



TRAVIS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT 17

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Executive Summary of Severe Weather Event February 14-22, 2021

This report presents a summary of the events surrounding the February 2021 severe weather incident that affected the entirety of the State of Texas. Specifically, we will be examining the affect the storm conditions, system design, and actions taken, had on the operations of the Travis County Water Control and Improvement District (WCID No. 17) water production and distribution systems.

Travis County WCID No.17 is a nonprofit public utility, located on the southern shore of Lake Travis, servicing approximately 45,000 area residents. The District provides potable water to its customers from its Eck Lane Water Treatment Facility as well as the Mansfield Water Treatment Facility through a distribution network consisting of sixteen elevated and ground storage tanks, along with eight pumping stations. The District also provides sanitary sewer service to approximately 30,000 customers at four separate waste water treatment facilities which are serviced by a network of 108 remote pumping stations.

Beginning on 2/10/2021 a weather event was predicted for Central Texas that was expected to bring day time temperatures in the high 20's and evening temps as low as 10 degrees Fahrenheit. This was discussed and planned for at the District's regular Thursday (2/11/2021) Supervisors meeting. Plans were discussed to ensure emergency diesel generators were maintained and fully fueled, sites were weather prepared, on-call operations and maintenance staff would be available on both sides of the Mansfield Dam, four-wheel drive vehicles would be pre-staged for on-call personnel, and that on-call personnel would be prepared to stay overnight, as necessary, during the height of the storm. These are the District's standard pre-storm, cold weather preparations.

On 2/14/2021 a significant weather event moved across the WCID No. 17 service area. This storm resulted in extreme winter conditions that had previously never been seen in the District's service area. The storm worsened beyond all predictions and the area was inundated with significant snow fall and freezing rain, as well as multiple days with temperatures in the single digits and wind chills as low as -15 degrees Fahrenheit. In all, this severe weather event was comprised of three separate ice storms and two significant snowfalls where according to the National Oceanic Atmospheric Association's Austin office, the storm resulted in 50% more hours below freezing than the previous record storm, in 1951.

From 2/15/2021 - 2/22/2021 a series of weather related system breakdowns occurred, combined with a number of non-weather related component malfunctions and an unprecedented community water demand, which resulted in a loss of supply and/or pressure controls to Pressure Planes #1,5,7,8. This necessitated a Boil Water Notice be issued for the affected areas on 2/16/2021. Full system supply and pressure control was restored on 2/19/2021. System flushing and sampling was conducted on 2/20/21 and the Boil Water Notice was lifted for the affected Pressure Planes on 2/22/2021.

Prior to the onset of the storm, the District suffered a mechanical component breakdown that necessitated the shutdown of one of the two Eck Treatment Plants. This occurred less than 12 hours prior to the commencement of the storm. This outage was followed by the weather related breakdown of the Mansfield Water Treatment Facility flow control valves that prevented the operation of the Mansfield Water Treatment Plant. This in turn limited the District to only one of its three water treatment plants until repairs were affected. While this was taking place a significant increase in demand was developing due to customers' trickle flowing their home water systems along with freeze related customer piping breaks.

System demand had increased up to an unprecedented 300% of normal. Due to this demand being significantly in excess of the remaining Eck Treatment Plant's capacity, system reserves decreased rapidly. This was particularly the case in our most remote pressure planes #1 and #8, which services the Comanche Trail neighborhoods and the Serene Hills, Majestic Hills and Falconhead West neighborhoods respectively.

It was only through the tireless effort of our operations and maintenance staff, working around the clock in extremely adverse and challenging conditions for days on end, that we were able to prevent a much more extensive loss of supply and pressure control. Their efforts were directly responsible for maintaining water to 77% of our customers while recovery efforts were ongoing in the affected portions of the systems.

At the height of the event there was an 18-hour period where it was estimated that 23% of District accounts were without water pressure or supply. Following repairs to the two offline water treatment plants on 2/16/21 and 2/17/21, Pressure Planes 1, 5 and 7 were recovered on 2/17/21 and 2/18/21 respectively. At this point water supply and pressure was being maintained for 93% of our customers. Three specific areas were the most severely affected during the event; experiencing water outages ranging from three to five days. Pressure Plane #1 (servicing Comanche Trail), Pressure Plane #5 (servicing the Hudson Bend area) and Pressure Plane #8 (servicing the Serene Hills, Majestic Hills and Falconhead West areas).

Following the restoration of services, a full review of the event, system operations and the District's response was conducted and is summarized in this report. Primary, as well as secondary causal factors have been identified and along with these, immediate, short and/or long term corrective actions have also been identified and will be reviewed in detail in the attached report.

Over the course of this eight-day event the District's systems, operators and maintainers were faced with a series of challenges that have not previously occurred in Central Texas. The severity of the storm and its rapid onset were unprecedented. It is estimated that up to 16 million Texas residents were under a boil water notice or without water service during the height of the storm. In the Austin area alone this winter storm system broke 12 separate records for temperature, wind chill, snowfall, ice accumulation, and the duration of the event. State wide, water systems were hit with significant freeze related damage, unforeseen water consumption rates and significantly deteriorated road conditions.

While the performance of our operators and maintainers was admirable and deserving of recognition, the event in question highlights resiliency and design issues at WCID No. 17 that are correctable and will require investment moving forward in order to ensure we are providing the best possible product to our customers. The District recognizes that it is imperative these causal factors be properly addressed and long term measures enacted to maximize the District's overall resiliency within the constraints of sound economic practice.