

# BUCKEYE CREEK WATERSHED FLOOD STUDY

Douglas County, Nevada



## CLIENT

Douglas County, Nevada

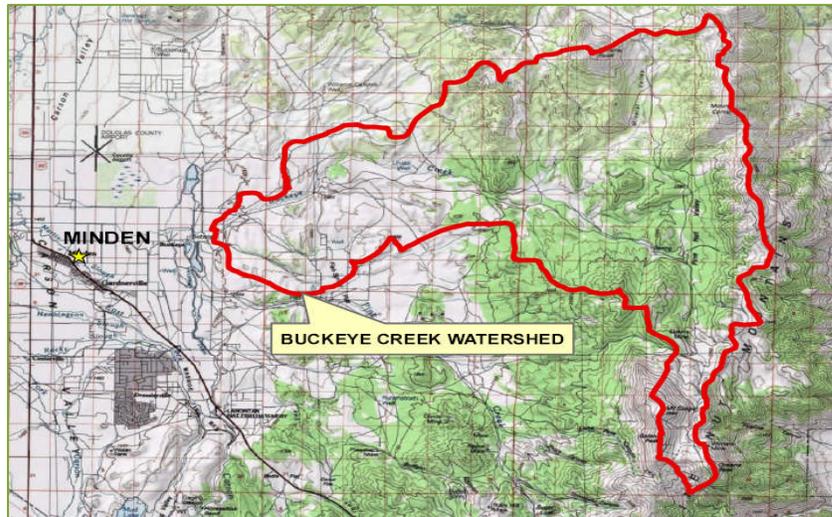
## SCOPE OF SERVICES

Hydrology & Hydraulic  
Modeling

Alternative Scenario Analyses

Floodplain Determination and Mapping

Coordination with Region IX FEMA staff and  
Regulatory Agencies



In July 2008, Douglas County retained Manhard Consulting to provide a restudy of the Buckeye Creek Watershed in support of a FIS appeal and extension request of the 90-day statutory public appeal period. This watershed was selected because it is the largest of seven sub-watersheds included within the original study and because the study results for this watershed varied the most dramatically from the 1999 Effective FIS for Douglas County.

The Buckeye Creek Watershed includes the sub-watersheds for Buckeye Creek, Juniper Wash, Calle Hermosa Wash, Calle de Asco Wash and Bobwhite Wash. The headwaters of the 75-square mile watershed reside in the westerly slopes of the Pine Nut mountain range. Stormwater runoff from these slopes flow in a westerly direction through steep valleys, to gentler slopes, through alluvial fans, and finally across flat agricultural lands on the way to the East Fork and main stem of the Carson River. In this study, hydrologic modeling was performed using HEC-HMS for the entire Buckeye Creek Watershed located upstream of East Valley Road. Input parameters incorporated into the original study model for developing stormwater runoff peak flow rates/volumes and the routing of these resulting flow rates/volumes through the watershed were evaluated and appropriately refined. Manhard's hydrologic analysis yielded 100-year peak flow rates that were lower (approximate 30 percent reduction) than those in the original study.

Hydraulic modeling was completed for approximately 4.8 miles of Buckeye Creek. The HEC-RAS hydraulic analysis of Buckeye Creek compared the resultant water surface elevations from both the original study and Manhard's revised study. Upon incorporating the revised flows into the model, the 100-year water surface elevations were reduced by approximately one foot along the study reach, with a maximum reduction of almost three feet.

The analyses of the Manhard study clearly indicated that model refinements produced lower peak flow results, as well as an overall reduction in the 100-year floodplain elevations and extents. From this determination, it was apparent that the results from the 2008 Preliminary FIS for the Buckeye Creek Watershed represented overestimated 100-year peak flow rates and resulting floodplains. It is anticipated that a restudy of the 500-year event in this watershed would produce similar results and either significantly reduce or completely eliminate the preliminary FEMA shaded 'X' zones. After reaching these conclusions, Manhard staff recommended to Douglas County that a restudy be performed for all watersheds originally submitted within the FIS and that an extension be requested from FEMA in order to complete this restudy and accurately determine the true extents of the County's flood hazard areas.