State of South Carolina

Governor Henry McMaster

Thomas S. Mullikin, Chairman

South Carolina Floodwater Commission

SMART RIVER AND DAM SECURITY TASK FORCE

BACKGROUND

An important step in better managing our flood mitigation plan is to effectively combine datasets and multiple model inputs and outputs, such as data collected through LIDAR and other studies, for an enhanced understanding of our complex river and dam systems. LIDAR, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses combined with other data generate precise, three-dimensional information about the shape of the Earth and its surface characteristics. Two types of LIDAR are topographic and bathymetric. Topographic LIDAR typically uses a near-infrared laser to map the land, while bathymetric lidar uses water-penetrating green light to also measure seafloor and riverbed elevations.

LIDAR systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility. NOAA scientists are currently using LIDAR to produce more accurate shoreline maps, make digital elevation models for use in geographic information systems, to assist in emergency response operations, and in many other applications. Existing data sets could be utilized to develop a multi-layered geographic information system (GIS) to improve the understanding of South Carolina river systems and make better-informed management decisions.

Based on recent flooding events, special study should be given to the north east region of the state around Marlboro and Marion counties along the Pee Dee River system. The combined effects of increased water flow from North Carolina and saturated land in South Carolina along this river system create ideal conditions for flooding. Consideration should be given to improving water storage in this area. A regional basin or reservoirs that collect and store the excess water could be constructed and utilized and designed so that a lake or pond is created. The lake may provide recreational benefits, water supply, and/or hydroelectricity. Additionally, creation of a man-made lake in this area of the state could not only help alleviate a recurring

risk of flooding but provide the potential for a huge economic windfall for the area's residents and future investors and business owners/operators.

There are federally funded programs that may be of assistance. FEMA is encouraging communities to incorporate methods into eligible Hazard Mitigation Assistance (HMA) funded risk reduction activities by providing guidance on mitigating flood and drought conditions. FEMA has developed initial guidance on flood and drought mitigation activities including green infrastructure methods, expanded ecosystem service benefits, and three flood reduction and drought mitigation activities: Aquifer Storage and Recovery (ASR), Floodplain and Stream Restoration (FSR), and Flood Diversion and Storage (FDS).

The Flood Diversion and Storage (FDS) projects involve diverting floodwaters from a stream, river, or other body of water into a wetland, floodplain, canal, pipe, or other conduit (e.g., tunnels, wells) and storing them in above-ground reservoirs, floodplains, wetlands, green infrastructure elements, or other storage facilities. Many FDS projects are currently eligible for HMA funding as flood risk reduction activities.

OBJECTIVES

To develop a statewide multi-layered geographic information system (GIS) to improve the understanding of South Carolina river systems using LIDAR and other current available data sets.
To review the current status of South Carolina's dams and make recommendations.
To review the feasibility of a water diversion plan along the Pee Dee river system to include creation of a lake or reservoir and create a detailed plan to construct and implement.
To review the possibility of Federal Funds for the diversion program through FEMA's Flood Diversion and Storage Program.

DELIVERABLES

- Completion of a multi-layered geographic information system (GIS) about the state's river and dam systems.
- A report on the current status of the state's dams with recommendations.
- A detailed planning report on diversion of waters from the Pee Dee river system.
- A report on the availability of federal funds for the Flood Diversion and Storage Program.
- Completed outreach plan for stakeholders in the affected flood diversion area.

TIME FRAME

1Q '19 Status report on River and Dam GIS report progress.
1Q '19 Feasibility report on Pee Dee diversion program.
1Q '19 Feasibility report on availability of Federal Funds for diversion program.
1Q '19 Identification of stakeholders in proposed area affected by flood diversion.
2Q '19 Detailed plan draft of proposed flood diversion program.