

**TO:** Board Members

**THROUGH:** Kevin Patteson, Executive Administrator  
Robert E. Mace, Ph.D., P.G., Deputy Executive Administrator, Water Science and Conservation  
Les Trobman, General Counsel

**FROM:** Mark Wentzel, Ph.D., Manager, Instream Flows

**DATE:** February 9, 2016

**SUBJECT:** Authorization to Publish a Request for Qualifications to Study Requirements to Improve Hydrometeorological Flood Forecasting in Texas

## **ACTION REQUESTED**

Consider authorizing the Executive Administrator to publish a Request for Qualifications for a total amount not to exceed \$150,000 from the Disaster Contingency Fund No. 453 to study requirements to improve hydrometeorological flood forecasting in Texas.

## **BACKGROUND**

Across many assessment time periods (years to decades), Texas regularly leads the nation as the state with the largest number of fatalities and financial losses due to floods. This dubious distinction is a result of a combination of factors including meteorology, geography, population, and infrastructure. The susceptibility of Texans to losses due to flooding was tragically highlighted during fatal floods that struck the City of Wimberley in May 2015.

In December 2015 a memorandum of understanding was executed between the Office of the Governor and the Texas Water Development Board (TWDB) "...for the purposes of preparing for a disaster, including installing a network of stream gages to enhance existing flood notification systems ..." Therefore, the TWDB seeks to identify areas of the state where flood notification systems are insufficient due to a lack of stream gages and weather stations, prioritize areas that require additional monitoring, and propose the most efficient monitoring locations to improve flood forecasting and warning capabilities for those areas.

## **KEY ISSUES**

A number of flood forecasting and notification systems have been developed to warn Texans of impending and ongoing floods. Using data from a network of weather radars, weather stations, and stream gages, the National Weather Service's regional River Forecast Centers provide flood warnings for large areas of the state. Additionally, other entities within the state have developed

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To provide leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas :  
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:  
: Kevin Patteson, Executive Administrator

their own flood warning systems, including the Harris County Flood Control District, San Antonio River Authority, City of Austin, and others.

However, communities within the state remain vulnerable to flooding. Some of these vulnerabilities are due to a lack of stream gaging and weather stations to support flood warning systems. For example, prior to flooding in May 2015, there were no active stream gages upstream of the City of Wimberley. Since May 2015 local stakeholders have worked with the National Weather Service, U.S. Geological Survey, TWDB, and other parties to identify locations for additional stream and precipitation gages to enhance flood warning capabilities in and around the City of Wimberley. These additional monitoring locations will help the National Weather Service improve flood forecasting capabilities near the City of Wimberley, but flood forecasting for other communities in Texas may still be inadequate.

The Executive Administrator recommends that a study of the requirements to improve hydrometeorological flood forecasting in Texas be completed. Staff will initiate a Request for Qualifications process to select a qualified contractor for this work. The selected contractor will perform analyses to identify communities in Texas that, due to limited or non-existent stream and weather monitoring, receive inadequate warning from the National Weather Service's Advanced Hydrologic Prediction Service or other flood warning systems.

In addition, the contractor will prioritize communities needing additional monitoring based on factors that will include propensity for flash floods, historical number of fatalities due to flooding, and severe and repetitive economic losses due to flooding, and may include population temporarily or permanently residing within designated Federal Emergency Management Agency flood hazard areas and other factors. For priority communities, the contractor will identify locations where additional stream gages and weather stations would improve flood forecasting based on hydrometeorological models. Locations of new stream gages and weather stations will be optimized to provide adequate lead times for flood warning while keeping overall costs low, increasing the number of communities that can be supported. Funding for this project will not exceed \$150,000 and work will be completed by December 31, 2016.

Final deliverables from this project will assist TWDB to prioritize future spending in order to provide the greatest value to the state. During the time this study is being completed, TWDB will continue with efforts to improve flood warning systems for vulnerable areas with identified needs such as the City of Wimberley and other public entities.

### **RECOMMENDATION**

The Executive Administrator recommends approval of this item.

This recommendation has been reviewed by legal counsel and is in compliance with applicable statutes and Board rules.