

Horsham

Boil Water Advisory

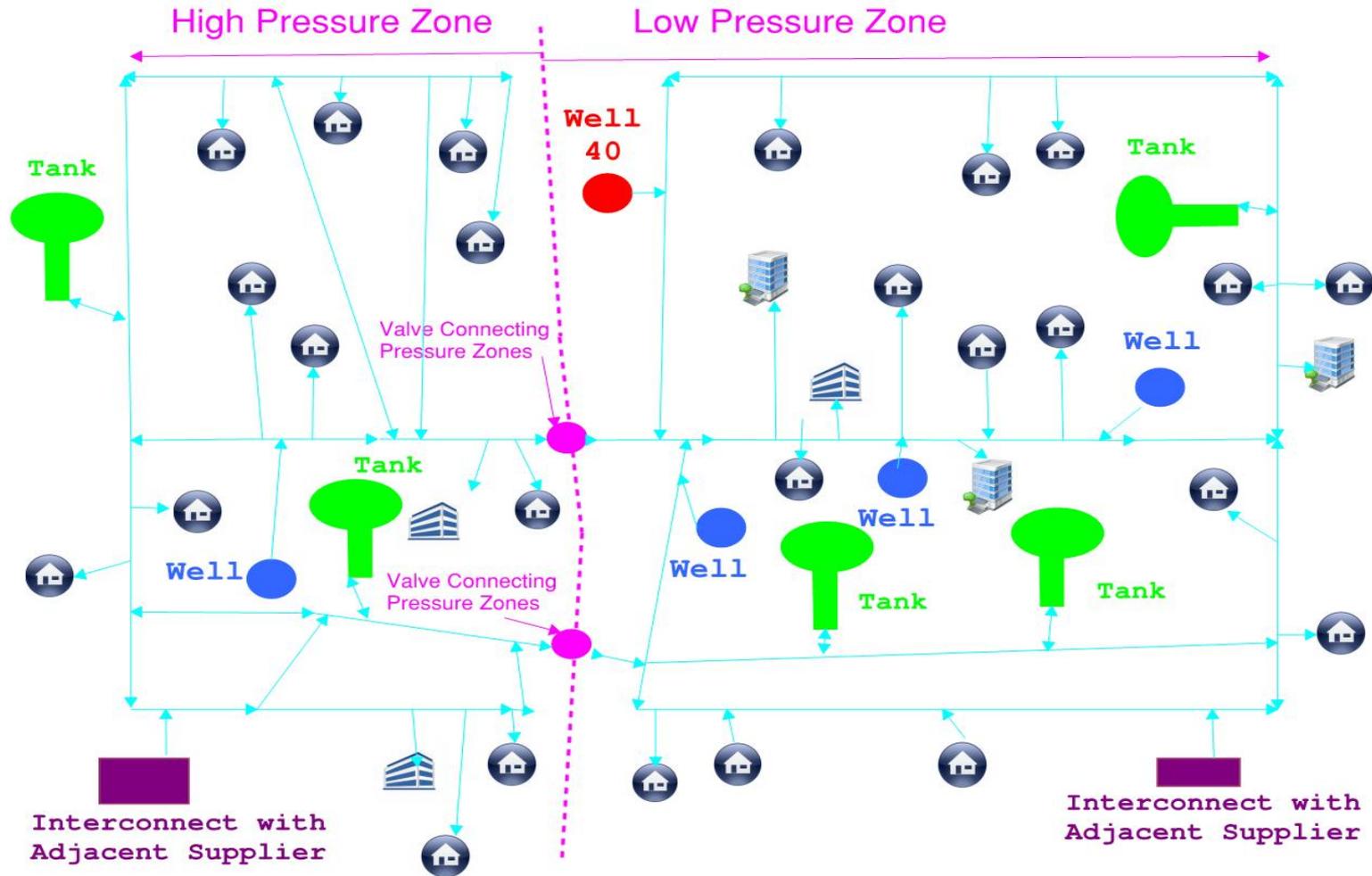
June 13, 2018

Boil Water Advisory

5/30/18-6/1/18

- For the first time in our 30+ year history, we were required to issue an advisory to our water customers, recommending that they boil their water as a precaution prior to consuming it
- Water from Well 40 was pumped to the system without chlorine for approximately 8 hours—4 hours longer than allowed by DEP
- Numerous samples taken on consecutive days confirmed that ***there was no contamination of the public water system*** as a result of this event
- The advisory lasted two days because DEP regulations require two days of consecutive samples. Each sample requires 24 hours to incubate

How Our System Works



How Our Water System is Operated

- HWSA is the owner and Aqua Pennsylvania is the certified operator of the system

Aqua

- Routine well operations
- Distribution system (main breaks, flushing, meter installs)
- Technical/customer services during & after hours
- Compliance monitoring
- 24-hour control system monitoring/emergency dispatch

HWSA

- Implementation of near- and long-term maintenance/capital improvement plans
- SCADA and instrumentation maintenance and upgrades
- Meter reading
- Billing

What Makes Well 40 Unique?

- Well 40 includes permanent treatment for removal of PFOS/PFOA, making it a valuable source of supply under our Short-term Plan
- Well 40 is 1 of only 6 Authority-owned sources operational under the Short-term Plan
- Well 40 supplies our system with 10% of our water
- As we implement the Long-term Plan, we strive to keep in operation all wells with treatment systems, including Well 40

What Happened?

- The Authority had been experiencing operational difficulties with Well 40 for several weeks. These difficulties *were not* related to the quality of water being produced by the well
- Because of the desirable water quality, we continued to use Well 40 while addressing operational issues. This required manual control of the well, making it susceptible to human and control system failures that would not have occurred had the well been able to be shut down
- While in manual mode, the well and chlorinator were being shut down at night. While doing so, the operator's actions inadvertently shut down the chlorinator without shutting down the well pump.
- An alarm was generated and acknowledged by Aqua, but an operator was not dispatched

Other Important Factors

- The failure occurred overnight when demand is low
- Due to low demand, tanks were filling so the majority of Well 40 water was mixing with chlorinated water from 6 other sources
- As part of the Short-term Plan all active wells are currently being operated at disinfection levels well above minimum requirements

System Safeguards

- Normally, multiple layers of operational control are in place to prevent a disinfection failure
 - Control system synchronizes the operation of the well pump with the operation of the chlorine pump
 - Control system shuts the well down when chlorine is low or not present
 - A phone alarm is placed to the Aqua control center
 - An operator is dispatched

What has HWSA done?

Additional Safeguards

- Engaged outside consultant to lead a forensic analysis of the events and identify corrective actions
- Instituted redundant emergency call-out parameters
- Created additional ad hoc control system activity reports
- Reviewed regulatory reporting requirements and procedures with staff
- Submitted public notification certification to DEP

What has HWSA Done?

Our Public Notification System

- This advisory was the first in our history, and it exposed weaknesses in our public notification system
- Verification that the well did in fact pump continuously > 4 hours without disinfection took time
 - Process was complicated by the fact that the well was being operated manually
 - The system is monitored and data is logged continuously, but technical support was required to access the data
- Data gaps from equipment and personnel increased the incident response time

Public Notification Improvements

- Outbound call system has been transitioned to new platform
- Numerous sources of resident contact information are being integrated
- Outreach to obtain customer contact information will be expanded
- HWSA Facebook, Twitter social media accounts have been established (to be launched this week)

What has Aqua done?

- Aqua's control center has added a separate log book specifically for Horsham in which:
 - all alarms will be recorded, along with the action taken
- All HWSA alarms must be responded to with documented action (recorded in custom log book)
- HWSA must be notified of all alarms
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- Developing a joint Aqua/HWSA team to clarify roles, responsibilities to improve communications

What Remains to Be Done?

- Resolve operational issues at Well 40 and return well to standard operational status
- Conduct third-party inspection & evaluation of control system
- Develop protocol/chain of custody for manual operation of wells
- Update & expand emergency response plan
- Establish provisions for Authority personnel to be informed of after-hours emergencies and available to answer customer calls as necessary

Looking Forward

- As a result of the inconvenience and disruption of the boil water advisory to our customers, the Authority will grant a 3-day credit to all impacted customers
- A comprehensive review of the events leading up to and throughout the recent advisory, including weaknesses in the notification and communication process, is actively in process
- We will explore every opportunity to improve the service we provide
- Every corrective action necessary will be taken to minimize the risk of a recurrence