

# Floodplain Statement of Findings

## STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT REPAIR AND REHABILITATION OF BLACK ROCK CAMPGROUND ENVIRONMENTAL ASSESSMENT

JOSHUA TREE NATIONAL PARK

Recommended: Mark A. Bore 3/1/13  
Superintendent, Joshua Tree National Park Date

Concurred: F. Edwin Hamrey 3/12/13  
Chief, Water Resources Division Date

Concurred: Gottfried 4/23/13  
Pacific West Regional Safety Officer Date

Approved: Patricia A. Neubauer 4/23/13  
Director, Pacific West Region Date

*aidy*

**STATEMENT OF FINDINGS FOR  
EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT  
REPAIR AND REHABILITATION OF BLACK ROCK CAMPGROUND  
ENVIRONMENTAL ASSESSMENT**

**JOSHUA TREE NATIONAL PARK**

## **INTRODUCTION**

Executive Order (EO) 11988, "Floodplain Management" requires the National Park Service (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. Director's Order (DO)-77-2: *Floodplain Management* provides direction for the preparation of a floodplain SOF. This SOF has been prepared to comply with EO 11988 and DO-77-2.

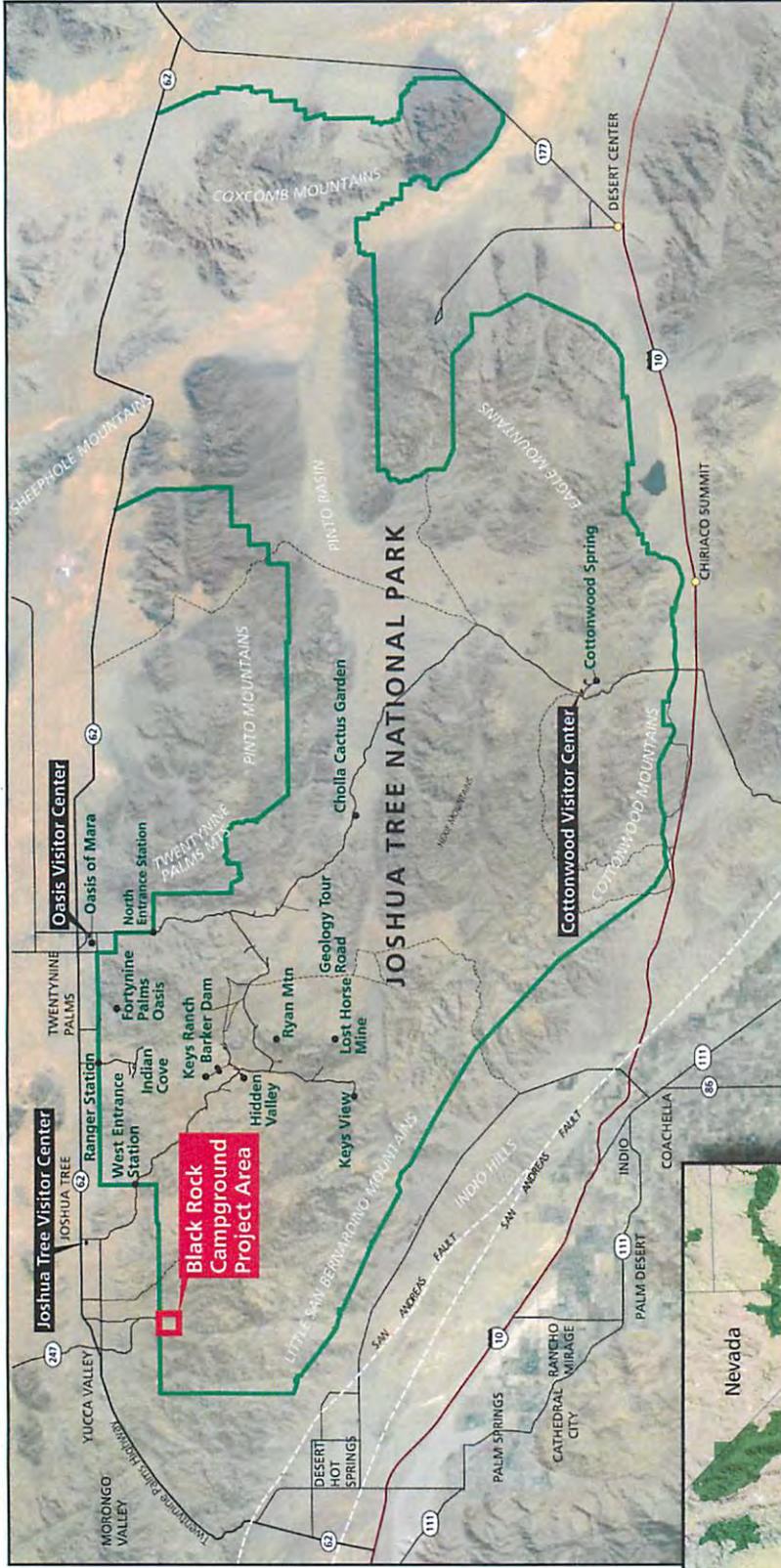
## **SELECTED ACTION**

The NPS is planning to repair, rehabilitate, and reconstruct Black Rock campground, which is in the northwest corner of Joshua Tree National Park (park) near the community of Yucca Valley, California (Figure 1). The selected action will add drainage improvements, reconfigure campground roads and campsites, and protect park facilities and natural resources from further deterioration. While the Black Rock campground is outside of the Black Rock Canyon floodplain, the large watershed above the campground currently conveys stormwater runoff through portions of the campground in an unpredictable manner, resulting in localized erosion and flooding in the campground and downstream private property, including Black Rock Canyon Road. The original campground was not designed to adequately convey drainage away from campground facilities. Campground roads are aligned so that stormwater runs directly down the roads with the potential for damaging campground facilities, natural resources, and downstream private property. Degraded roads and camping areas also have contributed to erosion and sediment deposition downstream of the campground. The objective of the selected action is to convey drainage from the campground to the adjacent Black Rock Canyon without increasing downstream flooding, and reduce uncontrolled runoff and localized flooding in the campground and downstream private property.

### **Project Description**

New stormwater drainage channels, in conjunction with the east-west crossroads within the inner campground loop road will be constructed to intercept and direct flow east to the existing Black Rock Canyon. This will prevent stormwater runoff from flowing north through the campground and to the adjacent residential neighborhood (Figure 2).

FIGURE 1. JOSHUA TREE NATIONAL PARK



## Vicinity Map

Black Rock Campground Rehabilitation  
Joshua Tree National Park





The drainage improvements will be a combination of roadside channels and open-flow channels. Low-flow water crossings will be used where drainage channels cross campground roads.

Stormflow captured by new drainage channels will help disperse runoff and reduce the potential for flooding and associated property damage and safety concerns. In addition, drainage improvements include opening a currently plugged dry wash about 0.2 mile south of the campground near the West Side Trail Loop to reduce the amount of off-site runoff entering the campground and divert it around the campground. Approximately 2,350 feet of new drainage channels are planned with average channel widths of 12 feet. The channels will be 2 feet deep and lined with rocks. A new 0.7-acre vegetated detention basin on the north downslope boundary of the campground will provide storage and infiltration of stormwater runoff. The majority of the campground improvements will be within areas of existing disturbance, although there will be new disturbance, as well as decommissioning and restoring old roads and other infrastructure. All of the planned work will be outside of the Black Rock Canyon 100-year floodplain.

### **Floodplains**

The campground area is designated by the Federal Emergency Management Agency (FEMA) as Zone D, an area in which flood hazards are undetermined, but possible (FEMA 2012). Based on an analysis by Cardno ENTRIX (NPS 2012a), there is no risk to Black Rock campground from large floods originating from nearby Black Rock Canyon because the campground is outside of the estimated 100-year floodplain and outside the 500-year flood inundation area of the Canyon.

### **Drainage and Flood Analysis of Basins in the Campground**

The large Black Rock Canyon watershed upslope from the campground currently conveys storm runoff through portions of the campground in an unpredictable manner, resulting in localized erosion and flooding. Stormwater runoff through the campground currently consists of surface flow along roads, and in small ephemeral washes and swales.

There are no streamflow gages in the Black Rock Canyon watershed to provide historical flow data for calculating flood frequency. As a result, the NPS (NPS 2007) used the Rational Method and HEC-RMS model to estimate existing 100-year runoff peaks conveyed through the west, central and east basins in the campground and discharged across the north and eastern site boundaries. In the largest basin (west basin, 37 acres), the 100-year peak flow was estimated to be 83.5 cfs. In the central basin (19.5 acres), the 100-year peak flow was estimated to be 52.6 cfs, and in the east basin (17.9 acres), it was estimated to be 50.7 cfs. Under existing conditions, the campground roads are primary drainageways because the roads are perpendicular to site contours.

## **Justification for Use of the Floodplains**

The project is outside the 100- and 500-year floodplain of Black Rock Canyon, but is in an area through which uncontrolled stormwater runoff occurs. Drainage improvements will capture and reroute drainage from the campground to Black Rock Canyon. This will increase the volume of stormflow to the floodplain of Black Rock Canyon and reduce localized flooding in the campground and downstream properties.

## **Investigation of Alternative Sites**

The drainage analysis and flood study of Black Rock Canyon and the campground (NPS 2012a) also assessed two alternative concepts for rehabilitation of the campground. While both of the other concepts would not result in increased risk of flooding in residential areas along Black Rock Canyon, the preferred alternative previously described provided the greatest runoff control both within the campground and downstream. In addition, it was not feasible to relocate the campground because of adjacent wilderness areas and associated impacts. Abandonment of the current campground site for another area would still require work to address drainage issues. Thus, alternative design concepts and campground sites within the park were eliminated from further consideration.

## **Hydrologic Risk**

According to the drainage analysis and flood study completed for the Black Rock Canyon watershed, the drainage plan for Concept C, which is the selected alternative in the Environmental Assessment (Figure 2), will not significantly change flood flow conditions in Black Rock Canyon downstream from the campground and will not result in increased flood risk to residences for flood events up to the 100-year flood (NPS 2012a). Rerouting drainage from the campground directly to Black Rock Canyon will increase flow by about 136 cfs and water depth by about 1 inch during 100-year flow events. This small change in depth will not adversely affect the out-of-channel flow north of the park in downstream residential areas adjacent to Black Rock Canyon. Within the campground, flood flows will be more controlled, and the 100-year peak flows will be reduced (NPS 2012a).

## **CONTINGENCY PLAN AND MITIGATIVE ACTIONS**

Because the selected action will not occur within the floodplain of Black Rock Canyon, and will not significantly change peak flows downstream of the project area, no mitigative actions in accordance with the NPS floodplain guidelines and with EO 11988, "Floodplain Management" will be required. Flood flows in the campground will be mitigated by the drainage improvements that will provide greater control of storm flows in and downstream of the campground. The potential for flood flows within the campground will be greatly diminished with implementation of drainage and campground improvements. However the park will develop a contingency plan to protect campground users and park staff from flooding during a large storm event, which will include measures such as:

1. posting of signs at the campground warning campers of possible sudden flooding during large storm events and a map at a central location in the campground showing where to seek shelter if flooding occurs;
2. providing information at the Nature Center and campground entry about flash floods that occur at the park and in the campground; and
3. in the event of a sustained storm and flooding event occurring upstream from and/or within the campground, closing the campground and/or evacuation of the campground.

## **CONCLUSION**

The protection of people and property is of high priority to the NPS. The selected action will be constructed on NPS-managed land. No project actions will occur within the 100-year floodplain of Black Rock Canyon. The drainage modifications to be completed in the campground will increase runoff to Black Rock Canyon by an estimated 136 cfs, resulting in a 1-inch increase in water depth. This will not significantly change flood flow conditions downstream from the campground and will not increase the flood risk to the residential area downstream and outside of the park. The drainage improvements in the campground will effectively reduce localized flooding in the campground and along Black Rock Canyon Road and private property north of the campground.

The NPS finds the proposal to be consistent with EO 11990.

## **REFERENCES**

- Federal Emergency Management Agency (FEMA). 2012. Flood Insurance Rate Map: San Bernardino County, California: City of Twentynine Palms, Map #06071C893OH. Available at: [http://map1.msc.fema.gov/idms/IntraList.cgi?displ=wsp/item\\_10458408.txt](http://map1.msc.fema.gov/idms/IntraList.cgi?displ=wsp/item_10458408.txt).
- National Park Service (NPS). 2012. Final Drainage Analysis and Flood Study of Black Rock Campground and Canyon To Assist in the Repair and Rehabilitation of Black Rock Campground by Alleviating Existing Drainage and Erosion Control Problems. Prepared for Joshua Tree National Park, California by Carndo ENTRIX. Concord, CA. February.
- National Park Service (NPS). 2007. Black Rock Campground Design Charrette Technical Supplement. Prepared by HDR. PMIS # 4745. March.