# ALERT2 TWG for developing the ALERT2 protocol

ALERT flood warning systems have served the hydrologic warning community well for over 40 years. However, the now widespread use of ALERT technology, in particular, has exposed serious weaknesses that jeopardize the ability of the ALERT protocol to meet its intended purpose of triggering effective flood warning and emergency response.

A decade ago, a technical working group within the National Hydrologic Warning Council (NHWC, [www.hydrologicwarning.org](http://www.hydrologicwarning.org)) and the ALERT Users Group (AUG, [www.alertsystems.org](http://www.alertsystems.org)) began developing a new ALERT radio transmission protocol, ALERT2, designed to overcome the weaknesses inherent in ALERT. The new ALERT2 technology, successfully implemented in test beds across the US, is now being implemented commercially.

As implemented, the ALERT2 protocol eliminates “random” reporting in favor of a more disciplined approach to data reporting. ALERT2 assigns unique “time slots” for each transmitter. When the transmitter has data to report, it transmits the message in and only in its assigned time slot.

The TWG is to be commended for it diligence, innovation, and perseverance in creating ALERT2 shepherding it to fruition.

(Need to identify TWG members.)

# The Southern California ALERT2 Design and Transition Plan

By OneRain (James Logan, Mike Zucosky, Telos Services (Don Van Wie), and WEST Consultants (David Curtis)

The concentrated use ALERT technology in Southern California saturated the capacity of the Southern California ALERT Network (SCAN); degrading data quality and weakened SCAN’s ability to meet its public safety mission. The sheer size and scale of the Southern California ALERT Network presented a significant design challenge to transition to ALERT2.

The SCAN has grown and evolved over the past four decades to include approximately 1000 sites, 40 repeaters, and a multitude of computer receiving stations at counties, tribes, and federal agencies. With shared equipment, radio frequencies, and data, the network is burdened with complex interdependencies. Equipment and software upgrades are required at each site to accommodate ALERT2. The upgrade and other needed improvements require a multimillion dollar investment across the Southern California ALERT network.

To smoothly transition from the legacy ALERT technology to ALERT2 while maintaining operational continuity through multiple budget cycles, a complete system analysis, design and transition plan was needed.

In 2012, a consortium of Southern California ALERT users won a 2013 Flood Emergency Response Grant from the California Department of Water Resources. Funding for the grant was made possible by the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 otherwise known and Proposition 84. (Prop 84) The Prop 84 grant is intended to support the upgrade and transition from the legacy ALERT technology to ALERT2. The ALERT user consortium included Ventura, Santa Barbara, San Bernardino, Orange, and San Diego County. Ventura County assumed the role of lead agency managing the grant.

The Southern California ALERT2™ Implementation Plan identified ALERT2 system upgrade needs along with an implementation plan for the ALERT users consortium as well as other counties and agencies impacted by the ALERT2 transition. An analysis of the entire network and all stakeholders was needed due to the complex network interdependencies that evolved over time and the need to preserve operational continuity over multiple budget cycles. In addition to the ALERT consortium, other impacted stakeholders included Los Angeles County, Riverside County, San Luis Obispo County, the International Boundary Waters Commission, Indian tribes, and two National Weather Service offices.

The Southern California ALERT2™ Implementation Plan team is commended for successfully meeting this complex design challenge.

# TDMA Management Tool developed

by OneRain.

ALERT2 network design and management is considerably more complex than for legacy ALERT systems. New tools are required. ALERT2 TDMA Manager enables realistic ALERT2 network design in visual form. It provides multi-user shared access via web interface and enables information sharing that reduces potential for conflicts or mistakes. Multiple agencies can share access.

ALERT2 TDMA Manager features Capacity Planning and QA/QC Verification – ensuring the optimization of transmission capacity across all parts of the network. The TDMA Management tool provides support for complex, multi-frequency, multi-repeater, multi-base station networks

OneRain is to be commended for its remarkable innovative approach to visualizing ALERT2 networks.