

To assist in facilitating City Council's consideration of Item 60 on the February 17, 2022 Agenda, Austin Water has provided responses to all questions posted on the Council Message Board as of 5:00pm on February 16, 2022. While this does not fully address all questions from Tuesday's briefing at the Special Called Council Meeting, Austin Water remains committed to a transparent and thoughtful response to questions arising from this recent boil water notice.

Questions from Mayor Pro-Tem Alter

AL-1) Why did staff keep adding the processed solids / lime longer than they should have?

This question is a primary focus of the investigation underway, which includes completing staff interviews and formalizing a report. Depending on the investigative outcomes, additional actions and timeframes could be required.

AL-2) How did the increased settled water turbidity go unnoticed and how did the filtered water turbidity go unnoticed for so long?

This question is a primary focus of the investigation underway, which includes completing staff interviews and formalizing a report. Depending on the investigative outcomes, additional actions and timeframes could be required.

AL-3) What kind of sensors do we have in place to monitor the turbidity in the open channel settled water trough - which connects the basin to the water filtration area? Can the processed solid additions be automatically turned off if the turbidity is high or trending high in the settled water troughs?

Settled water flows through turbidimeters continuously to provide readings in real time. Given the need to closely monitor and adjust the solids content of the basin throughout the seeding process, the plant does not rely on programming and automatic control to stop solids flow to a clarifier based on settled water turbidity.

AL-4) Explain what kind of automation we have in place for bringing a basin online. If that process is not automated, explain why we don't automate it. If automated, what kind of standard operating procedures (SOPs) do we have for manually checking for settled water and filtered water turbidity? Are SCADA controls involved in basin seeding and filling? Do the alarms go off to multiple people from the SCADA system? If the alarms are not answered, do supervisors get notified of the situation? Were any automated processes bypassed or turned off? Was this a failure in automation (SCADA)? If so, how do we fix it?

The basin filling is not automated; however, SCADA controls are involved. At this time, there was no known failure in SCADA. Given the sensitive nature of details pertaining to critical infrastructure, Austin Water is available to work with the City Council on how best to provide additional details on this answer.

AL-5) How many operators were working when the failure occurred and what is their level of licensing? Was the number of engineers working the recommended number?

Three operators, a typical staffing level, were working when the failure occurred. Each had the appropriate Surface Water Treatment Operator licensing as required by TCEQ. Process engineers are typically on site on weekdays during normal work hours.

AL-6) Were SOP's followed? If not, why not?

This question is a primary focus of the investigation underway, which includes completing staff interviews and formalizing a report. Depending on the investigative outcomes, additional actions and timeframes could be required.

AL-7) Please provide a list of all internal plant alarms for the week prior to the failure. Were there process alarms that notified someone of the issue, and if not, why not?

An initial review of the alarm list indicates that both visual and audible alarms occurred to notify staff onsite of the issue. Given the sensitive nature of details pertaining to critical infrastructure, Austin Water is available to work with the City Council on how best to provide additional details on this answer.

AL-8) Chain of command notifications: How quickly was the shift supervisor notified? How quickly was maintenance notified? How quickly was the head of water notified?

This question is a primary focus of the investigation underway, which includes completing staff interviews and formalizing a report. Depending on the investigative outcomes, additional actions and timeframes could be required.

AL-9) Equipment Failures: Were there equipment failures that led to process failure? Was that equipment part of a checklist that operators verify/validate? Please provide the daily, weekly, and monthly operator checklists. When was the last time dosing pumps, sensors, etc. associated with the failure were calibrated?

At this time no equipment failures have been discovered.

AL-10) What steps if any were taken to isolate the contaminated water? Was there an attempt to divert water back to the head of the plant? Is it possible to divert contaminated flows to storage basins and or back to the head of the plant?

It is possible to divert water back to the head of the plant. However, the rate of such a diversion is limited by the size of the pumps used to recirculate. Recycling such a large volume of water using even the largest pump would have taken several days. The best route for treated water out of the plant is through the clearwell, which is where the high turbidity water was contained. When the plant was taken offline, the clearwell was drained to eliminate some of the highly turbid water. This allowed Austin Water to refill with treated and processed water.

AL-11) Are there filter beds on the back side of the process? Why did these fail? Were some of them offline? Why does the city not have sufficient filtration redundancies in place to manage process upsets?

Ullrich is equipped with 18 filters. The number of filters that are online at any time varies depending on the amount of water being treated; some filters are always kept in reserve. Operational practice is to

rotate filters off-line before their performance deteriorates. During this event, the filters that were on-line were eventually overwhelmed by the high turbidity settled water. There were filters available for service, but the on-line filters were not removed from service when needed.

AL-12) What are you doing this week to make sure this can't happen again? What has already changed? What are the business systems that need to be put in place to make sure this never happens again? - manpower, automated systems, treatment changes etc.

Austin Water immediately met with staff at all three treatment plants to review the incident and has taken steps to increase system redundancies that include establishing proper setpoints and increasing the frequency of turbidity audible alarms, expanded notification for turbidity exceedances, and automatic shutdown of the filtration system when turbidities are exceeded. Additionally, Austin Water is implementing enhanced turn-over procedures that will aid in communications between shift changes, as well as the escalation of communications to plant superintendents, management, and executive staff when issues arise. Staffing level and additional training are business currently being reviewed.

AL-13) The past 3 boil water notices and the taste and odor issue from the zebra mussels were due to operational and asset management issues at Ullrich. What has been done to improve the operations and communication at Ullrich? What type of asset management plan is in place at Ullrich to ensure it does not happen again?

Past boil water notices have involved natural disasters (2018 Colorado River Flood, 2021 Winter Storm Uri). This recent event was the result of operational issues. After each incident, Austin Water conducted a thorough after-action analysis and took corrective action. Operations and communication at Ullrich have improved through documentation or updating of relevant standard operating procedures, additional training, and emphasis on communication of situational awareness. These activities are ongoing.

The asset management plan for Ullrich is similar to other major Austin Water facilities: it is data-driven and based on asset condition, criticality and upkeep. Its objective is to maintain assets at an acceptable risk level and plan infrastructure investments consistent with community and resiliency needs.

A bulleted list of improvements for each occurrence is provided below.

2018 Colorado River Flood:

- Instruments were procured and are operational at each Water Treatment Plant. Staff have been trained to run samples. Austin Water's Water Quality Lab verified routine maintenance with Zetasizer manufacturer on all three units.
- "Lessons learned" from each treatment plant have been incorporated into procedures that are implemented when there is a threat of flooding or a drastic change in raw water quality.
- Polymer feed system installation, training, and start-up are complete. Standard Operating Procedures have been developed, including polymer feed dosing levels.

- Design is complete, TCEQ approval for construction has been received, and the projects are advertised for contractor bids, due December 9. Handcox and Davis water treatment plants are equipped with emergency polymer feed systems that can be utilized if needed until construction of the permanent systems are complete.

2019 Zebra Mussel Event:

- Austin Water engineered and completed a system to control zebra mussel growth in our raw water piping infrastructure. We have an upgrade to our existing zebra mussel system in design that will switch from our current copper sulfate chemical application to a copper ion system that provides for easier maintenance.

2021 Winter Storm Uri:

- Repairs of all winter storm damage at Ullrich, Davis and Handcox water treatment plants is complete. Examples of repairs include broken piping, broken valves, cracked basins, and damaged chemical feed systems.
- Heaters, sand and deicing fluid was procured to assist with future winter storm response.
- Preventative maintenance procedures have been updated to more thoroughly inspect components that were impacted by the winter storm.
- Insulation of all exposed piping is complete.
- Winter storm standard operating procedures have been updated. Updates include procedures to protect infrastructure from freezing weather and temporarily pause non-critical treatment processes.
- Supplies have been purchased to enhance staff preparedness while sheltering in place at treatment plants during emergencies. Supplies include cots, bedding, hygiene products, potable water and ready-to-eat meals.
- At Ullrich, fully automatic transfer on the Austin Energy side requires the replacement of manual transfer switches on two existing primary feeds and one existing backup feed. The work on the backup feed is complete and the work on the two primary feeds will be complete in 2022.
- Electricians are now stationed at Ullrich during normal business hours, and a plan has been developed to station electricians at other treatment plants.

AL-14) Do we have SCADA or other automation failures happening within our treatment plants?

No, there are no other failures occurring within our plants.

AL-15) When was the last time that we hosted a peer review by high performing US water utilities or related associations to identify areas of needed improvement to our practices and facilities?

Austin Water participates in the Partnership for Safe Water, which is comprised of an alliance of six prestigious drinking water organizations:

- AWWA – American Water Works Association
- AMWA – Association of Metropolitan Water Agencies
- ASDWA – Association of State Drinking Water Administrators

- NAWC – National Association of Water Companies
- USEPA – U. S. Environmental Protection Agency
- WRF - Water Research Foundation

Questions from Councilmember Renteria

R -1) What is the current rate of attrition (by role/position) at AW? How does that compare to other similar departments?

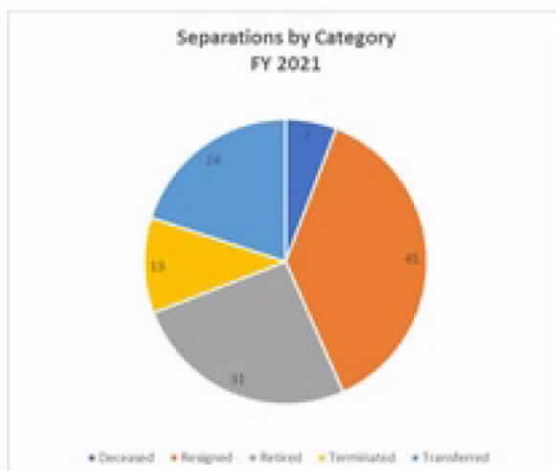
AW's overall attrition rate was 10.5% in Fiscal Years 21 and 20. Currently, we have 139 vacancies with 85 or 61% of those coming from Operations. The Operations program includes staff working in water and wastewater treatment plants and pipeline operations. In January of 2022, we saw the highest level of attrition, when 20 employees left the organization. 14 of these employees came from Operations. A more detailed analysis of attrition by role/position will require more time. We do not have attrition rates for similar departments readily available at this time.

R-2) Are attrition/retention issues contributing to the problems that have been occurring? If so, how?

Attrition/retention issues can create challenges to our organization because as we lose knowledge through retirements and other sources, we replace those individuals with less experienced new hires. It is very difficult to quickly train and onboard new employees. With attrition for FY22 Year to Date (YTD) on track to outpace attrition for FY21, it is very difficult to hire more people than are exiting the department or who are receiving internal promotions and creating new vacancies. Austin Water is working to compile reports showing average tenure of employees by job title/family. This analysis will require more time.

R-3) If we are seeing retention issues, especially in critical roles, why?

See the graph below for reasons for Employee Separation during FY21. Nearly 2/3 of separations were due to resignations and retirements. While Austin Water does not specify critical roles by job title, 72 of the separations in FY21 were from the Operations program area. See additional information in question 4 below.



R-4) Is recruitment of qualified staff an issue?

Yes, for the last several years the Austin MSA has seen unemployment rates as low as 2%; lower than anywhere in Texas and the US. Given the competition we have with other large-scale employers, we have seen smaller candidate pools, particularly since the beginning of the pandemic. We also lose candidates during the hiring process as well as post-offer due to entry level pay. We routinely place our job postings on external job boards, schools, and professional associations to reach as many potential candidates as possible. We constantly assess our hiring practices for continuous improvements.

R-5) Any potential measures that may be needed to address attrition/retention/recruitment issues, and the fiscal impact of those measures.

Austin Water is finalizing a market study where early findings indicate that for certain jobs, particularly in Operations, our pay rates lag other water utilities and are not competitive. We are also considering changes to our employee referral program, increasing our licensure stipend amounts, and requesting an increase in the amount of our shift differential pay. Fiscal impacts of these measures will be calculated as recommendations are finalized.