Washington has 2 Water Treatment Plants. Plant 1 is off of Main Street and feeds the low pressure zone. Plant 2 is on Constitution and feeds the high pressure zone. There are currently three Pressure Reducing Valves (Dallas, Bus 24, and Hillcrest) that are intended to separate the two systems and act as an emergency interconnect between our two systems.

- The raw well water at plant 1 has more ammonia, and thusly was designed to use chloramine as the disinfectant. Chloramine is a combination of chlorine and ammonia.
- The wells at plant 2 had lower levels of ammonia and thusly were designed to use free chlorine, which just means you add chlorine until all ammonia is oxidized into nitrogen gas.

In July of 2019, the IEPA passed new rules governing water quality.

The new rules required

1) a minimum free chlorine residual of 0.5 mg/L or a minimum combined chlorine residual of 1.0 mg/L (around double as was required previously)
2) Community water supplies must monitor chlorine levels at different points in distribution system
3) Community Water Supplies must not mix water sources with free chlorine and combined chlorine residual.

With the new rules also came the need for City's to put together a nitrification action plan if they are using chloramine as a disinfectant. The water quality study was proposed to check the chlorine levels throughout the plant as well as in the system and also to develop a nitrification action plan. One part of a nitrification action plan is to put a procedure in place to perform a free chlorine burn to remove the nitrates and nitrites from the system. This involves increasing the chlorine levels past the breakpoint and disinfecting with the free chlorine. Our Plant 1 does not have the ability to add enough chlorine to perform this currently, so modifications would need to be made to the plant. Upgrade costs are estimated around $250,000.

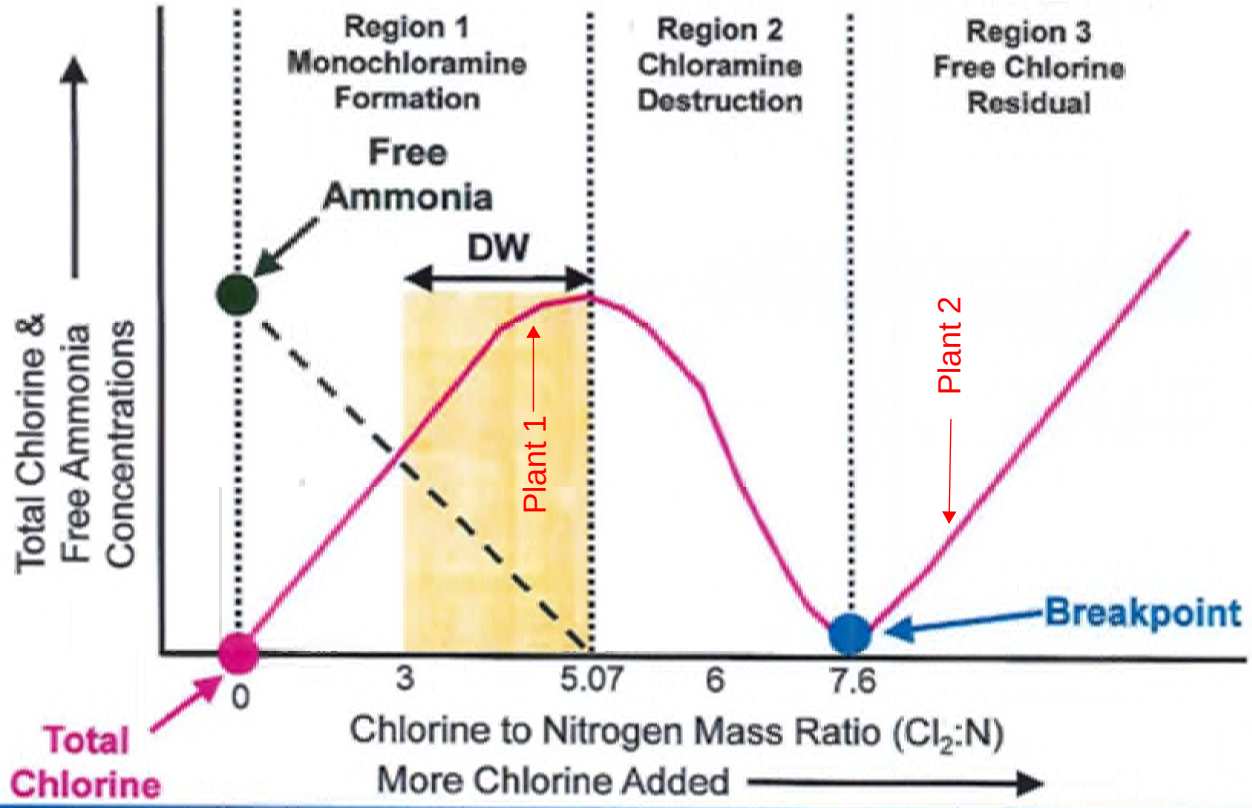
During the study, a simulation was run and it was shown that the high-pressure zone was assisting the low-pressure zone during peak use. This was causing the two systems to blend for short periods of time. The way to avoid this in the future would be to adjust the PRV locations to better isolate the zones, or to upgrade Plant 1 to allow for it to feed more chlorine and disinfect using the free chlorine residuals.

Switching plant 1 to free chlorine has the same upgrade costs as would be needed for the upgrades needed in the nitrification action plan, has a cheaper complete cost due to not needing to relocate PRV's (Each of IAWC's current proposed interconnects is estimated around $200,000), and it would also remove the blending that is experienced periodically.

For us to modify the final water quality from chloramine disinfection to free chlorine disinfection, IEPA is requiring us to do a table top corrosion study. This is a study that shows that switching does not cause damage to pipes. CMT has enough contract remaining to perform the tabletop study instead of the nitrification action plan and has asked to adjust the scope of their water quality study contract to perform the desktop corrosion test.

The water is and always has been safe to drink, we are just adjusting to new and tighter regulations like most other City's.

Chloramine Formation (Cl_2:N)



RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions

From David G. Wahman, Ph.D., P.E.; USEPA Office of Research & Development; printed with permission.

Legend

Water Treatment Plant #2 Trace (%)

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100
- Pressure Reducing Valve
- Pressure Zone Boundary

N

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Potential Future PRVs

Existing PRVs

Water Tower and Treatment Plant #2

Pressure Zone 2

Water Tower and Treatment Plant #1

Pressure Zone 1

Notes: The trace analysis was performed for a 1440 hour simulation.
Trace results are shown for the last 24 hour cycle (Hour 1416 to Hour 1440).

EXHIBIT 1

CMT

Job No.: 210013-76-00

CITY OF WASHINGTON
WATER QUALITY STUDY

EXISTING SYSTEM - AVERAGE DAY DEMAND
TRACE ANALYSIS