



Photos courtesy Mohave County

The Mohave County NAVD-88 Height Modernization Project team members pose for a group photo. Pictured (front row, from left) Mohave County's Randall Allison, Michael Dennis of Geodetic Analysis LLC, Bryan Campbell of AMEC, (second row) Mohave County's Dominic Boone, Allen Roberson, Bullhead City assistant city surveyor, Mohave County's Dave Adams, Seven Engle, James Lambert and Jason Foose, Bob Ware and Dan Butler from the City of Kingman, (back row) Mohave County's Roland Hulse, Sam Kitchen, Dustin Bonivert and Justin Hembree, Dave Minkel, National Geodetic Survey liaison, Arizona, and Charlie Yarbrough of Mohave County.

Height modernization project contributes to lower flood insurance rates

KINGMAN – Mohave County Flood Control District has just completed Phase 1 of a technology modernization that may pay off with lower flood insurance rates for residents.

The county is working on the NAVD-88 (North American Vertical Datum) Height Modernization Project, County Senior Engineering Technician Shannon Summers said during an interview Tuesday, July 15. “This was a team effort with Jason Foose, assistant county surveyor.”



Jason Foose (left), assistant Mohave County surveyor, and Shannon Summers, County senior engineering technician, relax during an interview Tuesday, July 15, at the Mohave County Administration Building in Kingman.



Geographic Information Systems/Global Positioning System Technician Jesse Hickman Jr. of the Fort Mojave Tribe took part in the Mohave County NAVD-88 Height Modernization Project.

The new Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps will take effect in August of 2009, she said, “and this height modernization will be a tremendous benefit to our local engineers and surveyors. Jason Foose did an outstanding job of coordinating this very complex field operation.”

The field operation for Phase 1 of the project consisted of multi-agency participation within and around Mohave County and the state, Summers said. “Mohave County thanks all of the communities and individuals who made this project a success. Those cooperative partners are our own Flood Control District and Public Works Survey Division personnel, the Fort Mojave Indian Tribe, the cities of Kingman and Bullhead City, AMEC Infrastructure, Geodetic Analysis LLC, the Arizona



Craig Gordon, Geographic Information Systems Director for the Fort Mojave Tribe took part in the Mohave County NAVD-88 Height Modernization Project.

State Cartographer’s Office and the National Geodetic Survey.”

The primary function of the project is to provide local communities with a network of benchmarks directly related the latest FEMA Digital Flood Insurance Rate Maps (DFIRMs), Foose said. “A map needs to be physically related to the earth. The point of this exercise is to relate our new maps to the ground. Maps are fit to the ground like sheets are laid on a bed. We have identified the corners of the bed and smoothed out the wrinkles, so to speak. We leave physical points where a local engineer or surveyor can measure from and be on the same reference datum as the map. A surveyor will measure from the benchmark, or known point, to determine the elevation of a house.”

Foose put the project into historical context.

“In the 1920s, the U.S. Geological Survey mapped the

continental United States assuming a theoretical center of gravity that best fit only our continent at that time,” he said. “They used conventional instruments – levels and optical instruments. Gravity was measured by level bubbles and tidal gauges on the coast. In the 1980s, there came a new realization of the center of gravity and of the shape of Earth based on satellite measurements. The National Geodetic Survey (NGS) recreated a model of our planet based on those measurements as they fit the entire planet rather than a specific area or continent. Consequently, the modeled surface of Earth changed because the theoretical center changed.”

“And the federal government has been pushing for a uniform adjustment to this datum since they came out with the NAVD-88,” Summers said. “And now we are doing it. This will enable local participants to present information to FEMA and the Flood Control District in a uniform and consistent reporting datum thus eliminating inconsistent conversions and confusing reporting practices.”

“Our survey staff was responsible for coordinating all of the field operations for the project,” Foose said. “County team members Dominic Boone and Charlie Yarbrough provided all of the preliminary groundwork and critical mission planning efforts for AMEC, which resulted in a savings of thousands of dollars in professional service fees for the Flood Control District.”

“We also appreciate the local governmental agencies and people, many who put in their time free of charge, to help us with the project,” Summers said. “The cost would have been prohibitive if we didn’t have their assistance. All county expenses came out of Flood Control District funds.”

Summers will submit the work to FEMA as a Letter of Map Revision (LOMR) which will then be included in the FEMA maps, she said. “They will give us a digital copy of all the points to include in our digital flood insurance maps and they will issue an LOMR. We (Mohave County Flood Control District) will make this network available on our website. When the maps become effective next year, surveyors will be required to submit data, elevation certificates or anything remotely related to FEMA accordingly.”

The county should have the results of Phase 1 in the fall of 2008, she said. “Phase 2 of the project, the field survey of the Arizona Strip Area, is scheduled to begin in September of this year with results available in early 2009.

“The activity that we are doing right now qualifies for credit points in the National Flood Insurance Program (NFIP) Community Rating System,” Summers said. “When we do things that help mitigate flooding, we gain points. We (Flood District) gather up all the things we have been doing that are eligible for points and present them for evaluation. The more points we gain, the lower flood insurance costs will be. The NFIP evaluates us every five years. We are up for evaluation in 2009. An auditor will grade our efforts and, hopefully, lower our rating. We are rated at an eight right now. We hope to at least accomplish a seven at our next evaluation.”

This modernization is a technological and economic improvement for Mohave County government, contractors, surveyors, architects, engineers and property owners, she said.