

AN ANALYSIS OF DROUGHT MANAGEMENT PLANS IN TEXAS

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ABSTRACT

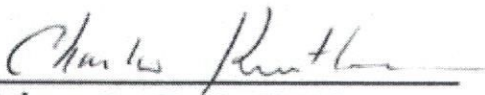
Water scarcity can be defined as a lack of enough water, or not having access to safe water supplies (Liu, Gosling and Yang). Due to population growth and shifts in rainfall over the coming decades, management of water resources may need to change. This thesis reports on how Texas deals with its current water scarcity to understand future options. While droughts cannot be prevented, the recent statewide Texas droughts in 2011 underscored the need for better preparation for responding to the impacts of drought. Having effective preparedness plans and an adequate supply is particularly critical to the proper management of water resources. (Division, 2005)

This thesis describes how regions within Texas address issues such as droughts, climate change, population growth, and how Texas's 16 Water Planning Regions respond to water shortage. Sections of the thesis examine drought preparedness strategies founding the 16 Regional Water Plans (2016). A Drought Contingency Plan (DCP) is a set of conservation measures that increase during different stages of drought. The Texas Water Development Board (TWDB) requires a DCP for any water entities that serves 3,000 connections or more. Emergency Drought Responses (EDR) are potential ways of increasing water supply during water scarcity conditions. The TWDB requires an EDR for any entities that serve fewer than 3,000 people or only have a single source of water supply. This report also includes data for water use in each Water Planning Region, to compare how much water the people in each region currently consume.

After compiling information on DCPs, EDRs, and water use, the 16 Water Planning Regions were compared, and the results presented graphically. Regardless of the climate or the available water resources, Texas drought contingency strategies are similar and follow a trend to further improve conservation methods across regions. Most entities report that demand, not supply, is the biggest threat to water availability. Most plans address conditions of severe drought, but do not plan for more than the previous worst-case scenario. This thesis concludes that Texas may not be able to continue to provide water to all its consumers during the next major drought. It remains

an open question whether Texas can increase supply from drought-proof sources, such as use of brackish groundwater.

Drought Contingency Plans (DCP) rely mostly on consumer conservation efforts. Emergency Drought Responses (EDR) emphasize increasing water supply. My original hypothesis was that drier areas of Texas would have differing strategies than regions with ample annual rainfall. However, this research has indicated that this is not the case: DCPs and EDRs are comparable across Texas. Small communities across Texas conserve water with the limited resources they have. Large cities are improving water conservation strategies; with population growth, their conservation measures may not be enough because there is a limit to how much can be conserved.



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