Texas Floods and Austin’s Boil Water Crisis

LCRA Water Quality Advisory Committee

April 9th, 2019

Kevin Critendon, P.E., Assistant Director, Austin Water
Presentation Outline

• Last Year’s Unprecedented Flood Event in Central Texas and Resulting Austin Citywide Boil Water Notice

• Chronology of Events

• Austin Water Treatment Plant Impacts

• Lessons Learned
Austin Water Production Capacity and Demand

Water Treatment Plant Capacities

<table>
<thead>
<tr>
<th>Plant</th>
<th>Capacity (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handcox WTP</td>
<td>50</td>
</tr>
<tr>
<td>Davis WTP</td>
<td>118</td>
</tr>
<tr>
<td>Ullrich WTP</td>
<td>167</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>335 MGD</strong></td>
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</tbody>
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Four-Year October Average Demand - 140 MGD

Legend
- Dams
- Colorado River
- Highways
- Austin Water Retail Served Area
- Austin Water Wholesale Served Area
- Texas Counties
Dry Summer, intense rainfall, flooding, high turbidity

- Nearly a foot of rain along the Llano River basin, following a hotter and dryer than normal summer, washed a huge amount of silt, dirt and debris into the river.

- Location and duration of rainfall, soil conditions and time of the year may have played a role in high turbidity levels in AW supply.

- The Llano River flows into the Colorado River, which is the source of intake water for Austin Water’s three treatment plants.

- Around a week later almost another foot of rain fell in the Highland Lakes watersheds upstream from Austin and downstream from the Llano.
Dry Summer, intense rainfall, flooding, high turbidity

- On Thursday October 18 Austin Water treatment plants began experiencing high levels of turbidity.
- By Saturday October 20, raw water turbidity levels were 80 to 100 times normal, and higher than the plants had ever experienced -- at least on a sustained basis.
- The unprecedented levels of sediment clogged filters and slowed production while changes in water chemistry significantly also affected normal treatment processes.
- The plants began to produce water more slowly.
- Austin Water called on citizens to reduce water use

- Still, production capacity began to sink below demand.

- Austin Water officials became concerned that the plants could not supply enough water for maintaining fire flow while at the same time meeting turbidity standards.

- When this became clear officials decided to issue a precautionary citywide boil water notice, the first citywide boil water notice in Austin Water’s 100 year plus history. This was Sunday evening October
The City of Austin’s Emergency Operations Center had been activated days earlier to deal with the impacts of flooding. They were about to shut down, but went back into action for the boiled water notice.

- Restaurants, schools, and hospitals/medical facilities were priorities to contact.
- EOC also contacted bottled water suppliers and retailers.
- Boiled water order announced in a 6 AM press conference on Oct 22 with Austin Water Director, Mayor and City Manager
- Austin Water Director instituted emergency water conservation measures: no outdoor use of water; car washes and power washing shut down
• Austin Water set-up a 24 hour Department Operations Center (DOC) with video hook-ups to plants every six hours.
• Austin Water provided daily press briefings
• Local press were invited to view DOC and film
• On Tuesday, October 23 evening one of Austin’s treatment plants exceeded official turbidity limits – as anticipated when the precautionary boil notice was issued.

• Austin Water issued a required boil water notice under state law

• Austin Water provided support to Austin’s wholesale customers to perform their own required sampling and provide other data TCEQ needed prior to lifting the boil water notice

Barton Creek meets the dirty waters of the rain-swollen Lady Bird Lake on Tuesday October 23, 2018. [JAY JANNER/AMERICAN-STATESMAN]
• After repeated rounds of testing Austin Water met all standards and the Boil Water Notice was lifted on Sunday October 28 – with an announcement outside City Hall

• It is important to note that during the period of the boil water requirement, water sample testing revealed no presence of harmful bacteria in the water being produced. The issue was the inability to produce water that met the clarity requirements

• Austin Water was able to maintain strong chlorine disinfection levels in the drinking water supply throughout the entire boil water event

• No reported illnesses
Total Plant capacity - 335 MGD
Four-Year October Average Demand - 140 MGD
Sampling Sites

Legend

WatersSampleSites

color_
- Aqua
- Black
- Blue
- Brown
- Burnt Orange
- Gold
- Gray
- Green
- Indigo

Water Line by Zone

PR_ZONE
- Boosted
- Central
- Glenlake
- Hydro
- North, South
- Northwest A, Southwest A
- Northwest B, Southwest B
- Northwest C, Southwest C
- Lost Creek Reduced

Legend

- Lavender
- Lt.Green
- Maroon
- Orange
- Pink
- Purple
- Red
- Silver
- White
- Yellow
Lessons Learned

Reviews are underway, but following are some preliminary lessons learned:

• This event was consistent with climate change projections of more intense heat and more intense droughts, broken by more intense floods. (Texas will become more like it is.)

• We can do a good job of predicting the broad impacts of climate change, but it is harder to predict exact impacts

• Would call for emergency reduction in water use earlier – perhaps a turbidity trigger

• Consider changing in treatment process, chemical addition, possible capital investments to treat extremely high sediment water

• Considering purchase of potable water tanker truck
Q & A

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