

ABSTRACT

GEOMORPHIC AND HYDROLOGIC STUDY OF RED ROCK CANYON STATE PARK, KERN COUNTY, CALIFORNIA

In 1997, a severe thunderstorm damaged cultural and natural features within Red Rock Canyon State Park, Kern County, California. Groundwater was intercepted in Red Rock Creek, south of Abbott Drive, forming a surface water seep and creating new riparian habitat. Evaporation at this site reduced the volume of subflow to Sodium Spring downstream, diminishing the well-established habitat there.

This thesis investigates (1) current and historic geomorphic and hydrologic conditions of Red Rock Creek and recommends methods to enhance riparian habitat below Abbott Drive and at Sodium Spring, and (2) models potential impacts on the canyon from off-highway vehicle (OHV) activity within Dove Spring Canyon.

Recommendations for restoring riparian habitat at Sodium Spring include redirecting stream flow and installing an infiltration gallery at Abbott Drive to capture and convey groundwater recharge.

Initial erosion modeling predicts that up to 11,219 tons of sediment produced at Dove Spring Canyon could be entrained and washed into Red Rock Canyon. Further modeling is recommended.

Matthew Farris
August 2003