



THE YORK WATER COMPANY

200¹⁸¹⁶
YEARS₂₀₁₆

"THAT GOOD YORK WATER"

Chapter 109 Update

Water Supplier Challenges and Unintended Consequences

Jeffrey R. Hines, P.E.
President and CEO
The York Water Company
jeffh@yorkwater.com
D: 717-718-2953

Chapter 109 Current

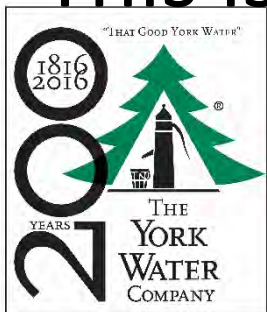
Current distribution system disinfection level (for chloramine systems), must be ≥ 0.02 mg/l total chlorine.

Chapter 109 Draft

Increase to ≥ 0.5 mg/l total chlorine.

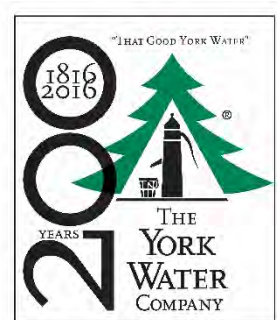
.02 \rightarrow 0.5 mg/l

-This is a 25 time increase in disinfection



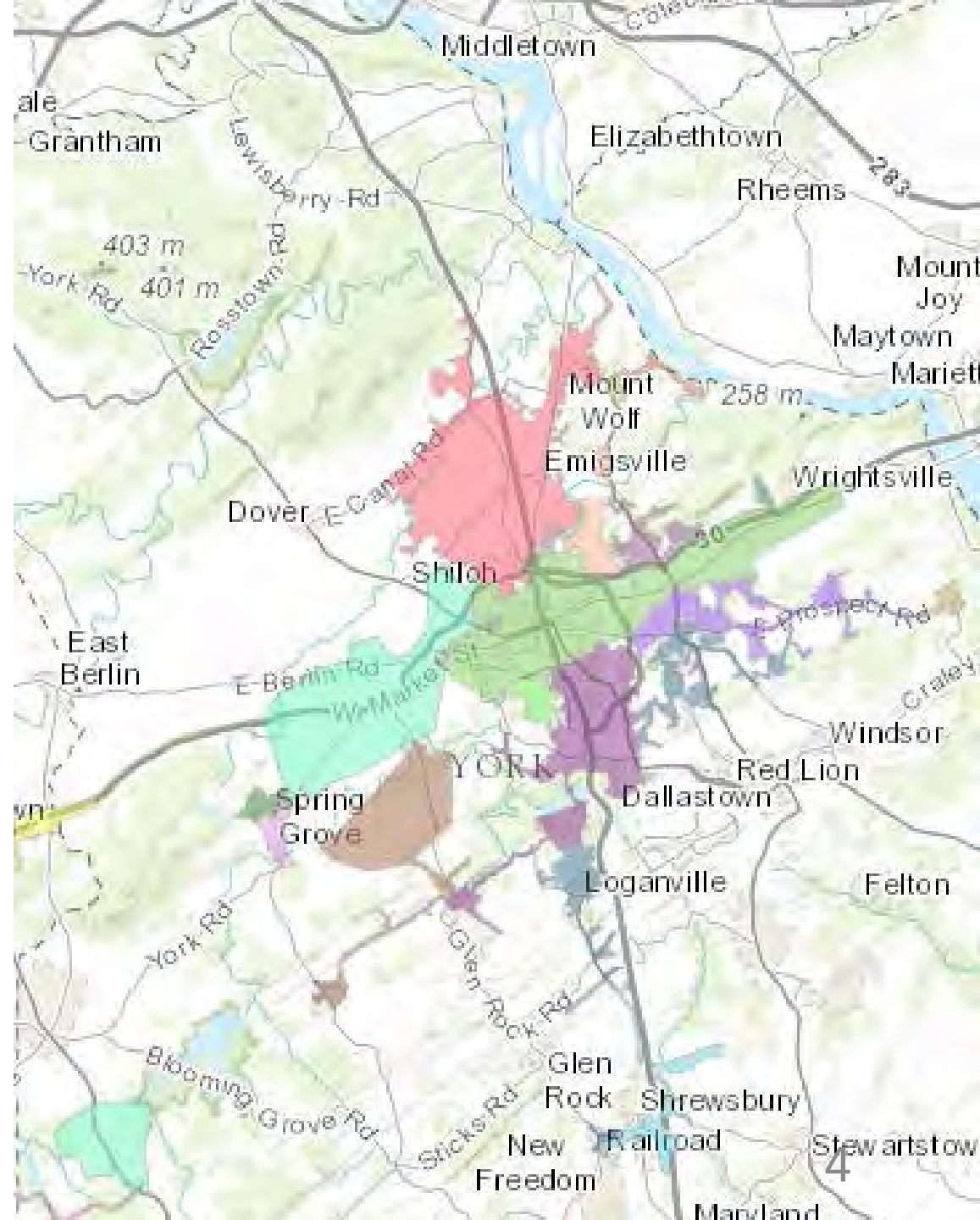
What is the impact on water systems?

- You have 2 options:
- Must greatly increase residual
- 1) Must increase the entry point
- 2) If system has dead ends, etc., must boost chlorine and/or increase flushing to insure .5 mg/l is met 100% of the time.



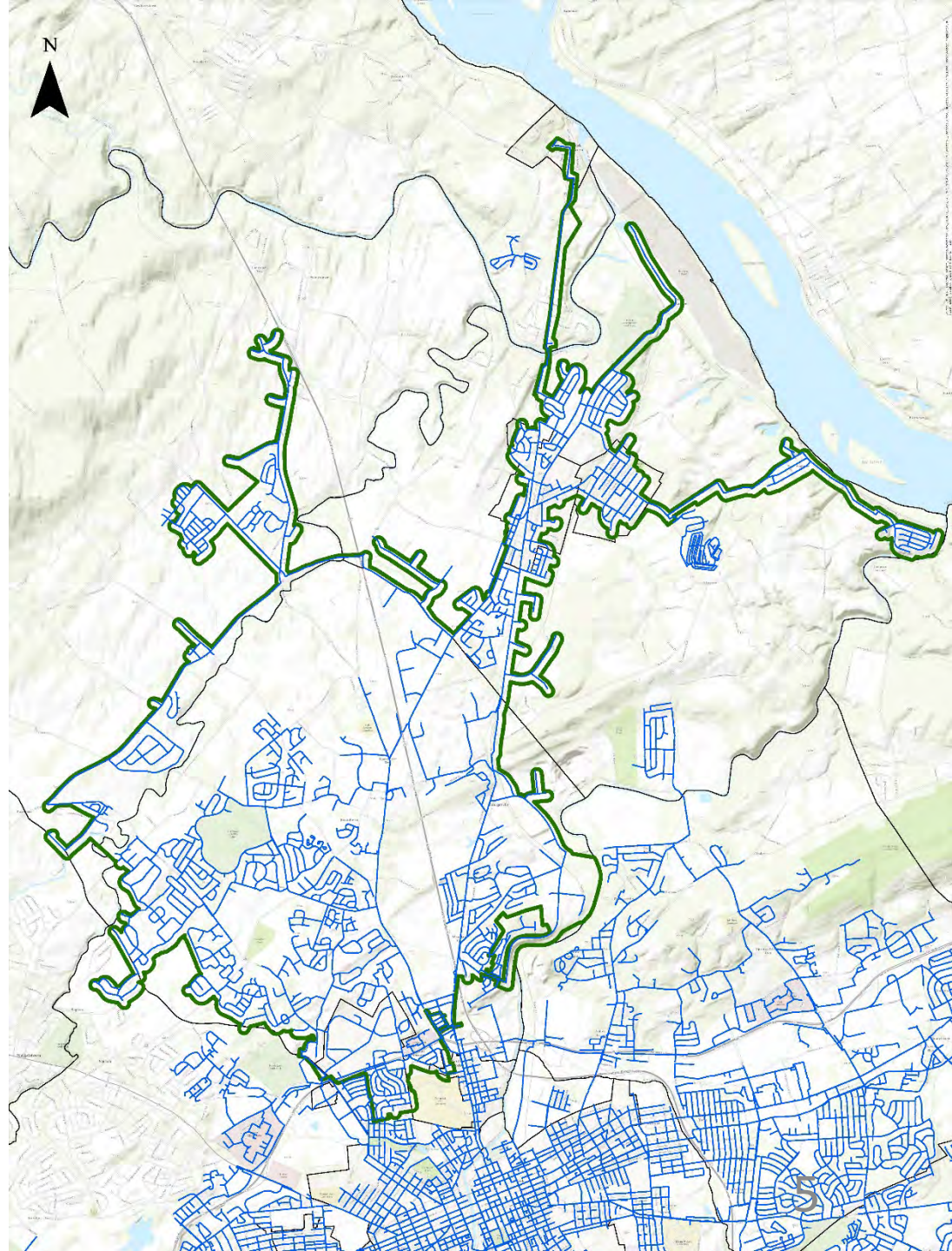
The York Water System

- One WTP
- 21 repump systems
- 29 Booster Stations
- 31 Storage Tanks
- 5 chlorine boosters



One of York's 21 repump systems:

- It serves about **15,000 people**.
- **~120 miles** of pipe
- Conducted a preliminary assessment of residuals during peak summer months.
- Currently always exceed the minimum **.02 mg/l**.
- However, large areas periodically drop below **0.1 mg/l**
- This is **5 times higher** than the current minimum, yet only **1/5 of the proposed minimum**

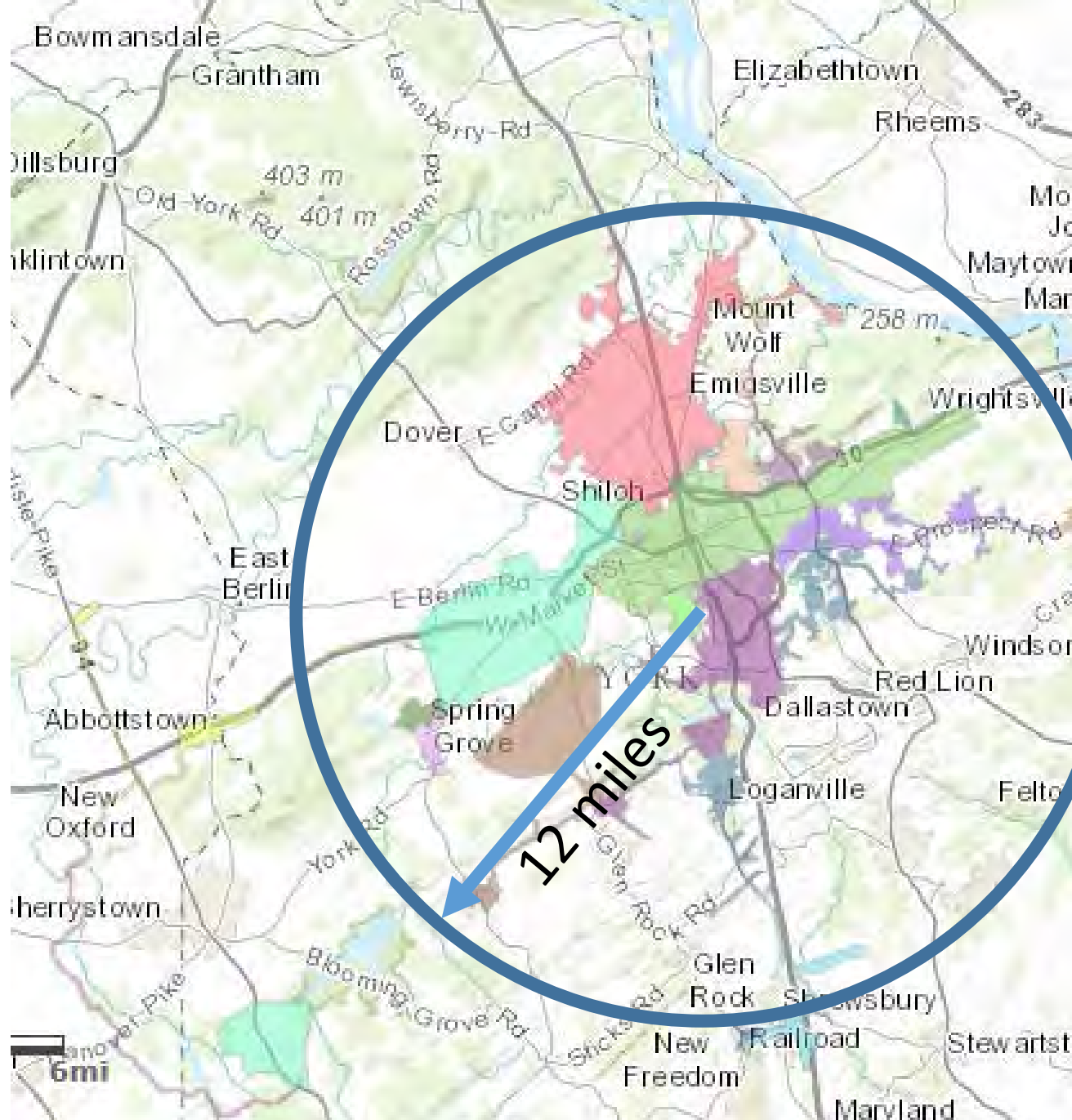


Currently disinfection residual starts at the Filter Plant at about **2.0 mg/l** and can drop to **below 0.1 mg/l**:

- Long parallel pipe networks designed to provide adequate fire flow, reduce ends, provide redundancy
- Pipes have long residence time
- Chlorine decays over time



- Avg. Distance from WTP to edge of service area: 12 miles
- As the “pipe flows” this becomes ~15 miles
- Water generally will pass thru at least 1 water tank, and sometimes **up to 4 water tanks!**
- The “age of the water” when it reaches these customers may be **2-14 days old.**
- There are now 5 rechlorination stations to boost residual
- The current system has been designed and built over many decades to **exceed that .02 residual** in all parts of the system



One option (the obvious one):

Increase residual as the water leaves the WTP.

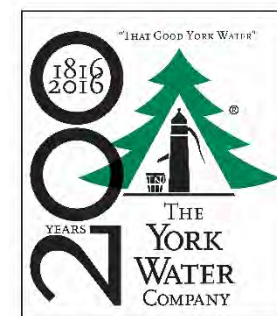
- Currently enters the system at about **2 mg/l** total chlorine. **We've used chloramines since 1942.**

- The maximum acceptable entry point residual is **4 mg/l**.

- We had a high chlorine demand this winter where the entry point was about **3 mg/l**. The taste and odor complaints from our customers was **wide spread**.

- This also increases the DBP risk, which we've all worked extremely hard over the **past two decades** to minimize.

- This also makes the water more aggressive and may result in numerous other issues within the system. **(EX: Lead & Copper)**



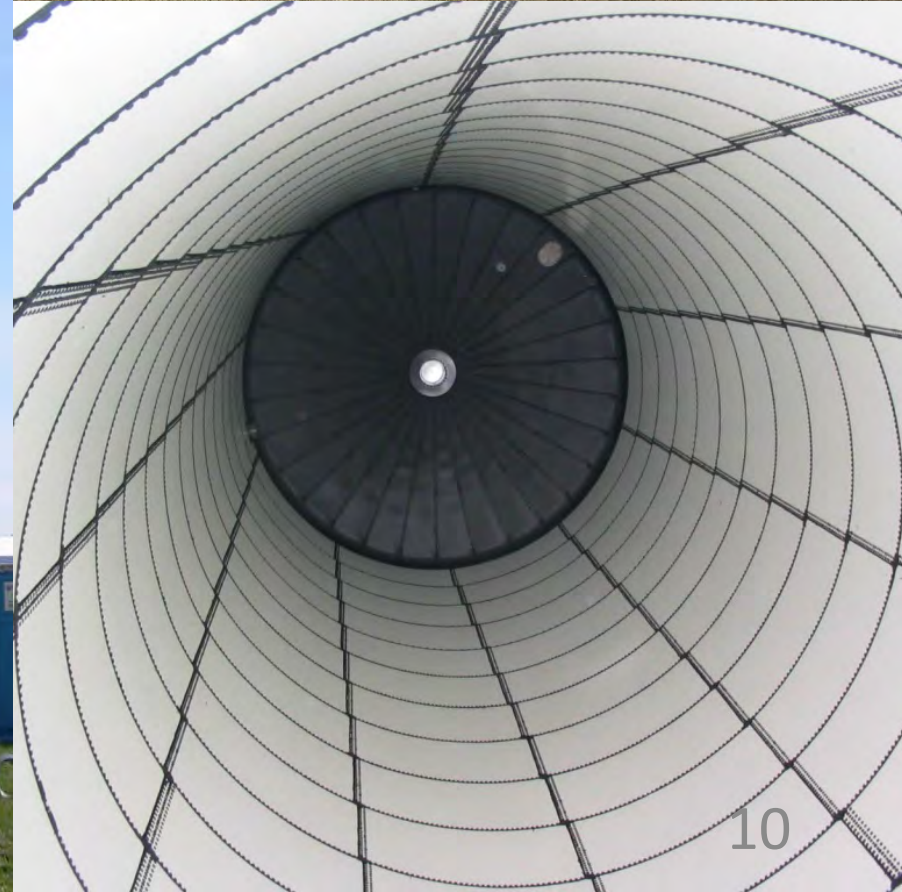
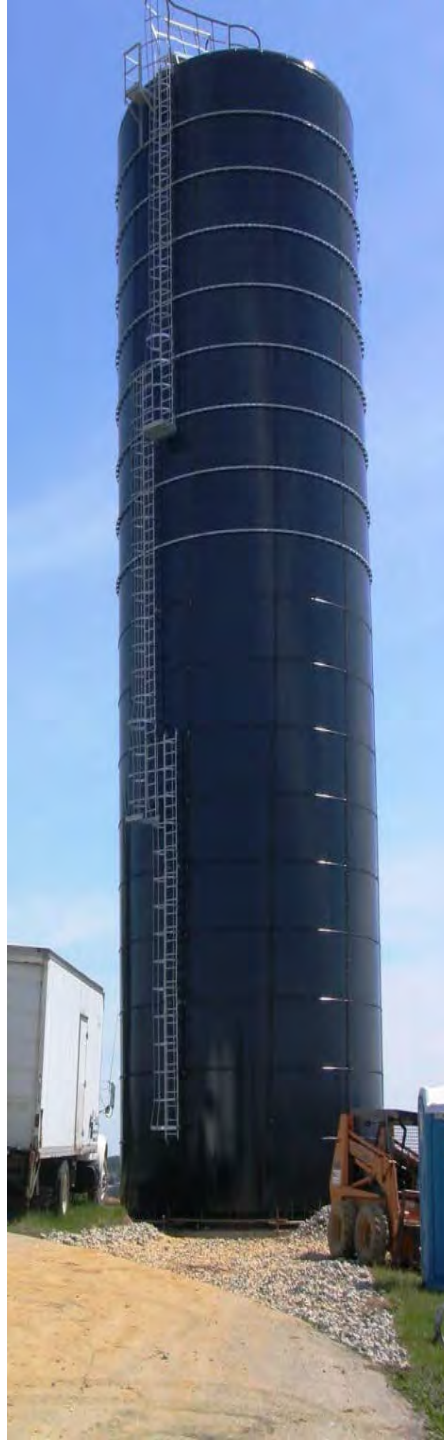
So, Option 2:

Once the water has left the WTP, your only option is to :

- a) Boost the residual, or
- b) Flush the system to turn the water over and maintain higher residual

The consequence with boosting residual:

1. Buy land for booster station (\$10-\$20K)
2. Design, permit, and build (\$50-100K)
3. Backup genset (\$50K)
4. Chlorine feed (\$25K)
5. SCADA (\$25K)
6. Total: ~\$200,000



The consequence with flushing water:

1. Establish flushing protocol
2. Install auto-flush or have an operator manually flush
3. Flush numerous areas of the system to maintain residual
4. Flush frequently

- Wastes water
- Cost for equipment
- Cost for personnel
- Ironically, must dechlorinate flushed water to avoid DEP clean water violation
- Bad PR, may damage property, erodes public confidence, etc.

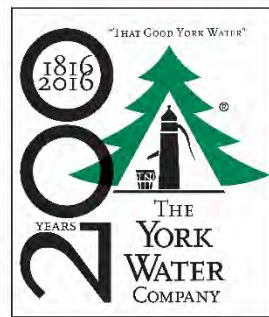


So, with this impending rule moving very quickly, we gathered our internal staff to discuss how we embrace these proposed rules.

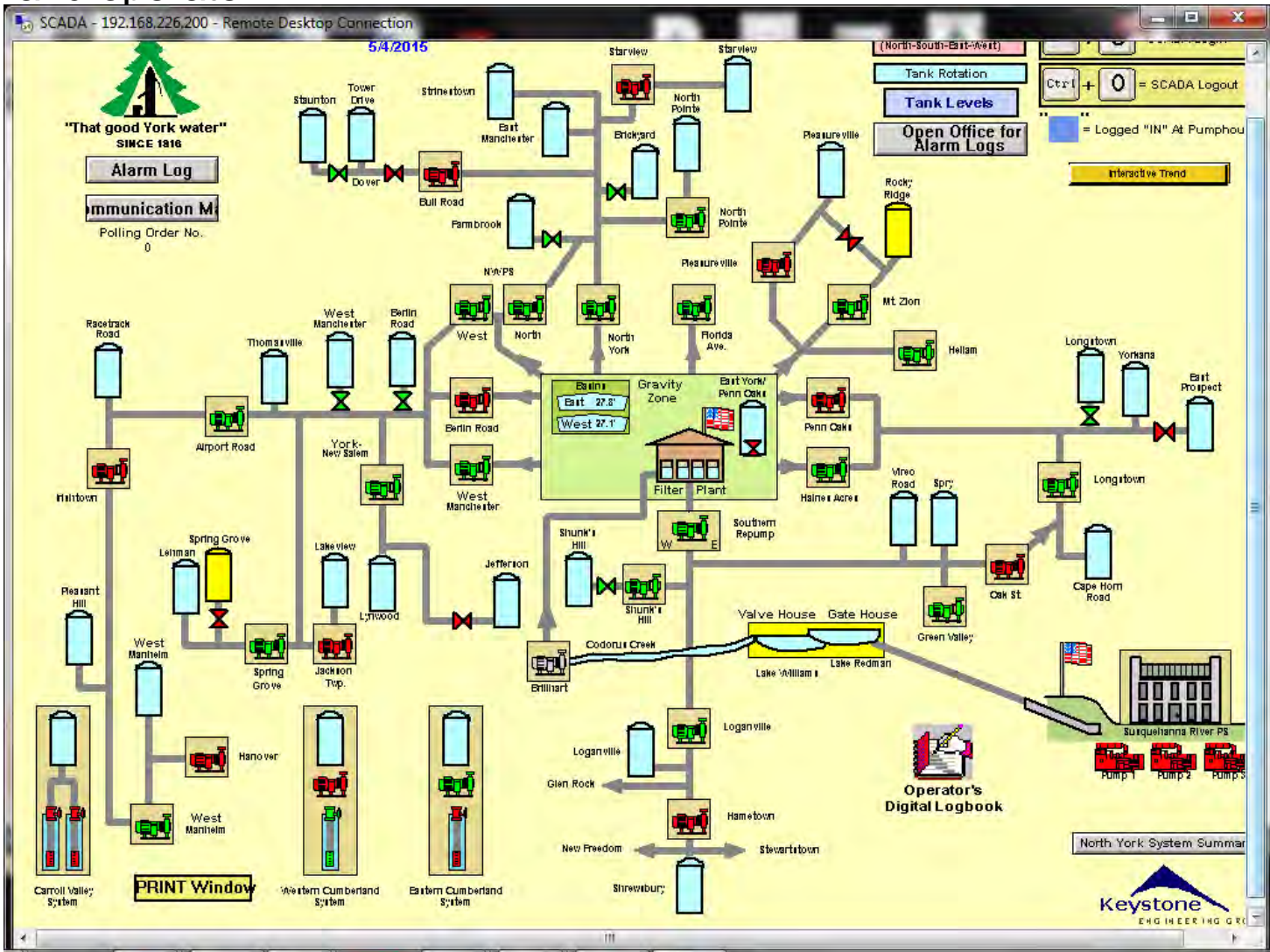
At York Water, like many of the professionally managed water utilities in this room, we always strive to stay ahead of the regulations so that we're ready to go when the rules become final. We take our Company motto: "**that good York water**" very seriously.

However, every other rule that we've embraced since the **Safe Drinking Water Act** was implemented, and even before that, there has been a reasonable approach to meeting the regulation.

We've determined in the brief few months we've been looking at this, that its simply not possible to put a reasonable solution in place to achieve this rule as proposed.



We estimate that to achieve this requirement York Water would need to permit, design, construct, and maintain **20-25 new chloramine booster stations** throughout our distribution system. So, in addition to the 61 distribution facilities we currently have permitted and operated, we'd need to add 20-25 more, most of which would require acquiring land to start. So that's a **40% increase in the number of facilities** we need to build and operate.



Operating this many additional **unmanned chloramine booster stations** greatly increases the risk of a malfunction that could cause an **overfeed** of chemical into the water system, or a **release** of chemical in residential neighborhoods.

Even with this additional disinfection capacity, there would **still be low turnover areas** within our distribution system that would require an extensive flushing program to maintain this new residual.

Chlorine leak that caused in Lower Providence evacuation under investigation



CAPEX

To construct 20 chlorine booster stations would cost approximately \$2-4 million dollars.

Unfortunately, since our distribution systems are already built, these facilities would need to go into **residential areas**, many of which are already built out. So even finding some space to properly build would be extremely difficult. (not to mention public pushback)



O&M

We estimate that we may need to flush **200 ends** on a routine basis (100 GPM for 2 hours) during periods of low residual (possibly many more ends may need flushing) [50 mg/year]. We would likely need to hire **3-5 additional certified operators** just to flush the water mains and maintain the additional chloramine booster stations.

Consequence?

We estimate the initial cost of implementing just this portion of the proposed rule would be in **the \$2-\$4 million range**, take several years to site, design, permit, and build, increase **annual operating costs by \$500,000**, and create the unforeseen consequences we've described above. (and we haven't even discussed loss of public confidence when they begin receiving Tier 2 notices)





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Jeffrey R. Hines, P.E.
President and CEO
The York Water Company
jeffh@yorkwater.com
D: 717-718-2953