

DEPARTMENT OF THE ARMY CORPS OF ENGINEERS

COMPLETE STATEMENT OF

**COLONEL LARS N. ZETTERSTROM
COMMANDER, GALVESTON DISTRICT**

BEFORE

**COMMITTEE ON HOMELAND SECURITY
UNITED STATES HOUSE OF REPRESENTATIVES**

ON

**HOUSTON STRONG: HURRICANE HARVEY LESSONS LEARNED
AND THE PATH FORWARD**

APRIL 9, 2018

Mr. Chairman and distinguished members of the Committee:

I am honored to testify before you today to discuss the authorities and responsibilities of the U.S. Army Corps of Engineers (Corps) during disaster response and recovery operations, focusing on Hurricane Harvey and its impacts to the Houston, Texas area. I am Colonel Lars Zetterstrom, Commander, Corps Galveston District.

The Corps conducts its emergency response and recovery activities under two basic authorities: the Stafford Disaster and Emergency Assistance Act (Stafford Act); and Public Law 84-99 Flood Control and Coastal Emergencies, 33 U.S.C. 701n, as amended (PL 84-99). Under the Stafford Act, we and other Federal agencies support the Federal Emergency Management Agency (FEMA) under the National Response and Recovery Framework. In this capacity, the Corps is the lead Federal agency for Emergency Support Function 3 (Public Works and Engineering), and Recovery Support Function (RSF) – Infrastructure Systems but works under the Federal Coordinating Officer's (FCO) direction. ESF-3 provides temporary emergency power, temporary roofing, debris management, emergency infrastructure assessment, critical public facility restoration, temporary housing, demolition/structural stabilization, and support to FEMA command and control Nodes/ESF3. The Infrastructure Systems RSF works to efficiently facilitate the restoration of infrastructure systems and services to support a viable, sustainable community and improves resilience to and protection from future hazards. Under PL 84-99, we prepare for disasters through planning, coordination, and training with local, state, Federal partners. The Corps can also assist state and local entities in flood fight operations or through implementation of advance measures to prevent/reduce storm incident damages. After the emergency incident, PL 84-99 authorizes the Corps to repair damage to Federal flood infrastructure projects, and work with states/municipalities to rehabilitate and restore eligible non-Federal flood infrastructure to pre-storm conditions.

When disasters occur, Corps teams and other resources are mobilized from across the country to assist the local Corps districts that are responding to the incident. As part of this mission, the Corps has more than 50 specially trained response teams, supported by emergency contracts, to perform the wide range of public works and engineering-related support missions I just described. Additionally, the Corps uses pre-awarded contracts that can be quickly activated for missions such as debris removal, temporary roofing, generator installation, and dredging.

2017 Hurricane Season: With regard to hurricane activity, 2017 was an unusually active season. The Corps was, and continues to be, involved in the FEMA-led Federal response and recovery operations in support of multiple incidents, including Hurricanes Harvey, Irma, and Maria.

Hurricane Harvey: On August 25, 2017, Category 4 Hurricane Harvey made landfall along the central Texas coast near Rockport, Texas, between Port Aransas and Port O'Connor and the President approved a Major Disaster Declaration for Texas. Large amounts of rainfall fell across the greater Houston metropolitan area causing record

flooding. FEMA tasked 27 total mission assignments totaling \$126 million to the Corps to assist in Hurricane Harvey response and recovery efforts. Since August 22, 2017, nearly 1,000 Corps personnel have been deployed to support response and recovery efforts. Currently, 120 Corps employees are deployed supporting 11 active recovery mission assignments. Active mission assignments total \$39 million and are expected to be completed no later than June 30, 2018.

Temporary Emergency Power: The Corps completed its temporary emergency power mission assignment in Texas by completing 45 generator installations.

Temporary Housing: In the 31 disaster impacted Texas counties, more than 3,100 applicants are approved for FEMA Direct Temporary Housing Assistance to date. The Corps is inspecting approximately 400 haul and install unit installations a day and certifying approximately 150 mobile housing units as ready for occupancy per week. To date, the Corps has assessed over 3,300 private sites (homeowner property) and over 1,200 commercial mobile home parks. In addition to installing units on individual home sites, the Corps assessed more than 330 potential group site locations and completed construction of improvements to an existing group site.

Debris Management Oversight: Debris teams led by Corps subject matter experts continue to provide state and county officials with technical assistance in defining requirements and monitoring debris removal and disposal operations in 10 counties.

Critical Public Facilities: The construction of critical public facilities temporary buildings are still ongoing. The Corps was assigned a mission to construct four public facilities - installation of two temporary schools, a city hall and a volunteer fire department. Two of these facilities have been completed and two are ongoing.

PL 84-99 Assistance: In anticipation of Harvey's landfall the Corps increased its flood fight supplies from 500 thousand to 2 million on hand including sandbags and sand barriers. The Corps provided over 1 million sandbags to local governments for Hurricane Harvey. The Corps is currently designing repairs for three flood damage reduction projects damaged during Harvey and assessing seven additional projects for repairs.

Navigation Restoration: The Galveston District is tasked with monitoring and maintaining over 1,000 miles of Federally-authorized navigation channels located within the Texas Coast. Sediment is naturally and continually deposited within these channels. The Galveston District monitors these channels through hydrographic surveys, and performs maintenance of these channels by removing sediment through maintenance dredging.

In a normal year, the Galveston District removes approximately 25 million cubic yards of regularly-recurring sediment accumulation (or shoaling) from Federally-authorized navigation channels, most of which results from normal tidal fluctuations, river flows, wave energies, and similar phenomena. This year, an additional nine million cubic yards

of shoaling – over one-third of the average annual requirement - was observed within Coastal Texas as a result of Hurricane Harvey. The storm was unique in that Harvey affected the majority of the 400-miles of the Texas Coast, and impacted nearly all of the navigation projects within the Galveston District's area of responsibility.

Galveston District staff was prepared to respond to Hurricane Harvey in part because the district has been an active member of the Gulf Coast Joint Hurricane Response Team since its inception in 2005. This team consists of representatives from Federal, State and local agencies that share roles in ensuring that maritime commerce and military vessels are provided safe access to gulf coast port facilities. Members include the United States Coast Guard, the National Oceanic and Atmospheric Administration, local Port Authorities, pilots associations, and the brownwater (tug) industry. In advance of each hurricane season, the team meets to discuss protocols and conduct monthly dry-run exercises, which simulate hurricanes entering the Gulf of Mexico.

Within days of Hurricane Harvey's landfall, the Galveston District had mobilized 15 pieces of dredging equipment to areas most-affected by hurricane-related shoaling. At the peak of the assessment phase, the Galveston District was managing 24 hydrographic survey vessels, and was able to perform assessment surveys of 95% of the high and moderate use channels within two weeks of Hurricane Harvey's landfall. The majority of draft restrictions were alleviated through maintenance dredging within the first 90 days of response efforts. However, Harvey-related dredging operations are still ongoing. A few channel restrictions persist, mostly within the upper reaches of the Houston Ship Channel. Repairs to dredged material placement areas and shoreline erosion are anticipated to commence in late Fiscal Year (FY) 2018 and extend through FY 2019.

To date, The Galveston District has received approximately \$65 million to address navigation damages from Hurricane Harvey.

Flood Risk Management: The Galveston District has partnered with the Harris County Flood Control District (HCFCD) since the 1930s on reducing flood risks in the Houston area.

Before Hurricane Harvey reached the Houston area, the District deployed staff to the Addicks and Barker (A&B) Reservoir Dams for 24 hrs/day condition inspections. The A&B dams were operated according to the Water Control Manual during Hurricane Harvey, which was an episodic, record-breaking rainstorm incident. It dropped approximately 36 inches of rain in the A&B watersheds, and as much as 51 inches in locations across the Houston region. The A&B Dams structures performed as designed during the incident. The District also deployed members of its staff to regional Emergency Management Centers in Houston during Harvey to communicate the risk of A&B Dam operations with agencies, media, and public, as conditions unfolded.

In addition to the Buffalo Bayou and Tributaries (Addicks and Barker Dams) flood damage reduction project, the Corps has or is partnering with the HCFCD on the construction of three additional flood damage reduction projects. Each of these projects

performed as designed to reduce flood risk during Hurricane Harvey. The District and HCFCD physically completed construction of the Sims Bayou project in July 2016. While the project did incur erosion damage, no flooding of structures occurred along Sims Bayou during Harvey. The Greens Bayou was funded to completion in 2016 and mitigation work is scheduled to complete in 2020. The Corps has also reimbursed HCFCD for completed construction on the Brays Bayou project.

Path Forward: In response to a 2013 dam safety modification study, the District is constructing a new outlet structure, parabolic spillway, stilling basin and outlet channels and grouting and abandoning the existing outlet structure at both the A&B. This action is underway after completing a dam safety modification study in 2012. The current construction work is scheduled for completion in April 2020. Additional studies to analyze the needs for rehabilitation of the A&B spillway structures and return flow ditches of the existing authorized project, to assess the potential for additional non-structural or structural measures to reduce the risks of flooding in the vicinity of A&B reservoirs, and/or to develop tools to identify best practices in flood plain management may be warranted. The Corps continues to discuss current and potential future efforts with the HCFCD.

The Corps remains fully committed and capable of executing its other Civil Works activities across the Nation despite our heavy involvement in these ongoing response and recovery operations. We also remain ready and poised to assist in future incidents as they may occur. This concludes my testimony and I look forward to answering any questions you might have. Thank you.