



Texas Floods and Austin's Boil Water Crisis

LCRA Water Quality Advisory Committee
April 9th, 2019

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

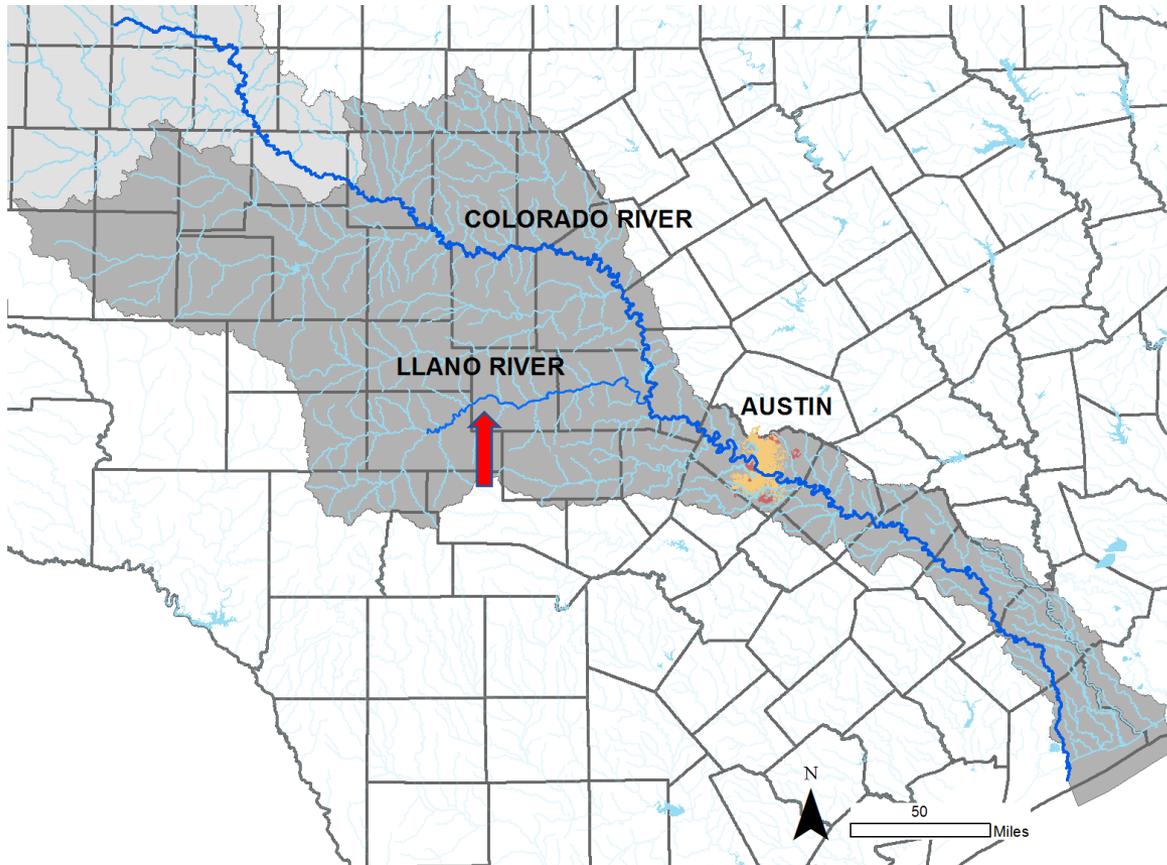


Presentation Outline

- 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



Colorado River Basin



[Environmental Stewardship](#)

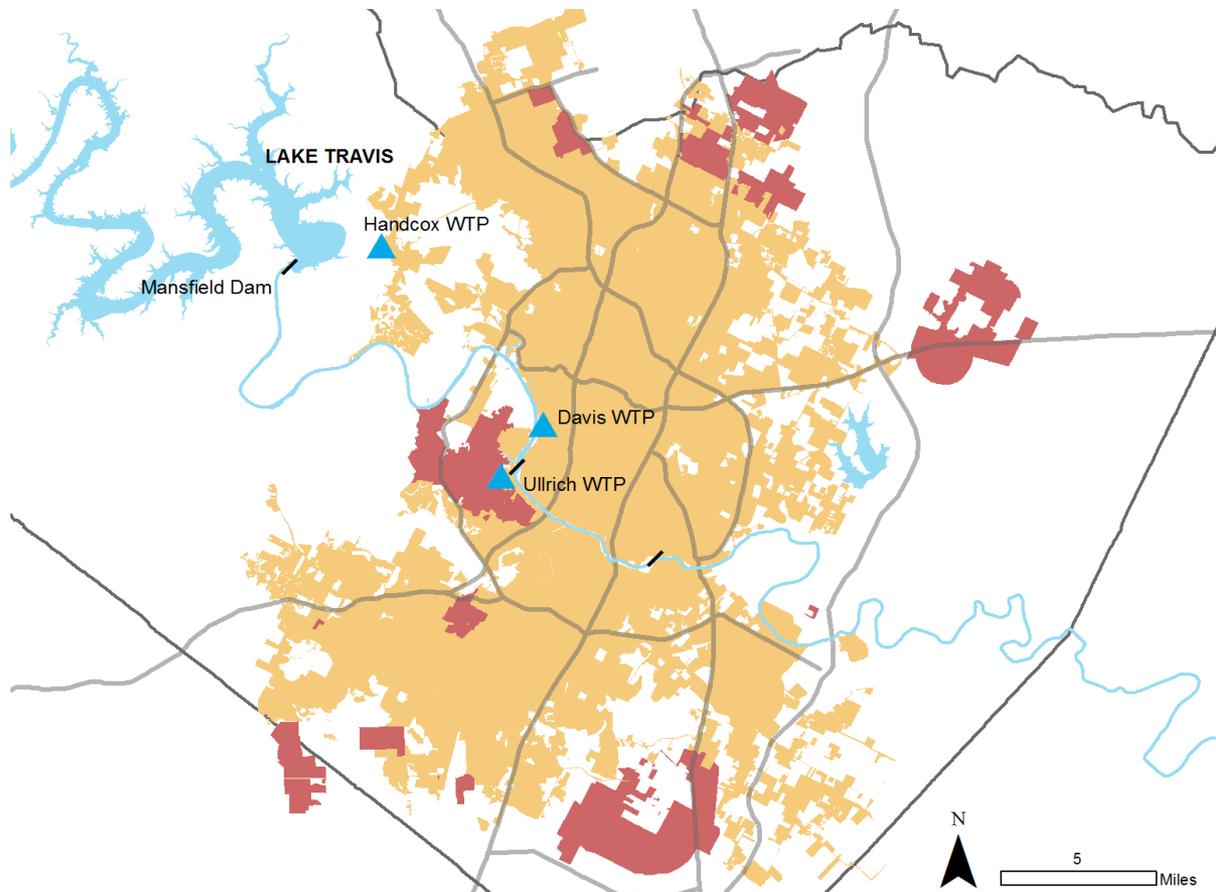
Legend

- Austin Water Retail Served Area
- Austin Water Wholesale Served Area
- Texas Counties

SUBREGION

- Lower Colorado-San Bernard Coastal
- Upper Colorado

Austin Water Production Capacity and Demand



Water Treatment Plant Capacities

Handcox WTP -	50 MGD
Davis WTP -	118 MGD
Ullrich WTP -	167 MGD

Total - 335 MGD

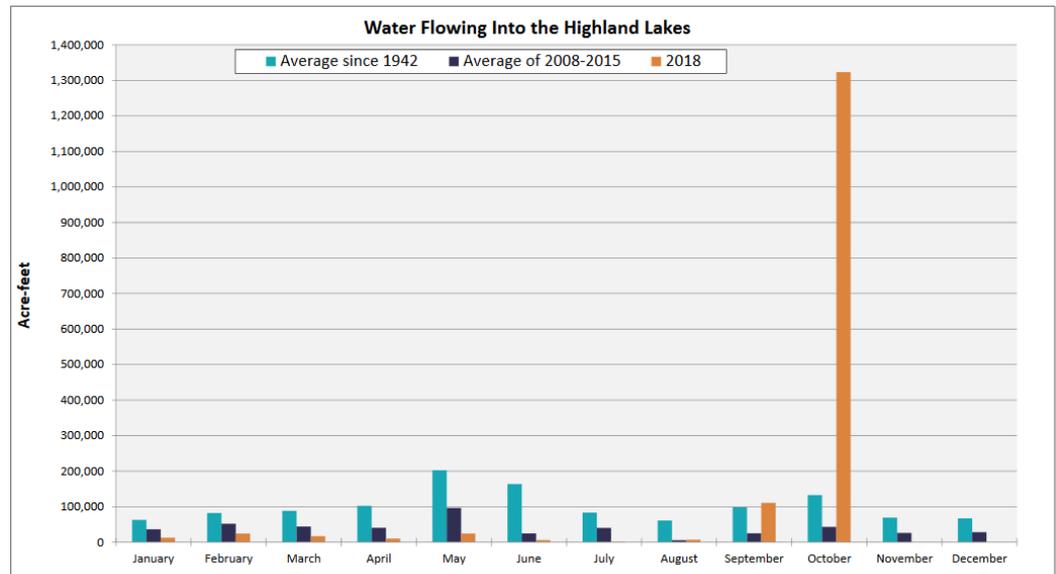
Four-Year October Average Demand - 140 MGD

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



* Inflows: the estimated amount of water flowing into the Highland Lakes from rivers and streams.

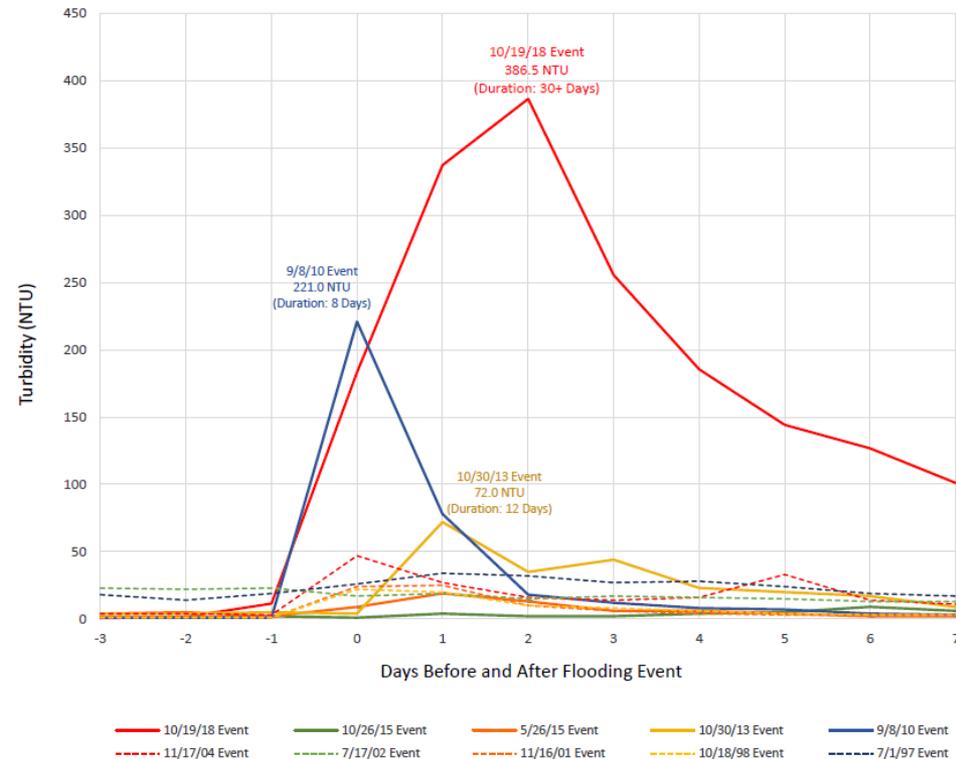
Data for 2017 and 2018 is preliminary and subject to change.

Period: October (acre-feet)	
Since 1942, October Average:	132,780
2008-2015, October Average:	43,010
October 2018:	1,323,094

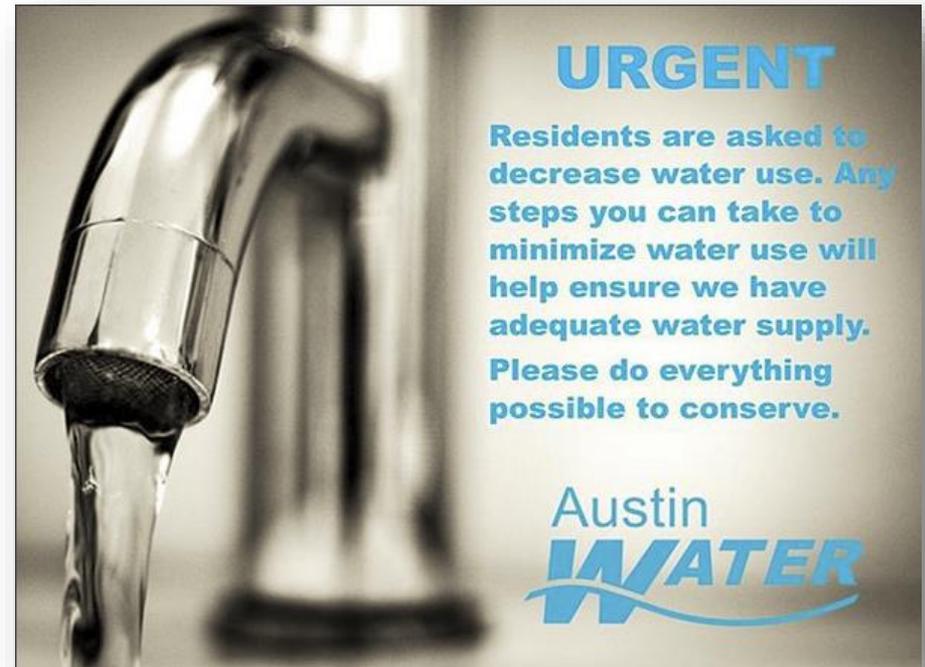
Dry Summer, intense rainfall, flooding, high turbidity

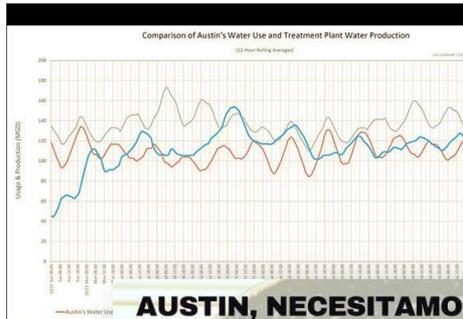
- On Thursday October 18 Austin Water treatment plants began experiencing high levels of turbidity
- By Saturday October 20, raw water turbidity levels were 80 to 100 times normal, and higher than the plants had ever experienced -- at least on a sustained basis.
- The unprecedented levels of sediment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

Ullrich Raw Water Turbidity During Flooding Events



- 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





BOIL WATER NOTICE FREQUENTLY ASKED QUESTIONS

Austin Water will issue a boil water notice as a precaution, even if the possibility of contamination is remote, to protect customers from drinking water that may have been contaminated.

State laws require that a Boil Water Notice is issued if a water systems has (or could have) become contaminated from water main breaks or loss of system pressure.

WHAT SHOULD I DO IF A BOIL WATER NOTICE IS ISSUED? Do not drink the water without boiling it first. Bring all water to a rolling boil for at least three minutes, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, food preparation, and water for pets. Boiling kills harmful bacteria and other organisms in the water that may cause illness. You should throw away ice made during the time the notice was issued (freezing does not kill bacteria).

IS THE WATER SAFE FOR WASHING DISHES, LAUNDRY, AND BATHING? The water is safe for washing dishes, but you should use hot, soapy water and rinse dishes in boiled water. There are no restrictions on doing laundry. The water is also safe for bathing.

HOW DO I PREPARE FOOD AND BABY FORMULA? Only use boiled or bottled water for cooking, making ice, washing fruits and vegetables, and making baby formula. If you must use water to make formula, use bottled water. If you don't have bottled water, use water that has been rapidly boiled for at least three minutes.

HOW LONG WILL THE NEED TO BOIL WATER CONTINUE? Customers should not stop boiling the water until they receive notice from Austin Water. Typically the need to boil water lasts for 24 to 48 hours, but can be longer. How long will depend on the conditions that caused the need to boil, how quickly the conditions are corrected, and how long it takes for laboratory results to confirm it is safe to return to normal water use. Austin Water will provide updates on the progress of corrective actions and how long the event is expected to last.

WHAT DO I NEED TO DO WHEN THE NOTICE HAS BEEN LIFTED? Austin Water will notify you when it is no longer necessary to boil the water. You should flush your water system by running all cold water faucets in your home for at least one minute, cleaning automatic ice makers by making and discarding three batches of ice, and running water softeners through a regeneration cycle.

WHY IS THE BOIL WATER NOTICE IMPORTANT? Inadequately treated water may contain harmful bacteria, viruses, and parasites which can cause symptoms such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly and people with severely compromised immune systems.

AUSTIN, NECESITAMOS TU AYUDA!

ESTO SIGUE SIENDO UNA EMERGENCIA

REDUZCA EL USO DE AGUA PARA EVITAR LA ESCASEZ DE AGUA

- ESTA PROHIBIDO TODO USO DE AGUA AL AIRE LIBRE
- EL USO DEL AGUA EN INTERIORES DEBE LIMITARSE A LAS NECESIDADES BASICAS
- SIGUE HIRVIENDO AGUA PARA BEBER Y COCINAR

MAS INFORMACION EN AUSTINTEXAS.GOV/BOILH2O



austin_water • Follow

austin_water While water production has recovered significantly, treatment plants are not producing as much water as they can. We are working to restore full capacity. Please keep water use down to help ensure the system can meet customer demands. <http://austintexas.gov/boilh2o>

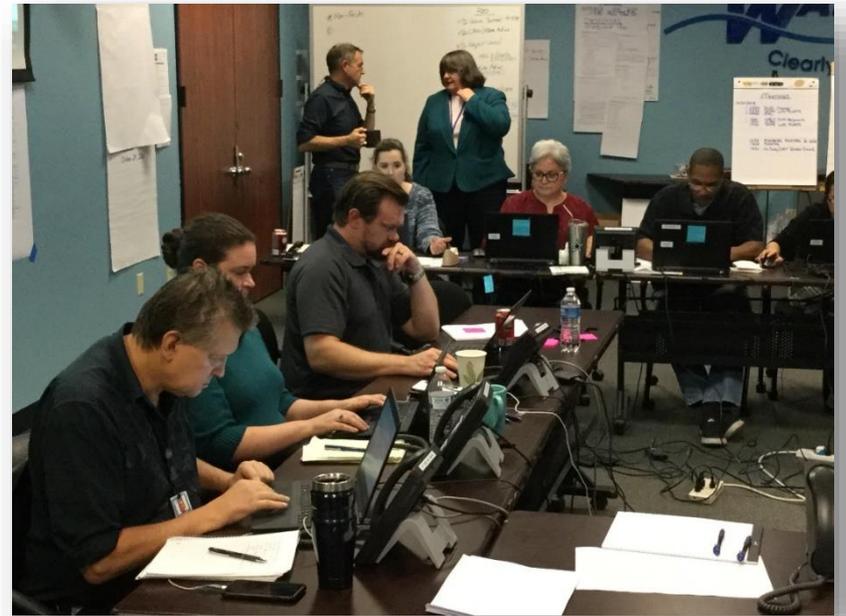
BOIL WATER NOTICE AND FAQs

Languages

- Information in American Sign Language (Video)
- المعلومات باللغة العربية
- 한국어로 보기
- Español
- 简体中文信息
- 用[繁體中文]提供的資訊
- Thông tin bằng tiếng Việt

- 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]

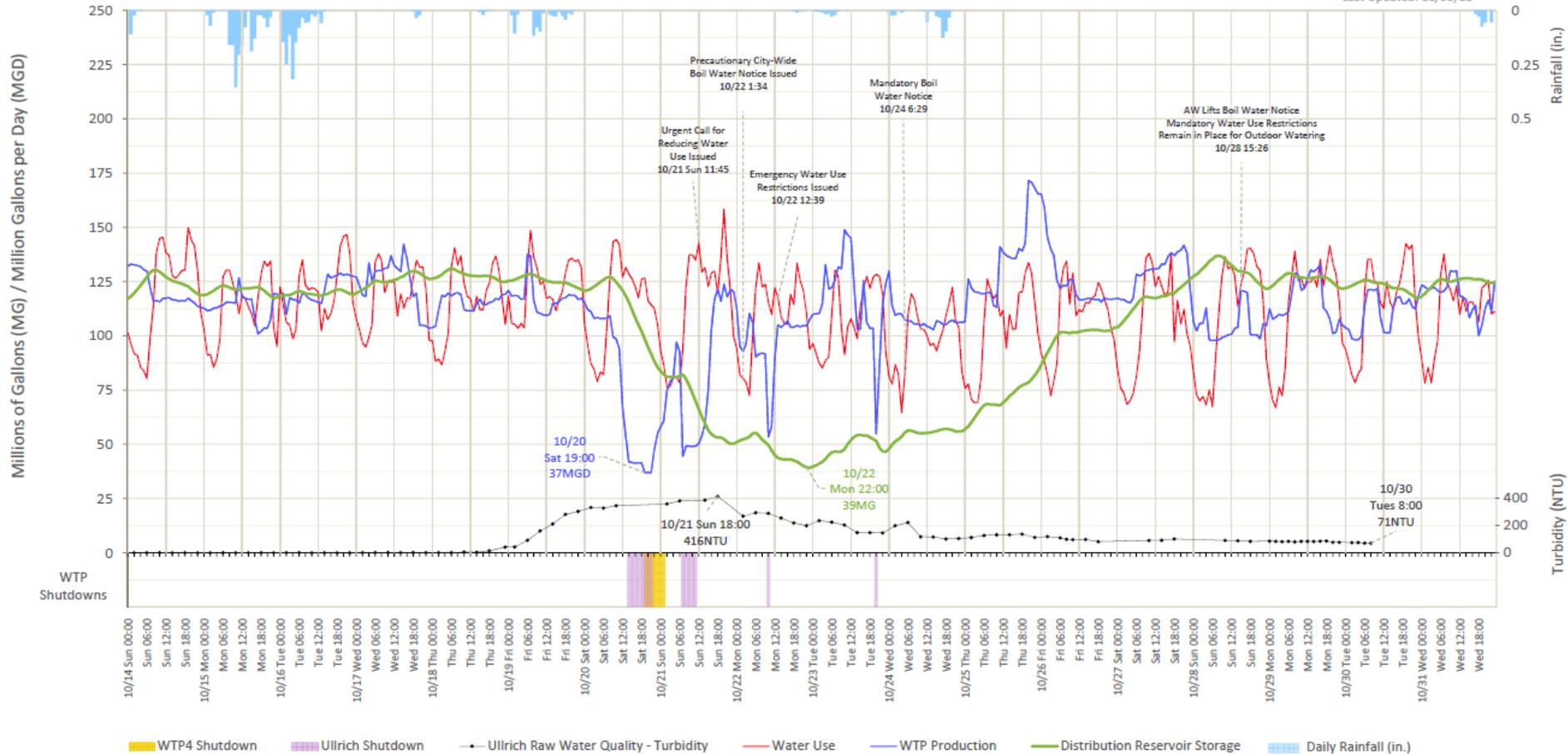
- After repeated rounds of testing Austin Water met all standards and the Boil Water Notice was lifted on Sunday October 28 – with an announcement outside City Hall
- It is important to note that during the period of the boil water requirement, water sample testing revealed no presence of harmful bacteria 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

Hourly Water Use, AW WTPs Production, & Water Quality

Last Updated: 11/08/18



Sampling Sites

Legend

WatersSampleSites

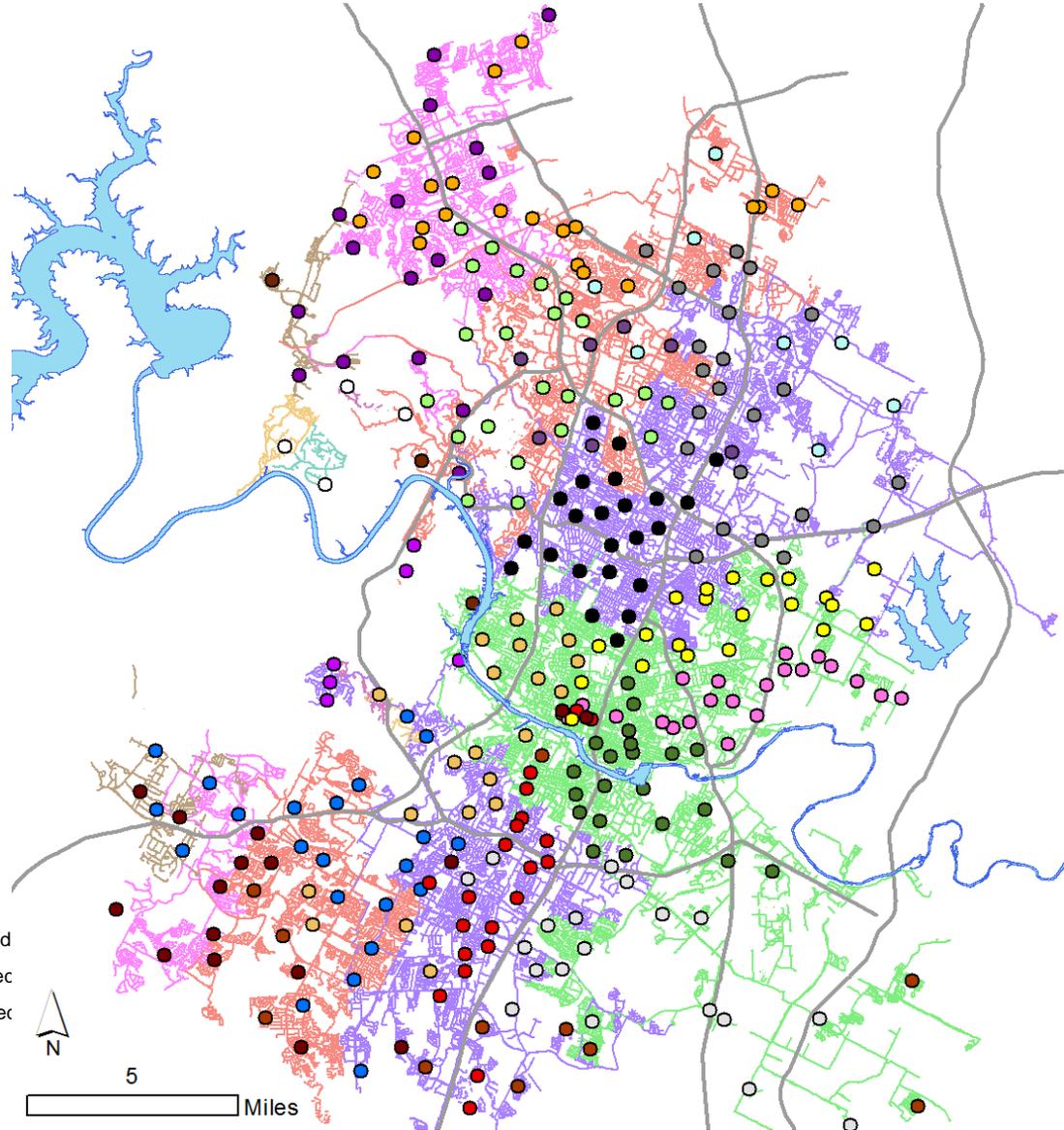
color_

- Aqua
- Black
- Blue
- Brown
- Burnt Orange
- Gold
- Gray
- Green
- Indigo
- Lavender
- Lt.Green
- Maroon
- Orange
- Pink
- Purple
- Red
- Silver
- White
- Yellow

Water Line by Zone

PR_ZONE

- Boosted
- Central
- Glenlake
- Hydro
- North, South
- Northwest A, Southwest A
- Northwest B, Southwest B
- Northwest B WBC
- Northwest C, Southwest C
- River Place
- South Barclay
- Central Reduced
- North Reduced, South Reduced
- Northwest A Reduced, Southwest A Red
- Northwest B Reduced, Southwest B Rec
- Northwest C Reduced, Southwest C Rec
- Lost Creek Reduced



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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