



WESTMINSTER
COLORADO

Water System Pressures

A Guide to Drinking Water Distribution

March 2018

Presentation Outline

Why Maintaining Pressure is Necessary?

What is a Pressure Zone and How Do They Work?

Frequently Asked Questions and Answers About Your Water Pressure and Interior Plumbing.

Why is Maintaining Pressure Necessary?

Key Goals for Operating our Water System

Flow Rate

- Meet customer demands

Pressure

- System performance

Redundancy to Customers

- Reliable service



Target Pressure Range for Our Water System is 40-100 psi

Too Much Pressure Has Risk

- ▶ Damage to appliances
- ▶ Increased main breaks and street repairs
- ▶ Water Leaks

Too Little Pressure Has Risk

- ▶ Reduced flows
 - ▶ Slow flowing showers
 - ▶ Poor lawn irrigation
 - ▶ Reduced fire flows
- ▶ Regulatory violations



What is a Pressure Zone and How Do They Work?

Water Pressures Vary Throughout our Water System Network

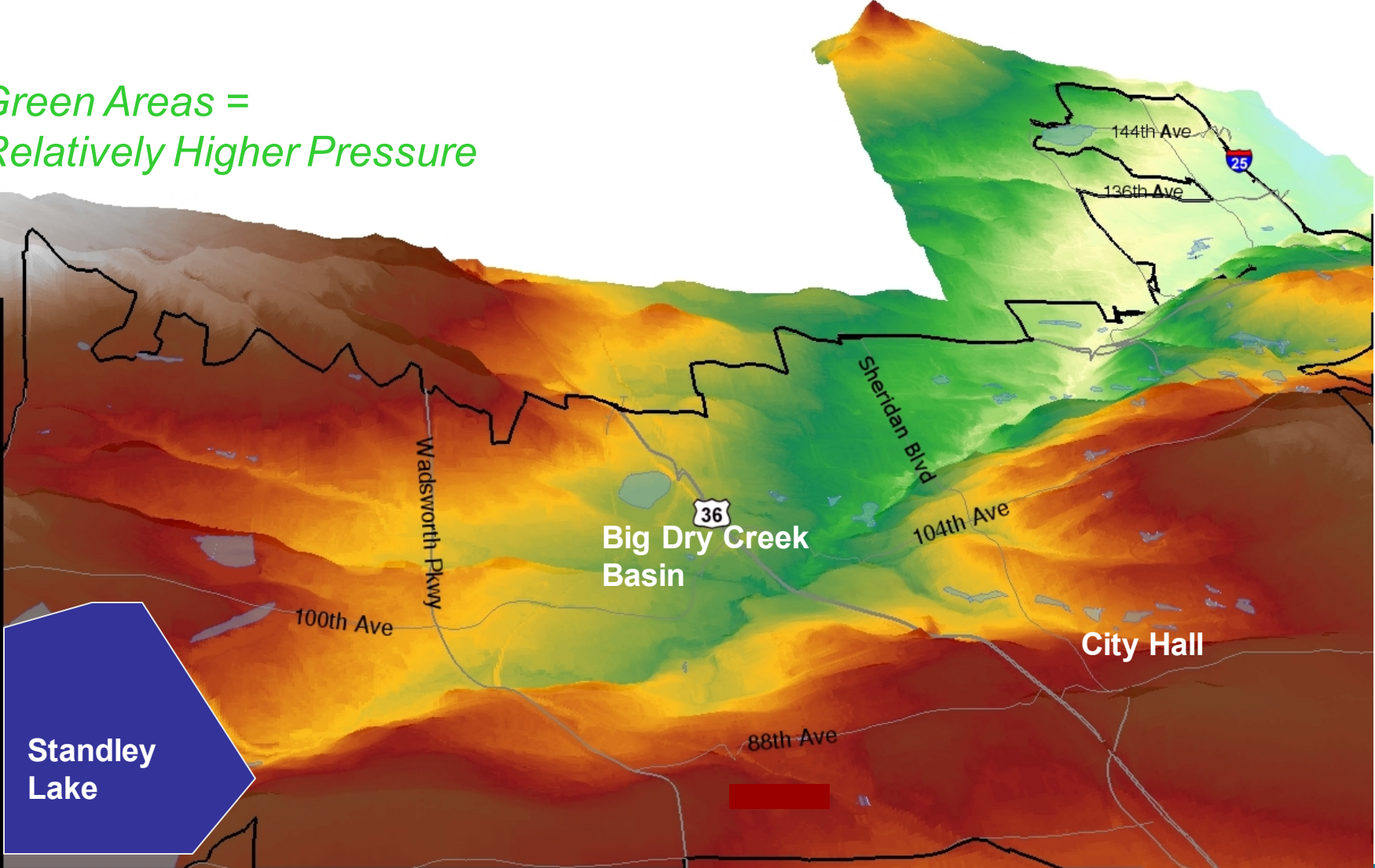
Pressure decreases due to friction as water travels through pipes

Pressures vary with elevation

- ▶ Low elevations = higher pressures
- ▶ High elevations = lower pressures

Geographic Relief of the City of Westminster

*Green Areas =
Relatively Higher Pressure*

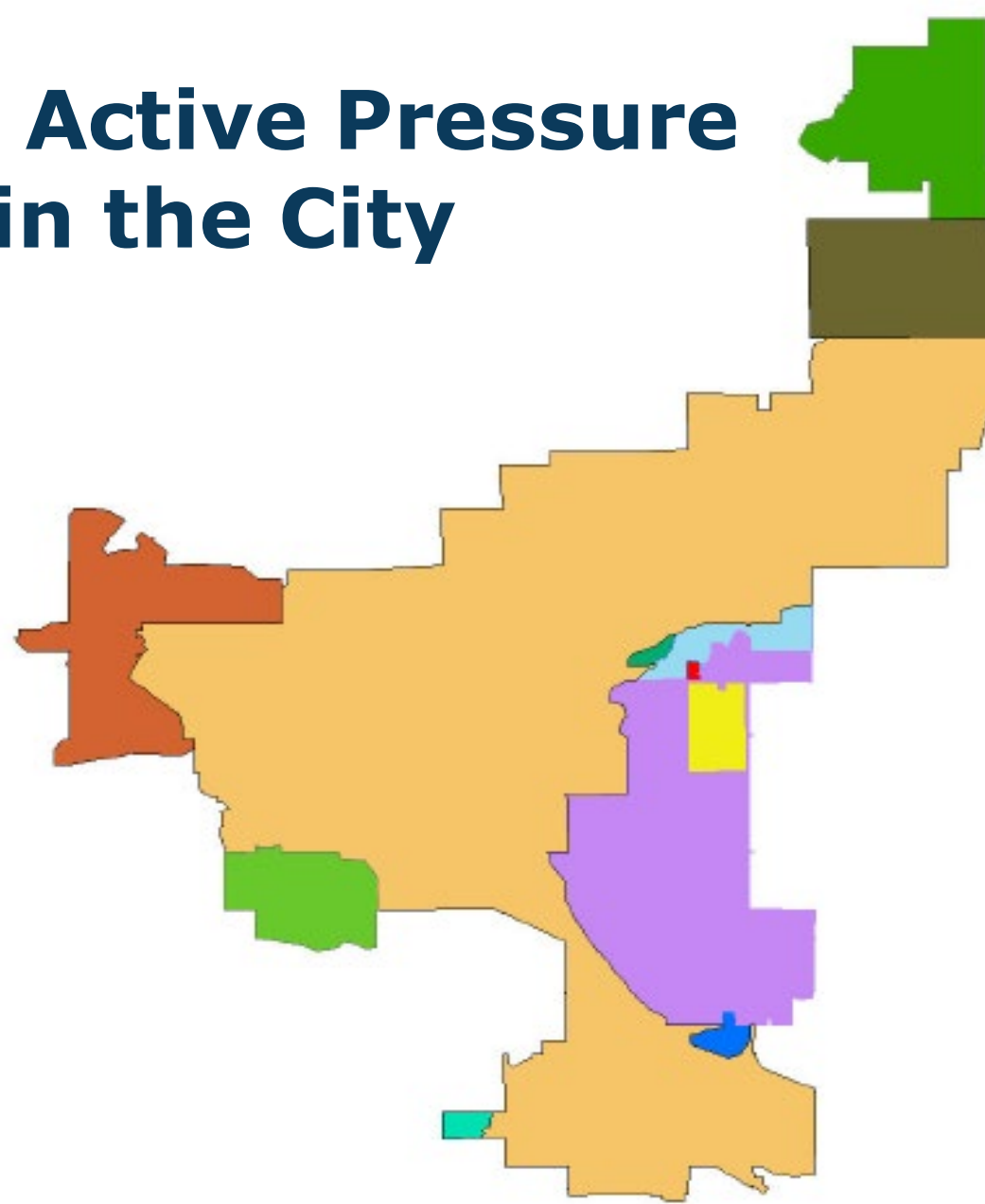


**Q: How Can We Try and Meet
Target Pressures Throughout
the City?**

**A: Group Areas of Common
Elevation and Build Pipe
Networks to Independently
Serve These Areas**

**Each Separated Area is
called a “Pressure Zone”**

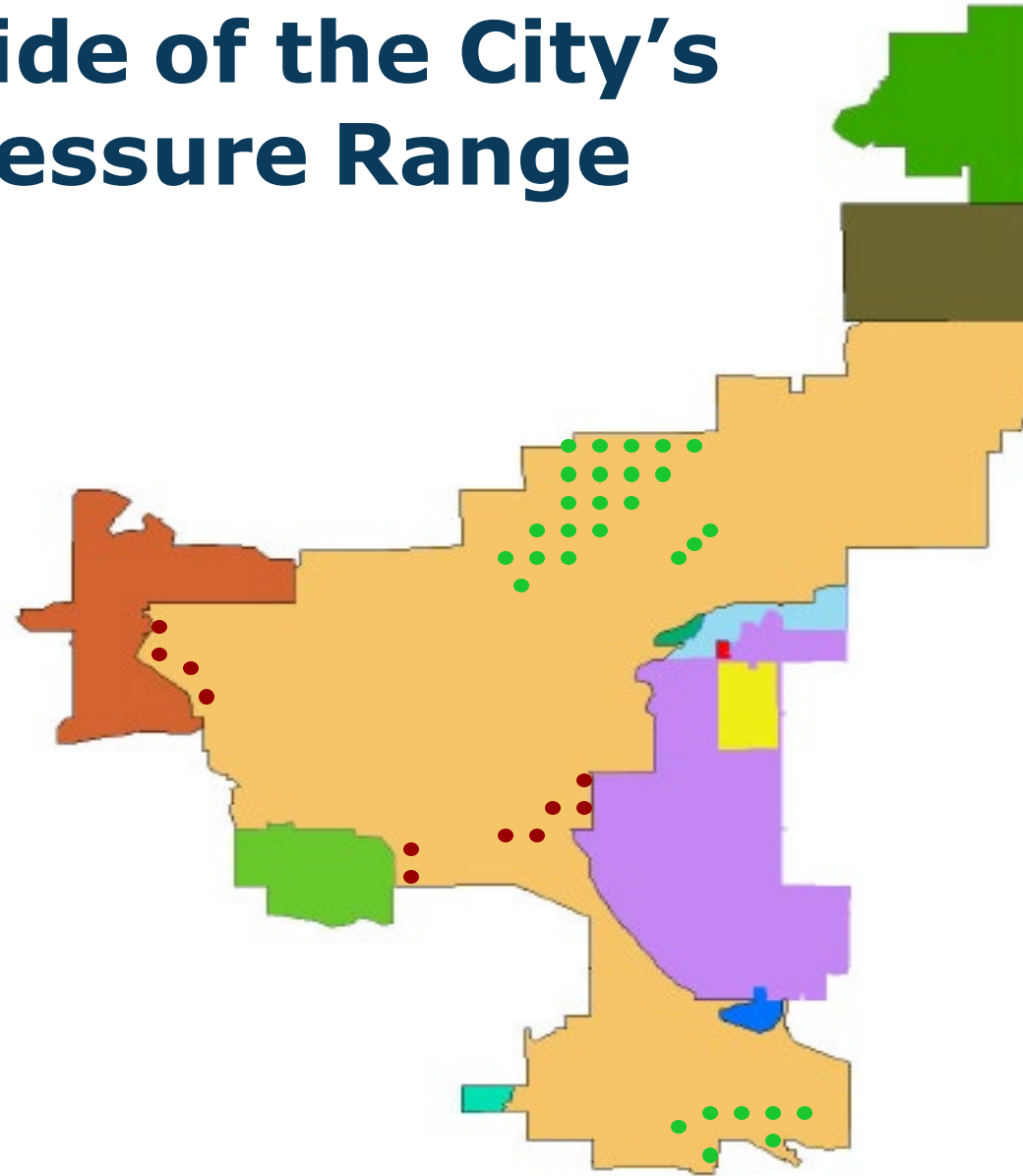
There Are 11 Active Pressure Zones in the City



Areas Outside of the City's Target Pressure Range

Green Dots = above target

Brown Dots = below target



Using Infrastructure to Adjust Zone Pressures

Pumps – increase pressure

Pressure Reducing Valves - decrease pressure

Water Pipe Networks – provide redundancy

Tanks - sustain pressure and flow for a period of time



Water System Projects Are Phased Over Time

Projects are prioritized based on:

- Overall cost
- Available funding
- Infrastructure condition
- Hydraulic constraints

**Good News:
City Council Initiatives Continue
to Improve Your Utility Services.**

Area of System Pressure Increase (Spring of 2018)



Frequently Asked Questions and Answers About Your Water Pressure and Interior Plumbing

**Q: Will fire hydrants be impacted
by water main pressure
fluctuations?**

A: The Utilities Division and Fire Department work together in determining the optimum locations for fire hydrants throughout the City. Fire hydrant flows are continually tested and the City's target water pressures are designed to provide adequate flows needed for fire protection at each fire hydrant.

Q: What is the most important note regarding interior plumbing?

A: Any work to change, repair, or modify interior plumbing should be performed by a qualified professional in accordance with the City's plumbing codes.

Q: How does fluctuating City water main pressure in the street impact my plumbing?

A: Your interior pressure reducing valve or PRV is located where the water supply pipe enters your facility. The device looks like a cone with a nut on top (see photo on next slide). Water entering the PRV valve from water mains in the street is constricted within the valve and controlled by an adjustable spring loaded diaphragm and disc. Even if the street water main pressure fluctuates, the pressure reducing valve ensures a functional pressure within your home, as long as the supply pressure does not drop below the valve's pre-set pressure (typically 50 psi).

Typical Interior PRV



**Q: What if my facility
does not have a PRV or
my PRV does not
function?**

A: PRV's are usually installed by the builder in areas of the City where street water pressure is higher than target pressure ranges. Building code now requires the installation of PRV's in all new construction where the water supply exceeds 80psi. Just like worn out mechanical parts, PRV's sometimes malfunction or just quit working. If you have been experiencing problems associated with high water pressure such as water hammer (noisy plumbing), water leaks, appliance damage, poor sprinkler efficiency, we encourage you to replace or adjust your PRV.

Q: How do I adjust my PRV?

A: Various video clips on YouTube provide step by step instructions on how to adjust a PRV. You may also contact a licensed plumbing contractor to assist with adjustment or replacement of your PRV.

Q: How is My Water Supply Turned Off If I Experience an Interior Leak and Need plumbing Repairs?

A: The main water shutoff valve to your facility is located on the water service pipe that comes through the foundation wall or basement floor. This valve shuts off all of the water inside and allows repairs to be made.