*Astragalus ampullariodes*). This determination was based on the fact that these species do not occur in the Project area.

Mexican spotted owl (*Strix occidentalis lucida*) and California condor (*Gymnogyps californianus*) could fly into the Project area during construction, although they do not currently frequent the area. The nearest Mexican spotted owl protected activity center is two miles away. The nearest roosting area for California condor is near Scout Lookout about five and a half miles from the north end of the Project area. Neither species has been known to roost, nest, or forage in the Project area.

Because Mexican spotted owl and California condor could fly into the Project area, although not likely, the park made a determination that implementation of the Project may affect, but is not likely to adversely affect, these species.

The park also made the determination that the implementation of the Project would not result in reduction or adverse modification for Mexican spotted owl or Shivwits milk-vetch critical habitat. The Project area is over four miles from Shivwits critical habitat. The Project area is within the designated critical habitat for Mexican spotted owl, since the entire park has been designated as critical habitat for this species. The Mexican spotted owl will not likely nest, roost, or forage in the Project area. Any ground disturbance would be re-contoured and reseeded with native vegetation at the end of the Project. Because of this, the park believes that the primary constituent elements that are essential for the conservation of both species would either not be affected or the effects would be minimal and short-term.

The National Park Service received USFWS concurrence with these NPS determinations on December 2, 2011. In addition, Project construction and operation activities are not anticipated to result in adverse effects to any state-listed species within the Project area.

Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment

The action will not violate any federal, state, or local laws or environmental protection laws.

Public Involvement and Native American Consultation

The EA was made available for public review and comment during a 30-day period ending December 27, 2011. To notify the public of this review period, a letter was mailed to stakeholders, Native American tribes, interested parties, and newspapers. Copies of the document were made available in local repositories, and an electronic copy was posted on the NPS Planning, Environment, and Public Comment (PEPC) website at http://parkplanning.nps.gov/.

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal. Three comments were received during the review period. None of the comments were substantive.

All three comments were from unaffiliated individuals. One of the comments indicated support of the Project. Another comment expressed concern that the new system would not supply water to plants and trees in the park that have been historically watered by the current irrigation system. Under the Preferred Alternative, water will continue to flow through the historic sections of Oak Creek Irrigation Ditch; the EA does address impacts associated with the abandonment of a non-historic section of the irrigation ditch. The EA states that a portion of Oak Creek Irrigation Ditch will be abandoned and result in adverse, indirect, localized, long-term, and minor impacts to vegetation.

The third comment expressed general support of the Project and also suggested reverting all lawn areas in the park to native vegetation and eliminating plants that require irrigation. Abandonment of the historic Oak Creek Irrigation Ditch was considered and dismissed because abandonment of the ditch would change the classification of a historic structure and the vegetation associated with the historic ditch, which would also change the management outcomes and practices of the park. Because these actions were contradictive to current management and practices of the park, this alternative was dismissed as a viable alternative.

No comments were received from Native American tribes.

Conclusion

As described above, the Preferred Alternative does not constitute an action meeting the criteria that normally require preparation of an Environmental Impact Statement (EIS). The Preferred Alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that range from site-specific to local, short- to long-term, and negligible to moderate. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the NRHP, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local laws or environmental protection laws.

Based on the foregoing, the National Park Service has determined that an EIS is not required for this Project and thus will not be prepared.

Approved:

Laura E. Joss 2/8/12

for John Wessels Date
Regional Director, Intermountain Region, National Park Service

Appendix A
Impairment

The National Park Service's *Management Policies, 2006* requires analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values.

However, the laws do give the National Park Service management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would more likely constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's General Management Plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at nighttime; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that they can be enjoyed without impairing them;

- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, resources remaining to be evaluated for impairment include soils, vegetation, water, Wild and Scenic rivers, and historic structures.

The following analysis evaluates whether or not the applicable resources carried forward in the EA will be impaired by the Preferred Alternative.

- **Soils** – Specific soil types identified within the Project area include Naplene silt loam, 2 to 6 percent slopes; Redbank silty clay loam, 0 to 2 percent slopes; and Rock land. Naplene silt loam soils occur throughout most of the Project area. Redbank silty clay loam soils occur within a small area of the southern portion of the Project area above the Visitor's Center.

  Construction activities will have adverse, direct, site-specific, short-term, and minor effects on soils from ground-disturbing activities and erosion. Because the soils will be stabilized and revegetated, there will be negligible, long-term effects on soils as a result of excavation. The short-term effects from excavation will be adverse, direct, site-specific, and moderate. Because the Preferred Alternative will result in only adverse, site-specific, short- and long-term, and negligible to moderate adverse impacts, there will be no impairment to soils.

- **Vegetation** – Within the Project area, there are two basic vegetation types: riparian near the river and mid-to-low elevation upland vegetation. The riparian vegetation includes Goodings willow (*Salix goodingii*), Fremont cottonwood (*Populus fremontii*), boxelder (*Acer negundo*), coyote willow (*Salix exigua*), and velvet ash (*Fraxinus velutina*). The upland vegetation in the Project area includes pinyon pine (*Pinus edulis*), one-seed juniper (*Juniperus osteosperma*), four-wing saltbush (*Atriplex canescens*), rubber rabbitbrush (*Chrysothamnus nauseosus*), broom snakeweed (*Gutierrezia sarothrae*), and sand dropseed (*Sporobolus cryptandrus*). Cheatgrass (*Bromus tectorum*), a non-native invasive species, has taken over much of the park due to previous disturbance.

  Construction activities will have adverse, direct and indirect, local, short- and long-term, and minor effects on native vegetation from activities such as grading, excavating, and re-contouring. To protect vegetation, weed control methods will be implemented and monitored to minimize the introduction of non-native plant species. Existing non-native vegetation will be destroyed during construction and disturbed

areas will be revegetated with native seed and plant species; this will result in beneficial, direct and indirect, local, long-term, and minor effects on native vegetation. The loss of individual trees and shrubs will result in adverse, direct, site-specific, long-term, and minor impacts. A portion of Oak Creek Irrigation Ditch will be abandoned, resulting in adverse, indirect, localized, long-term, and minor impacts. Because the Preferred Alternative will result in beneficial and adverse, direct and indirect, site-specific and local, short- and long-term, and only minor impacts, there will be no impairment to vegetation.

- **Water** – Water resources within the Project area include the North Fork of the Virgin River (which flows perennially) and its tributary, Oak Creek (which flows seasonally). Additional stream flow from initially diverting less water than the diversions currently taking place under the No Action Alternative will result in beneficial, indirect, regional, long-term, and negligible impacts. Increases in water turbidity near the construction activity will result in adverse, direct, local, short-term, and negligible impacts. Sediment increase as a result of erosion will result in adverse, indirect, local, short-term, and negligible impacts. Sediment taken from irrigation water and returned to the river will not be detectible; impacts will be direct, local, long-term, and negligible. Because the Preferred Alternative will result in beneficial and adverse, direct and indirect, local and regional, short and long-term, and only negligible impacts, there will be no impairment to water resources.

- **Wild and Scenic Rivers** – In the Project area, the North Fork of the Virgin River below the Temple of Sinawawa has been designated as a Wild and Scenic river. The North Fork of the Virgin River has ORVs for cultural, geologic, recreational, scenic, wildlife, and fish. Its tributary segment, Oak Creek, has scenic and wildlife ORVs. Both the North Fork of the Virgin River and Oak Creek are within the Project area and are classified as "recreational" rivers. Under a recreational designation, rivers are readily accessible by road, may have development along the shoreline, and may have undergone some impoundment or diversion in the past.

  Construction-related activities and disturbances will result in indirect, local, short-term, minor, and adverse impacts to scenic and recreational ORVs under the Preferred Alternative. Long-term, there will be no adverse effects to scenic views because above ground facilities will be visually screened and designed to blend with the natural setting of the area, and will be constructed in previously disturbed areas of the park. There will be no effects on cultural, geologic, and fish ORVs. Because the Preferred Alternative will result in adverse, indirect, local, short-term, and only minor impacts, there will be no impairment to Wild and Scenic rivers.

- **Historic Structures** – The Project area contains one historic structure, Flanigan Ditch, and one historic district, Oak Creek Housing District, both listed in the NRHP. The NRHP-listed historic Oak Creek Irrigation Ditch lies near the Project area. With protective measures in place, construction activities will not disrupt the Flanigan Ditch, and there will be no adverse impacts on it. Construction activities will not affect the historic portions of Oak Creek Irrigation Ditch. There will be adverse, indirect, local, short-term, and negligible impacts on Oak Creek Historic District as a result of construction activities associated with the Oak Creek pipeline and holding tank. Because the Preferred Alternative will result in only adverse, indirect, local, short-term, and negligible effects on Oak Creek Historic District, there will be no impairment to historic structures.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the Preferred Alternative.