



370 to 30: Bellevue's Multi-Faceted Solution to Reduce Customer Impacts of a Leak Repair Shutdown

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State & Regional News

Water to be shut off in Walsenburg for 12 hours

By: Holly Morrison

Posted: Dec 05, 2017 03:38 PM MST

Updated: Dec 06, 2017 08:19 PM MST



WALSENBURG, Colo. - Those in Walsenburg should prepare to be without water for 12 hours on Wednesday.

Water will be shut off from 4 a.m. to 4 p.m. so crews can tie in the new water line on Indiana Avenue.

The city expects water to be back on no later than 5 p.m.

Schools had to be closed for the day and the only area that will still have water is the nearby hospital.

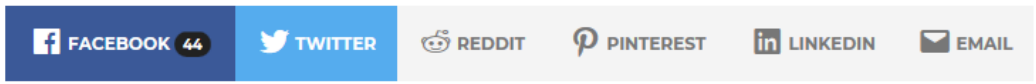
Some residents say they understand why the water has to be turned off, but for small business owners disagree. Several mom and pop restaurants and even a hotel had to close their doors to the public because of the water.

“Since March 1, we have offered monetary assistance or hotel rooms available to all eligible residents...”



No flush, no shower: Mississippi capital city in water pinch

POSTED 3:01 PM, MARCH 10, 2017, BY AP, UPDATED AT 03:09PM, MARCH 10, 2017



This is an archived article and the information in the article may be outdated. Please look at the time stamp on the story to see when it was last updated.

JACKSON, Miss. — Portable toilets are parked outside the Mississippi Capitol, city residents are stocking up on bottled water and restaurants are evaluating whether they can stay open with little or no water from the tap.



AP Photo/Rogelio V. Solis



LOCAL

Malfunctioning hydrant found during Falls fire

It's a problem first responders ran into this weekend trying to put out a fire in the city.

Author: Jeff Preval
Published: 6:33 PM EST February 26, 2018
Updated: 7:27 PM EST February 26, 2018

NIAGARA FALLS, NY - W
fire hydrants.

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2 hydrants out of service during Republic Steel fire

By **Richard Payerchin**, *The Morning Journal*

POSTED: 12/01/13, 11:03 PM EST | UPDATED: ON 12/01/2013

LORAIN — Two nearby fire hydrants were out of service as the Lorain Fire Department set up to control the fire at Republic Steel's new electric arc furnace, according to the LFD's official report. Five people suffered minor injuries and the extent of damage was unknown when the blaze broke out about 2 p.m. Saturday.



8News Investigates: Fire hydrants outside Petersburg house fire fails to supply water

By: pwsleybaugh

Updated: Jan 27, 2017 05:47 PM EST



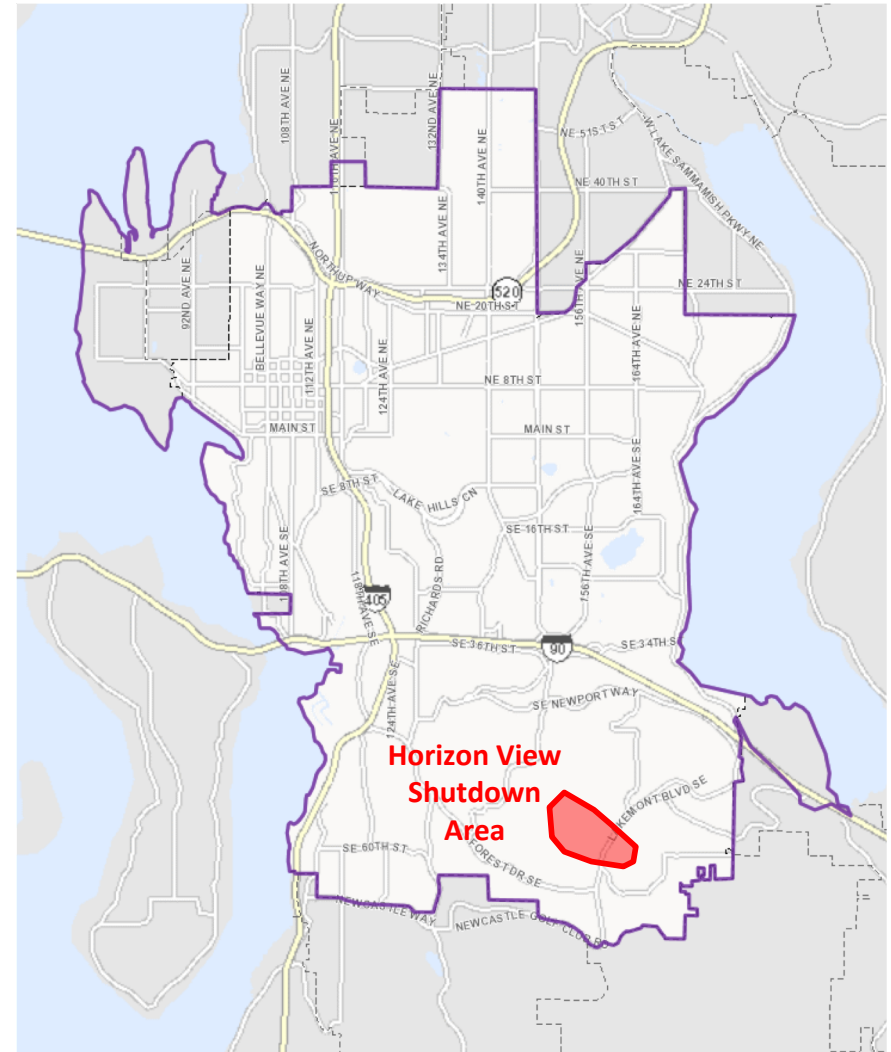
PETERSBURG, Va. (WRIC) -- An 8News investigation uncovered some fire hydrants in Petersburg did not supply water needed to fight a house fire. The fire union there is demanding the city take action.

Firefighters responded to a house fire Tuesday morning off of Byrne Street where they found one man dead inside.

Background



- Service Area
- ~150,000 Population
- ~140,000 Jobs
- 69 Pressure Zones
- 8 Municipalities
- Water supplied by Cascade (SPU)





Background

- Leak Repair Required Shutdown
- Potentially 370+ Customers
- Implications:
 - Customer Inconvenience
 - Gap in Fire Protection
 - Service Shutoffs/Turn-Ons
 - Disinfection & Flush (5 Zones)
 - Notifications
 - Customer Service Calls





Alternatives Analysis

Jumper
Hose?

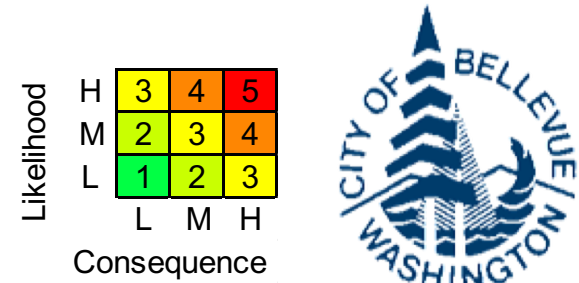
Backfeed
PRV

Wet
Insertion
Valve

Pump into
isolated area
(no tank)

Full
shutdown

Risk Register



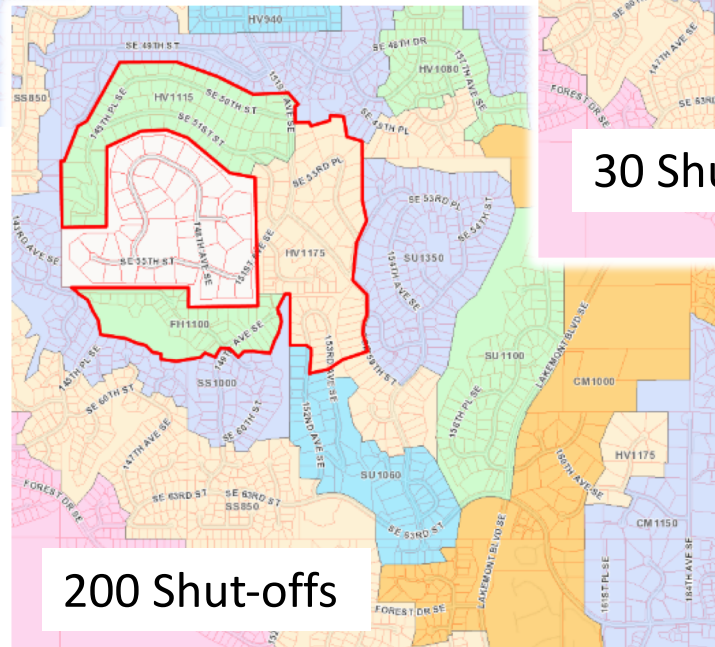
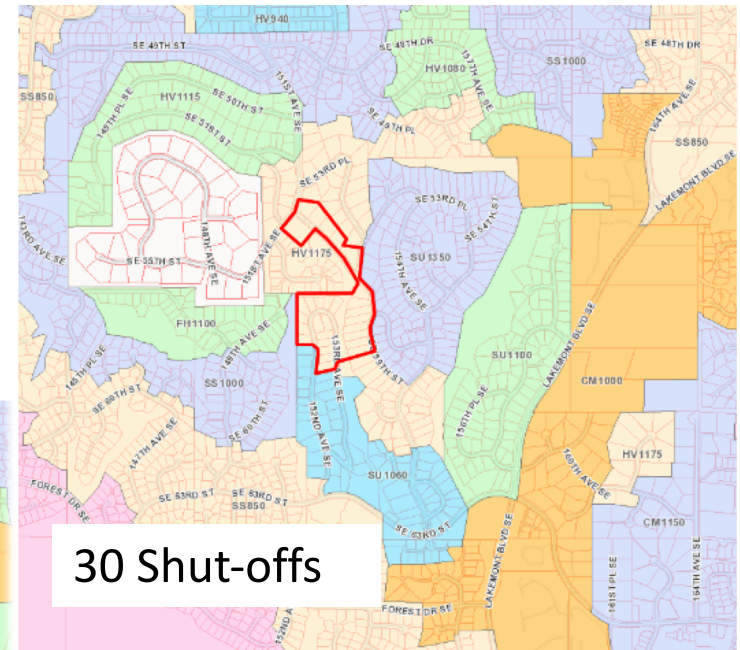
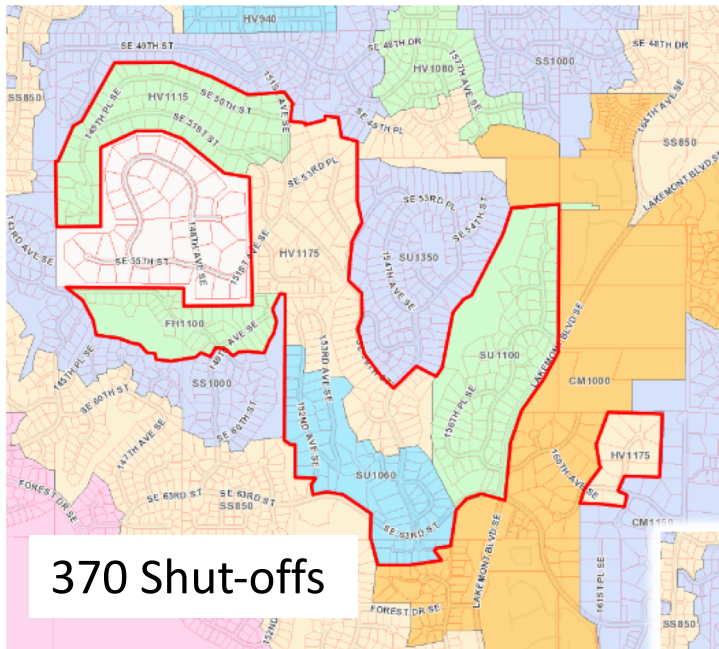
horizon view shutdown risk assessment							Comments
No.	Threat or Opportunity	Likelihood	Consequence	Risk Score	Impacts	Strategy	
	Reduced Fire Flow in a large area.	High	High	5	BFD could not rely on 1500 GPM	Accept	BFD would be notified of potential impacts. Rick will notify Dean Harm from BFD.
	Structure Fire occurs during period of reduced flow	Low	High	3	Property damage	Accept	BFD would be notified of potential impacts
	Inability to use insertion valve due to poor pipe integrity	med	High	4	380 meter shutdown	Mitigate	Potholed: pipe is in good condition at location.
	6" jumper hose has never been used, condition issues. Sanitary, safe to public.	med	high	4	inability to perform jumper, 380 meter shutdown	Mitigate	check condition of hose. Have crew fill hose with water to determine condition. Develop strategy with WQ to disinfect
	6" jumper hose failure or sabotage while in use	low	High	3	property damage, WQ concerns (boil), full shut down.	Mitigate	assign personel to monitor while in use protect the hose where vulnerable
	Leak on DIP blows apart once exposed.	Low	High	3	Without planning we would be forced to shutdown large area without notice.	Mitigate	Using the jumper, insertavalve and forward planning
	Leak on DIP is small pinhole leak and easy to repair.	High	Low	3	Fairly simple repair without the need for the shutdown.	Accept	Calculated risk is dig up, repair band and only plan for CIP work.
	Full Shut Down	High	High	5	380 customers w/o water. reduced fireflow to three pressure zones. # of customers tbd. No fireflow for Hilltop	Avoid	Resources to flush 5 pressure zones Notify and shut off 380 meters
	Reduced ShutDown Backfeed CM 1150 to HV 1175	High	Med	4	212 no water, reduced fireflow to three pressure zones. # of customers tbd. No fireflow for Hilltop	Avoid	Resources to flush 3 pressure zones Notify and shut off 212 meters
	Backfeed PRV 183 + insertavalve +jumper	High	Low	3	40-50 homes w/o water (27 at least) 1100, 1115 Summit, 1060 Summit 1100, 1175 have reduced fireflow EXPENSIVE/Need lead time to get materials. Est end of Feb.	Mitigate	Provides future benefits, Opportunity to jumper hydrant to hydrant (practice), significantly reduces the number of shut offs. Less resources to implement (more time). Install insertavalve by 2/10 for < \$40K (per RR)
	Risk of large amount of air after shutdown	High	High	5	Possible sediment stired up at HV3 Air lock pump=1350 zone loss	Mitigate	Install a blow off with a valve box and hose adapter and corp on top. In front of insertavalve

Alternatives Analysis



Scenario	Customer Impacts	
	Meters Shut Off (+/-)	Meters at Reduced Pressure
1. Full Shutdown	370	N/A
2. Reduced Shutdown (Backfeed PRV)	200	30
3A. Minimized Shutdown (Backfeed PRV + Jumper + Wet Insertion Valve)	30	30
3B. Minimized Shutdown (Backfeed PRV + Pump into closed zone)	30	30

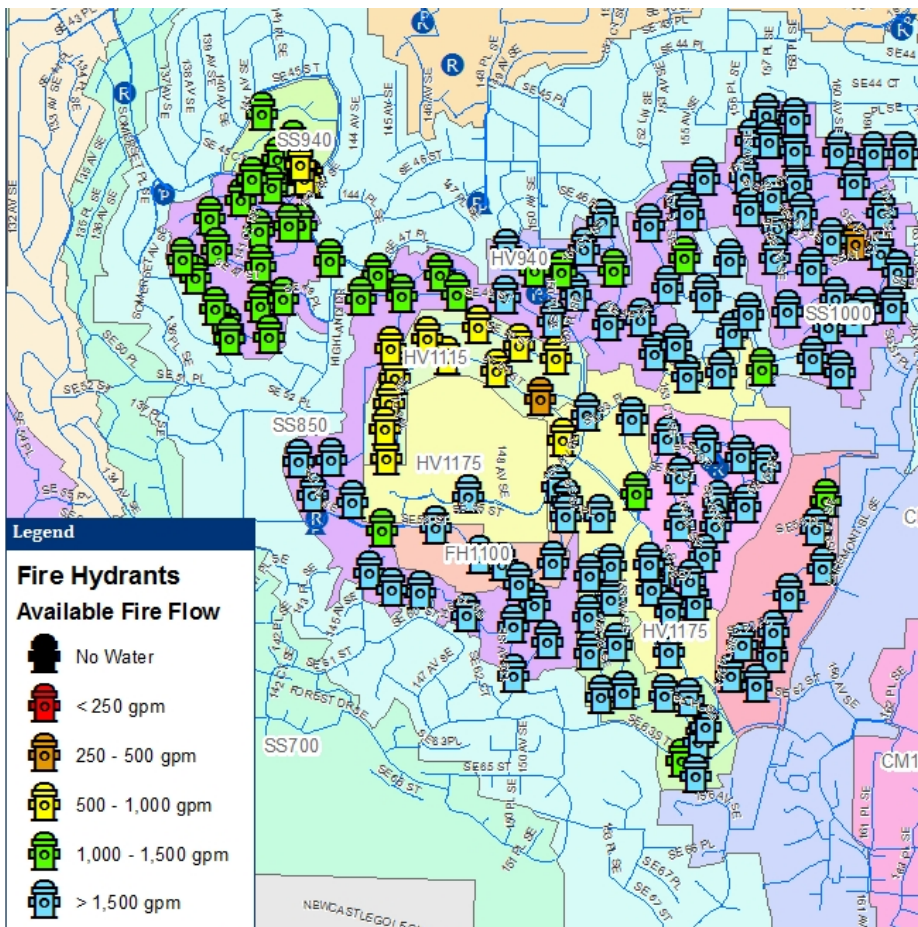
Alternatives Analysis



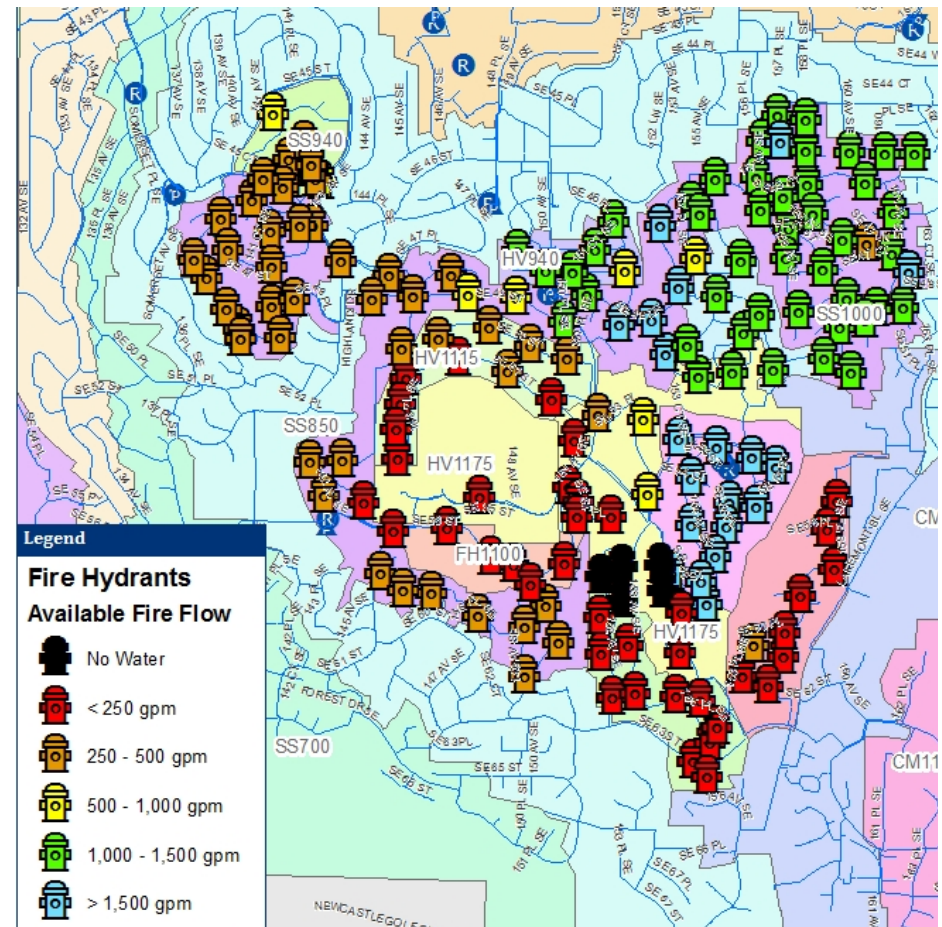
Fire Flow



Normal Conditions



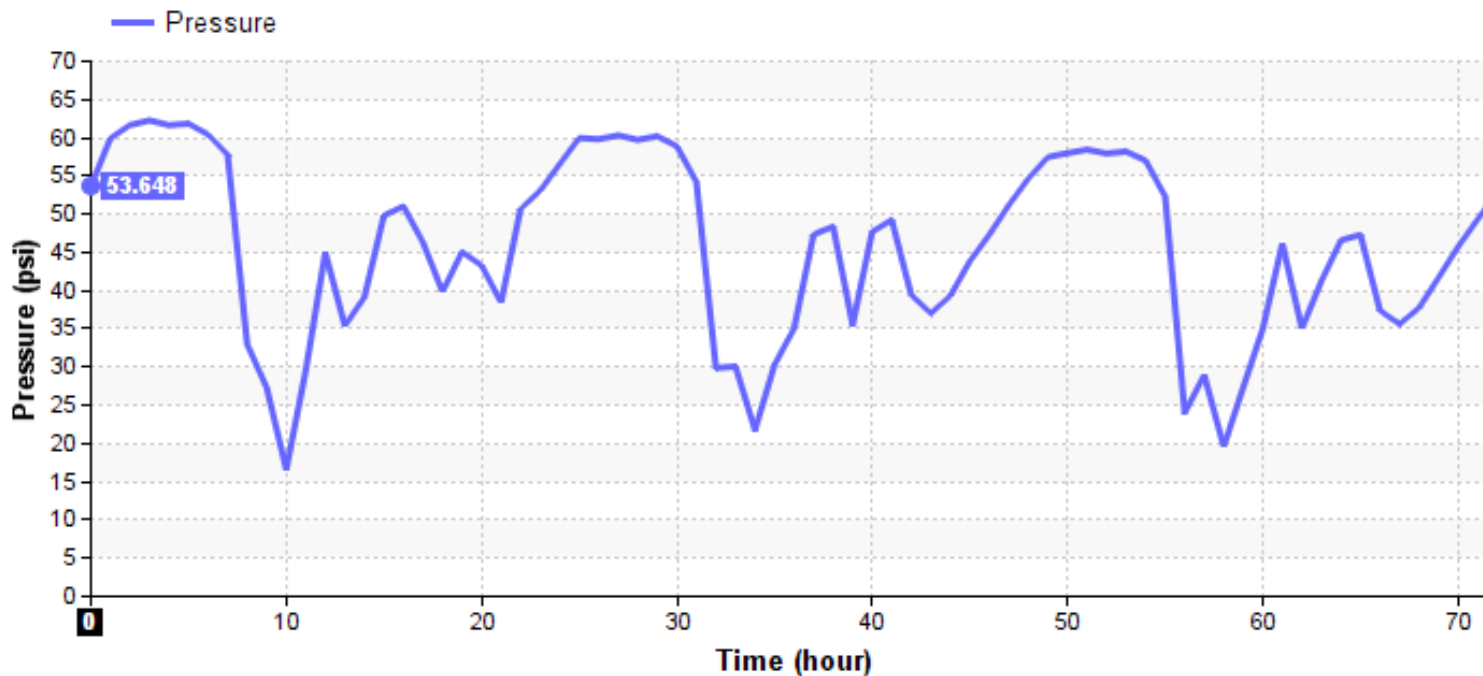
Minimized Shutdown





Pressure Simulation

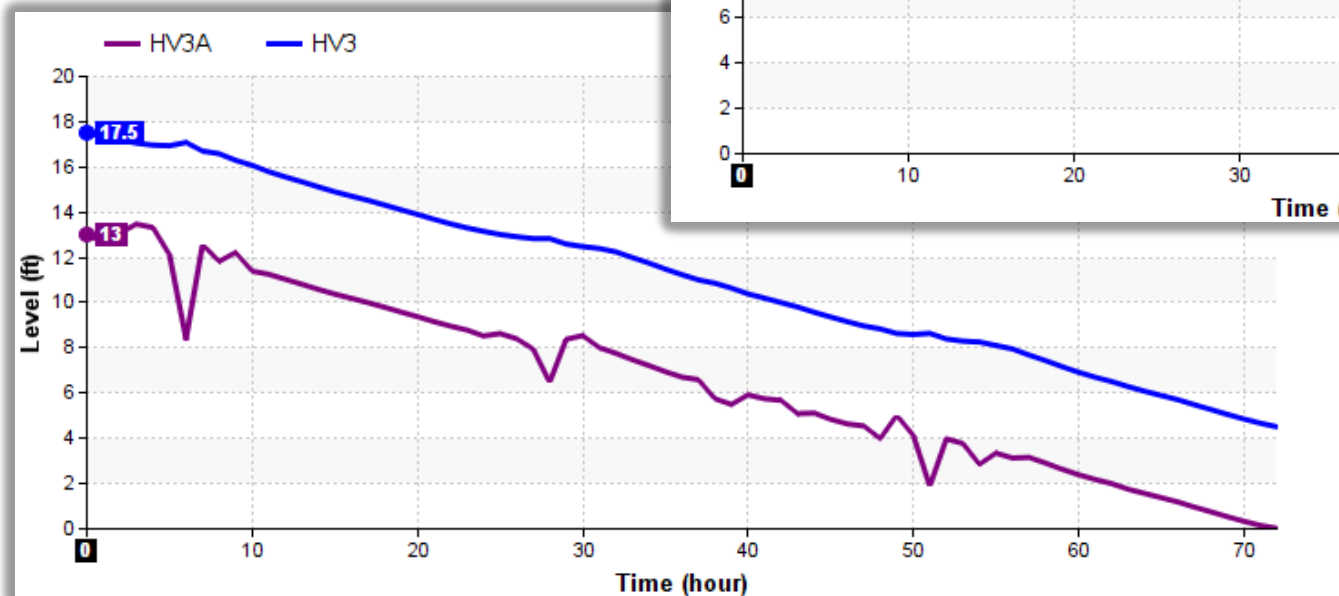
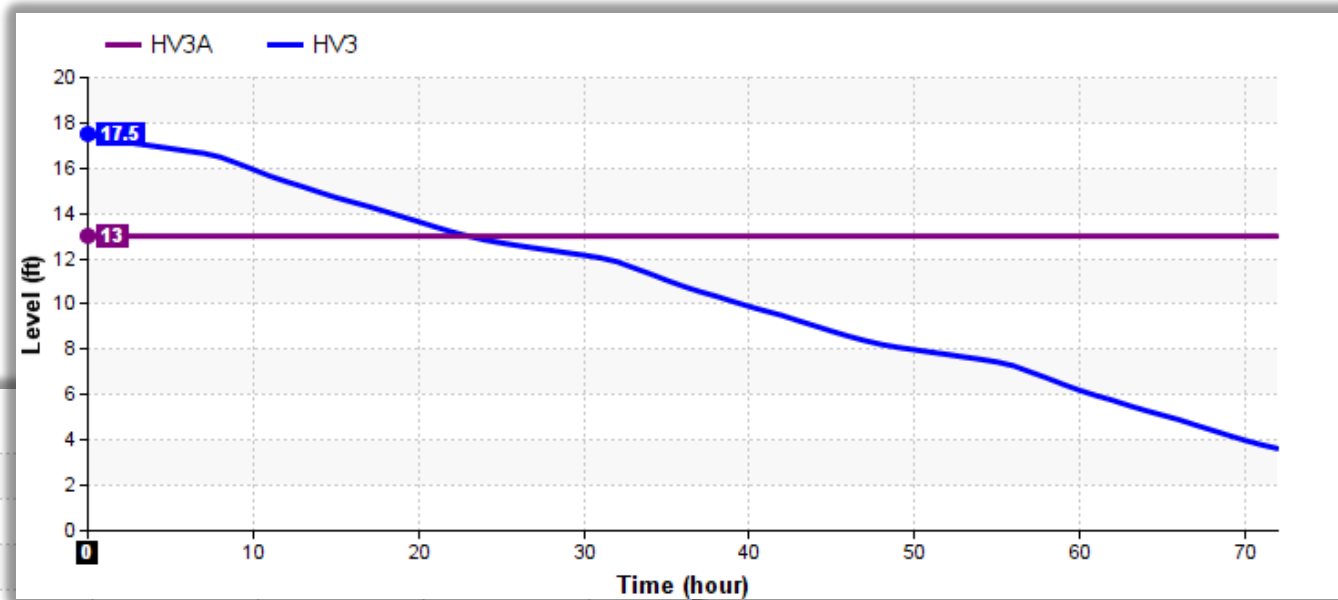
- Most sensitive downstream of jumper
- Kept hose size as large as possible to avoid wide pressure swings





Storage Volume

- No supply; rely on stored water





Field Preparation

- Leak detection
- Notifications
- Insertion valve installation
- Set out data loggers
- Jumper hose deployment & disinfection
- Open PRV for reverse flow

Insertion Valve



Jumper Hose



Road Shoulder,
Park/Playground,
Private Yard,
Driveways, etc



Jumper Hose - Road Crossings



Crossing #1: Existing Culvert



Crossing #2:
Temporary Casing





Back-Feed PRV

- ~170 customers
- Minimum Pressure 33 psi to 21 psi
- Fire flow not available, but no service interruption



Shutdown



- How Did it Go?
 - No complaints or inquiries
 - 6 hours start to finish





Findings

- Leaking pipe was not “home” at tee
- Data Logger Detected late-night high pressure (leaking zone valve?) unrelated to shutdown



Leak Location (Before)



Repair (After)



Questions?

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