In continuation of one of the most active hurricane seasons in the Caribbean and Gulf of Mexico, Hurricane Maria began developing on September 13, 2017, just days after Hurricane Irma narrowly missed Puerto Rico and caused destruction to the State of Florida. Many members of TX-TF1 were already deployed in support of Hurricane Irma in San Juan, Puerto Rico, when FEMA requested they support operations for Hurricane Maria. As a result, teams officially switched missions to begin preparations of landfall of Hurricane Maria on September 17.

Hurricane Maria made landfall just south of Yabucoa Harbor in Puerto Rico on September 20 as a Category 4 hurricane with winds of 155 miles per hour. This made Maria the first cyclone to hit the island since 1932 and caused extreme devastation as well as a complete loss of utilities for the island.

In order to assist with search and rescue operations, FEMA activated 2 Type-I US&R Task Forces and 10 modified Type-IV US&R Task Forces. TX-TF1 was one of the 10 modified Type-IV US&R Task Forces activated on September 20, and departed for Puerto Rico the following day by military C-130 aircraft. The Type-IV Task Forces were modified to include Canine Search Specialist, Search Team Managers, and Structural Specialists, which are not normally part of a Type-IV Task Force.

The Type-IV team deployed and assisted locals across the island completing missions as required and requested. The team demobilized on September 28 and arrived back in College Station later that day. Finally, on October 6, the remaining members of TX-TF1 deployed in support of the IST Cache arrived back in College Station safely, with many of them having been deployed since Hurricane Irma began on September 6.