



# Richmond Regional Water Crisis

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## Hanover County After-Action Report

February 12, 2025

# Agenda

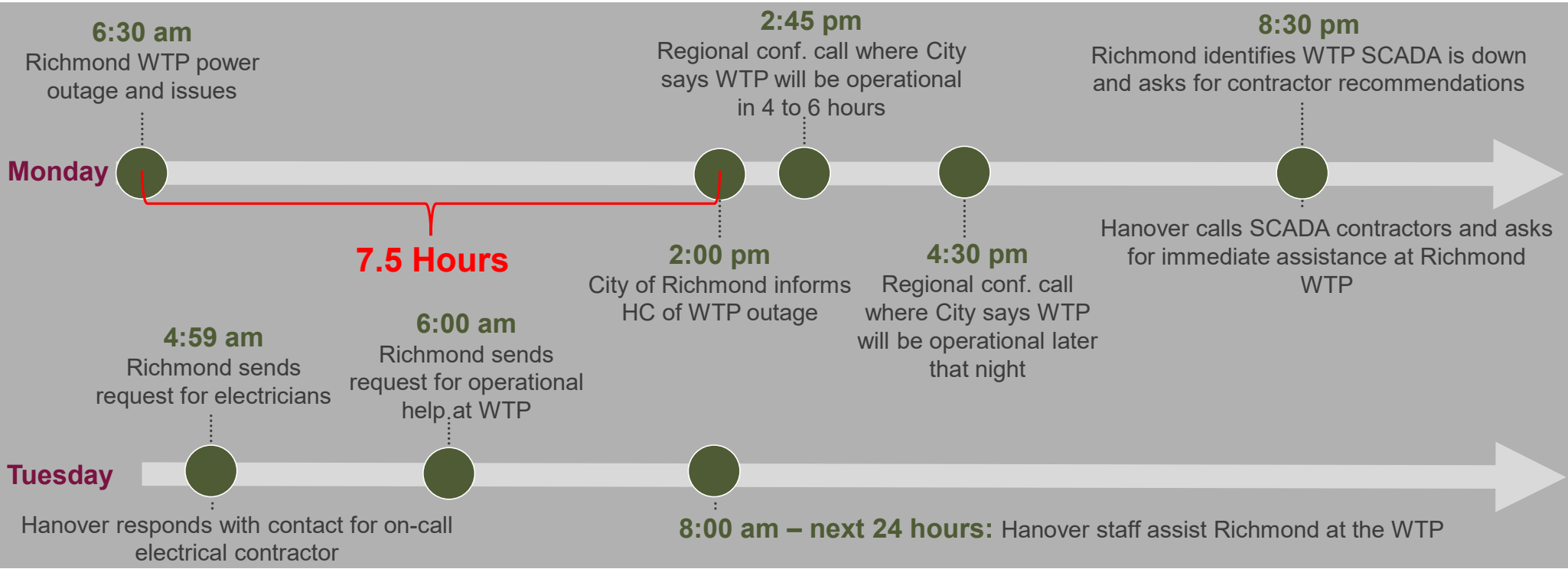
- Introduction and Purpose
- Timeline of Events
- Technical Evaluation and Recommendations
- Communication Evaluation and Recommendations
- Questions

# Introduction and Purpose

- Richmond Water Treatment Plant Outage started on 1/6/2025
- Hanover County lost public water service in Mechanicsville for 24-36 hours (4-day Boil Water Advisory)
- Hanover County After Action Report
  - Dewberry hired to evaluate technical components of Hanover County response
  - WaterPIO hired to evaluate communications (COMMS) components of Hanover County response

# Timeline - Monday 1.6.25 & Tuesday 1.7.25 (Richmond known facts)

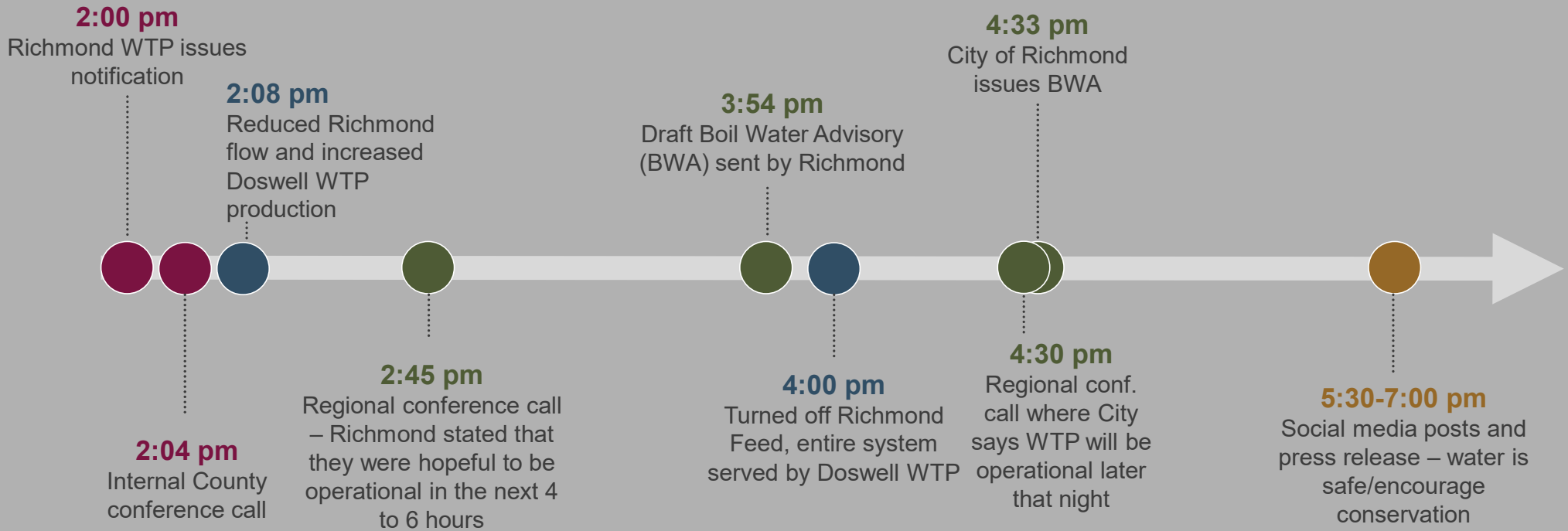
- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications



All times are approximate

# Timeline - Monday 1.6.25

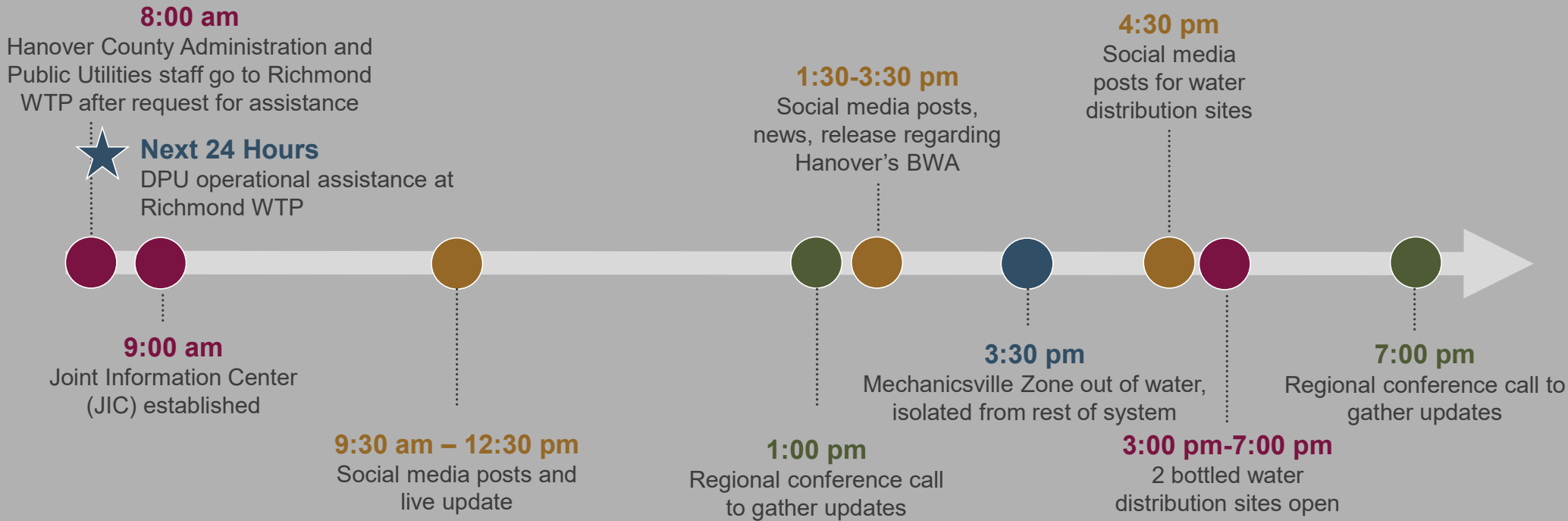
- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
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All times are approximate

# Timeline – Tuesday 1.7.25

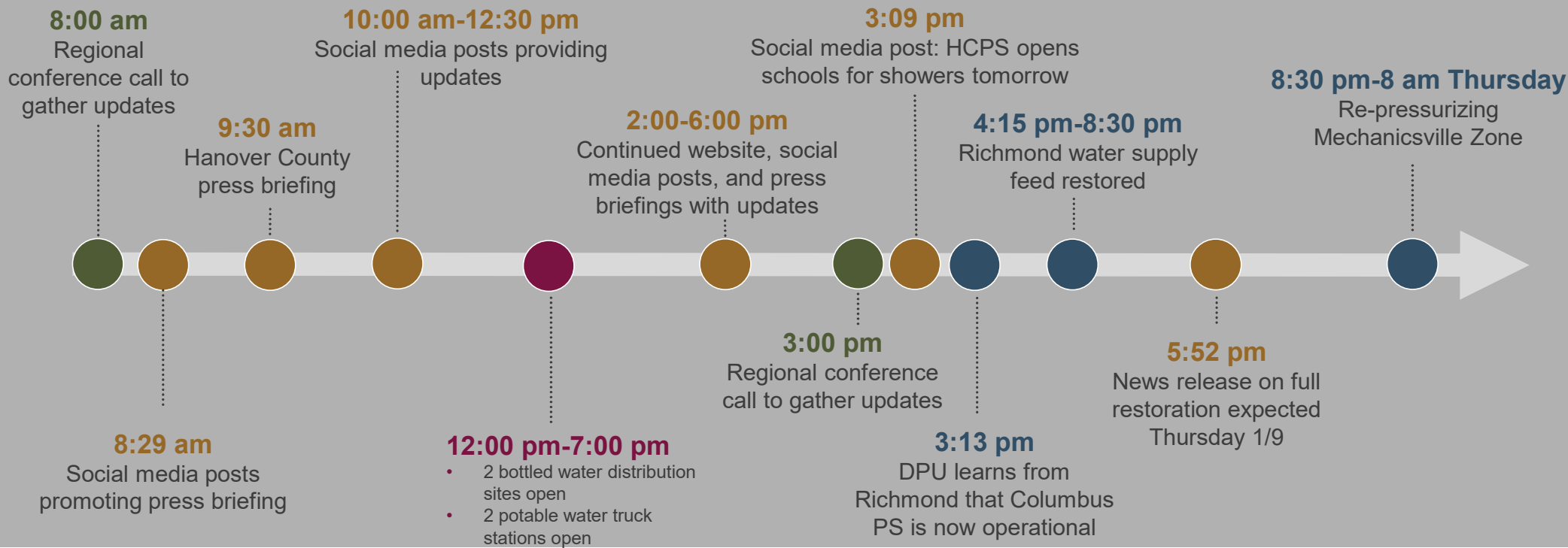
- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications



All times are approximate

# Timeline - Wednesday 1.8.25

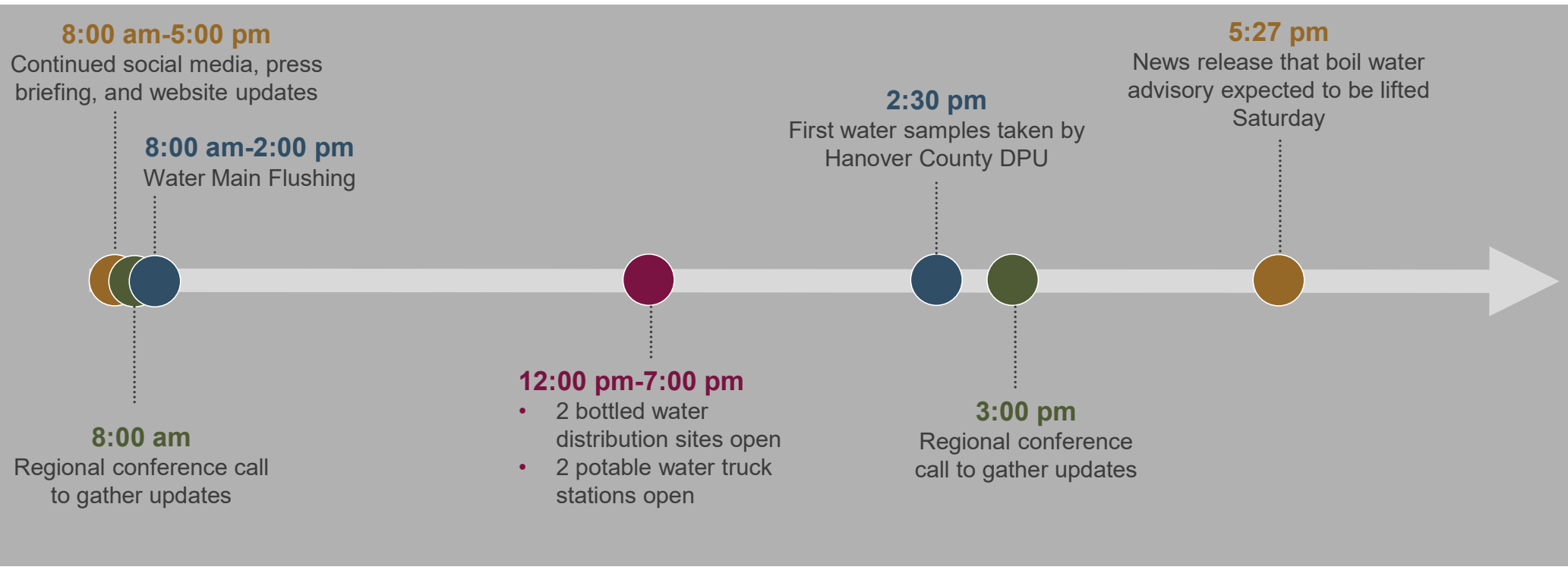
- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications



All times are approximate

# Timeline - Thursday 1.9.25

- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications

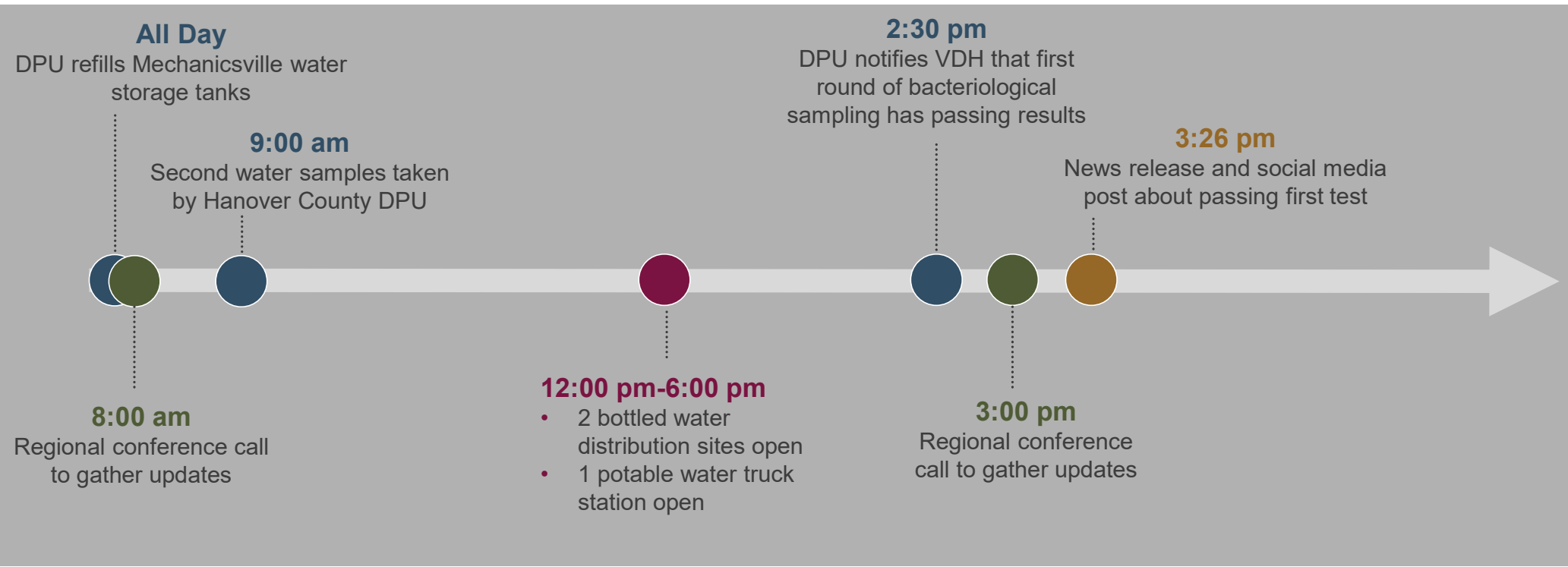


All times are approximate



# Timeline - Friday 1.10.25

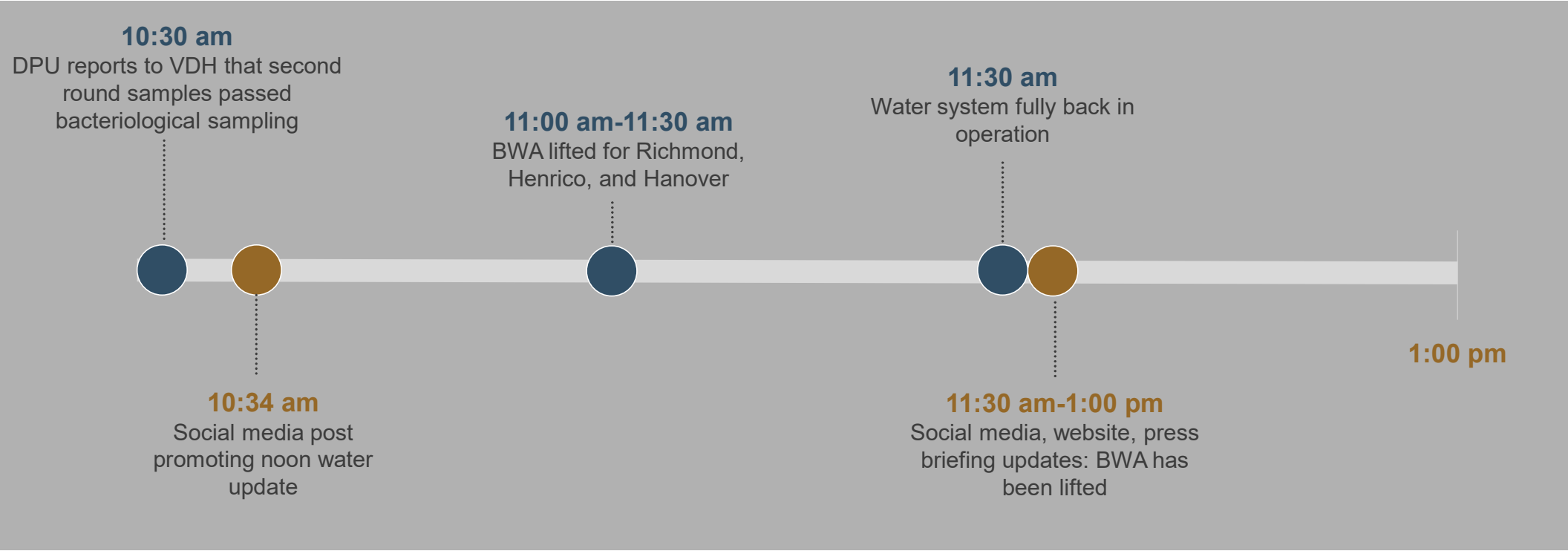
- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications



All times are approximate

# Timeline - Saturday 1.11.25

- County Operations, Emergency Operations, County Administration
- Department of Public Utilities (DPU)
- Regional Events and Actions
- Communications



All times are approximate

# Technical Evaluation Introduction

- Water System Overview
- Water System Operations Prior to Water Outage
- Water System Operations During Water Outage
  - Phase I: Loss of Richmond Water Supply
  - Phase II: System Isolation (East vs. West of I-95)
  - Phase III: Water Supply Restoration
- Technical Review of Hanover DPU Response
- Technical Recommendations
  - Short-Term
  - Long-Term

# Water System Overview

- Hanover Suburban Water System (HSWS)
  - 25,000 residential, commercial, and public customers
  - Serves parts of Mechanicsville, Ashland, Doswell, and Elmont within Suburban Service Area (SSA)
- HSWS Water Supply Sources – Total Supply Capacity of 24.775 million gallons per day (MGD)
  - City of Richmond (via Lockwood Booster Station) – 20.0 MGD
  - North Anna River (via Doswell Water Treatment Plant) – 4.0 MGD
  - Henrico County (via Route 33 connection) – 0.775 MGD
- HSWS 2024 Water Demand
  - Average Daily Demand – 8.6 MGD , Maximum Daily Demand – 14.3 MGD
- Four (4) Pressure Zones
  - Lockwood (Mechanicsville) – Typically supplied by City of Richmond water
  - Doswell – Typically supplied by Doswell WTP
  - Ashland – Blended (Richmond and Doswell WTP)
  - Elmont – Blended (Richmond and Doswell WTP)

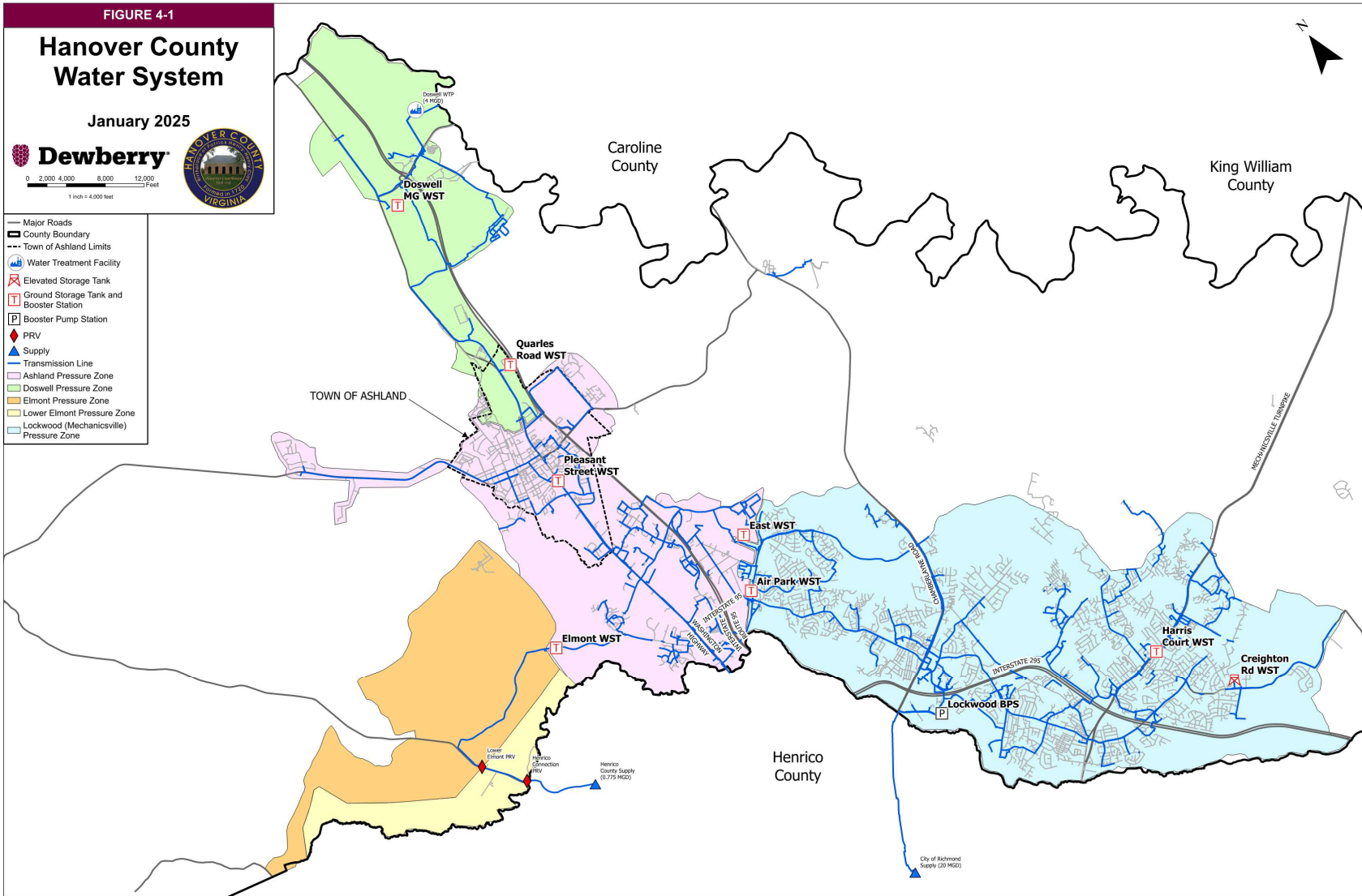
FIGURE 4-1

# Hanover County Water System

January 2025



- Major Roads
- County Boundary
- Town of Ashland Limits
- Water Treatment Facility
- Elevated Storage Tank
- Ground Storage Tank and Booster Station
- Booster Pump Station
- PRV
- Supply
- Transmission Line
- Ashland Pressure Zone
- Doswell Pressure Zone
- Elmont Pressure Zone
- Lower Elmont Pressure Zone
- Lockwood (Mechanicsville) Pressure Zone



# Water System Overview, Cont.

- Water Storage and Pumping Capacity

Storage/Pumping Facility	Pressure Zone	Storage Capacity (MG)	Pumping Capacity (MGD)
Doswell WTP	Doswell	-	4.0
Doswell MG WST	Doswell	1.0	2.0
Quarles Road WST	Doswell or Ashland	0.3	1.3
Elmont WST	Elmont	1.0	4.3
Pleasant Street WST	Ashland	1.0	2.0
East WST	Lockwood or Ashland	1.0	4.5
Air Park WST	Lockwood or Ashland	1.0	4.5
Harris Court WST	Lockwood	0.5	0.7
Creighton Road EST	Lockwood	1.0	-
Lockwood BPS	Lockwood	-	15.3
Richmond Storage <sup>1</sup>	N/A	8.9	-
<b>TOTAL</b>	<b>HSWS</b>	<b>15.7</b>	-

1. Hanover County has an allocation of 8.9 MG of storage capacity in the Richmond system.

- Storage Recommendation (2024 Max Day) – 5 to 7.5 MG

# Water System Operation Prior to Outage

- Water Supply and Demands Prior to Outage (Lower Winter Demands)
  - Average Demand – 6.6 MGD
  - Richmond supplied 2/3<sup>rd</sup> of demand
  - Doswell WTP supplied 1/3<sup>rd</sup> of demand
- Water Storage Prior to Outage (Winter Operation)
  - Tanks operated at approximately 50% to maintain water quality
  - 11.7/2.8 MG storage (w/&w/o Richmond)
  - 3.85 MG max. storage recommended

*“...Excessive storage capacity shall be avoided to prevent water quality deterioration.”*

*12VAC5-590-1081, 1., B. of VDH Waterworks Regulations*

# Water System Operation During Outage

- Phase I: Loss of Richmond Supply
  - Initial Richmond Water Treatment Plant Outage – 2 PM of 1/6/2025 (Monday)
  - DPU followed “Loss of Richmond Water Protocol”
    - Increased Doswell WTP to full capacity
    - Initially reduced pumping rate...
    - then turned off Lockwood BPS (after draft Richmond BWA)
    - Turned around East WST to supply Mechanicsville with Doswell WTP water
    - Tested Route 1 Henrico Connection (inadequate pressure)
  - Additional DPU actions
    - Lowered discharge pressure for all pump stations to reduce demand
    - Slowly used available storage to supplement supply deficit



## Water System Operation During Outage, Cont.

- Phase II: System Isolation (East vs. West of I-95)
  - Excess storage capacity ran out around 2 PM of 1/7/2025 (Tuesday)
  - Turned off East Water Storage Tank and Pump Station
  - Isolated Mechanicsville Pressure Zone (East of I-95) from Ashland Pressure Zone (West of I-95)
  - Issue Boil Water Advisory for Mechanicsville (East of I-95)
  - Maintained potable water service to Doswell, Ashland, and Elmont

# Water System Operation During Outage, Cont.

- Phase III: Water Supply Restoration
  - DPU started seeing gravity flow from Richmond around 4 PM on 1/8/2025 (Wednesday)
  - Slowly increased pumping rate at Lockwood BPS till 8:30 PM
  - Increased pressures by morning of 1/9/2025
  - DPU operations staff started flushing water transmission mains in morning of 1/9/2025 (Thursday)
  - DPU took 2 bacteriological tests 16 hours apart
  - Once both tests passed, VDH was notified, and Boil Water Advisory was lifted around noon on 1/11/2025 (Saturday)
  - Mechanicsville pressure zone was back in operation

# Technical Review of DPU Response

- Hanover County DPU staff performed very well
  - Hanover County DPU followed Richmond Waterline Emergency Response Procedure that was in place
  - Based on operational expertise and system knowledge, DPU performed additional measures to extend water service for Mechanicsville
- DPU maintained water service to 2/3rds of the system (Ashland, Elmont, Doswell) for duration of outage
- DPU staff proactively flushed transmission mains and communicated with VDH for efficient water service restoration in Mechanicsville

# Technical Evaluation Recommendations

- Water demand during Richmond WTP outage exceeded supply
- Short-Term Recommendations
  - Study for Henrico County water connections at Routes 1 and 33
  - Potential for near term improvement to provide additional supplemental water supply in the event of a future outage
- Long-Term Recommendations
  - Complete study to evaluate additional long term water supply sources
  - Complete study to evaluate water transmission improvements within existing water system

# COMMS Evaluation: Introduction

- WaterPIO – Founded in 2017. Based in Hampstead, NC.
- Helps utilities, engineering firms, industry orgs, & state agencies improve customer, media, & crisis communications. 20+ states.
- In water since 2007. Former network & DC local news producer.
- Certified crisis communicators. 20+ years.
- Conducted after-actions reviews for Austin Water post-Texas Freeze and Asheville post-Xmas 2022 systemwide outage.
- First hired by Hanover County Public Utilities for Lead & Copper Rule work in Fall 2024.

# COMMS Evaluation: Process

- Followed approach used for previous after-action reviews.
- Interviews conducted with leadership, staff, & local news media.
- Due to the compressed timeframe, also used questionnaires.
- All people interviewed received same questions. Unique questions asked during follow-up. Media, off-the-record.
- Processes in place for protection of participants. No direct quotes used. Paraphrased. Comments that mirrored others were joined together using general terms.
- Process worked. Candor provided at all levels, including press.

# COMMS Evaluation: Incident Challenges

- Hanover County's operational & communications responses hampered by poor Richmond COMMS at the start of the event.
- Initial Richmond information downplayed the event, leading to COMMS that harmed HC credibility. (Voluntary restrictions became outage & boil water advisory in roughly a day.)
- HC Operations involvement helped get COMMS up to speed. Fortunate. Richmond COMMS process didn't help HC COMMS.
- HC COMMS had to operate independently of Richmond. Some efforts for joint COMMS were made, but trust did not exist.

# COMMS Evaluation: Richmond COMMS

- Report did not do a comprehensive dive about Richmond's COMMS. However, conversations, interviews, & questionnaires revealed common themes & issues.
- Richmond failed to properly inform HC COMMS throughout the event. Richmond COMMS staff not up on water or crisis COMMS.
- HC's strong internal COMMS helped fill the gaps. Operations kept HC COMMS & Customer Service staff fully involved.
- Minor to moderate gaps can be addressed through Richmond improvement & HC creation of water-specific crisis COMMS plan.



# COMMS Evaluation: Hanover County Performance

- Solid team of COMMS professionals in place.
- COMMS role clearly respected. Reflected by internal COMMS.
- Conducted multi-level COMMS with accuracy & speed.
- Did not use HC crisis COMMS plan. Viewed for fire/EMS/police.
- Despite lack of plan, work mirrored proper crisis COMMS.
- “Mistakes,” such as hiccups with early use of Facebook Live & delay in creating a Joint Information Center (JIC) easily addressed.
- Biggest gap: Work with the news media. “One-way, not two-way.”

# COMMS Evaluation: Crisis COMMS Plan

- While performance was at a high level, lack of water-related crisis COMMS plan. Creation is this report's top recommendation.
- Water crisis COMMS plan: Gets HC up to speed fast. Helps with speed & accuracy. Guards against mis/disinformation.
- Plan provides structure, quality control, approval process, & templated information for speed & confidence.
- Prevents gaps in info rollout to news media, electeds, critical customers, community orgs, & customers.
- HC work mirrored proper crisis COMMS. Creation shouldn't take long, especially with lessons learned from incident.

# COMMS Evaluation: Internal COMMS

- Overall internal COMMS between leadership, COMMS staff, & other employees was impressive.
- “Operational approach” that is detrimental to Water World not used.
- Made up for issues with Richmond COMMS & response
- Strong across all levels, thanks to org chart & teamwork.
- Reflected in strong external COMMS.
- Customer Service staff felt fully informed. Often a gap with other utilities. Enabled “front line” success.

# COMMS Evaluation: External COMMS

- Overall external COMMS between leadership, COMMS staff, & other employees was excellent with some outreach gaps.
- HC COMMS delivered clear & accurate information at all times.
- Social use was excellent. FB Live helped w/minor issues.
- Website had/has excellent information in easy-to-use format.
- Customer Service extended hours. Escalation process worked.
- While news media takes issue with access, press releases were cited as comprehensive & clear re: information provided.
- Need for increased outreach to community, NGOs, & faith orgs.

# COMMS Evaluation: News Media

- While the information provided was cited for being full and accurate, news outlets took issue with HC engagement.
- “One-way” work instead “two-way.” Pushed info out with limited engagement. (COMMS staff complimented for interview help.)
- Facebook Lives became de-facto press conferences. Helpful for many, but press felt uninvited, kept at arm’s length.
- All wanted invites, ability to ask questions during Live sessions.
- HC “help” explanation logical. Lack of prior interaction. Distance.
- Press differed on two-a-day sked. Some fine, others wanted more.

# COMMS Evaluation: Secondary Findings

- Don't use Voluntary Restrictions. Water use INCREASES.
- Water Distribution COMMS: Difficult to balance notice with public reaction. Properly sent out, but truck had issues. For future, make sure truck is closer to arrival before sending notification.
- Spokesperson recommendation. Understandable use of leadership without deviation. Best practice: IC is not spokesperson. Unified PIO is used. For consideration.
- Greater use of Hanover Alert/CodeRed. Use for ALL water crises. Helps with renters/non-customers. Training for COMMS.
- Include community orgs & school systems in crisis COMMS plan.

# Questions



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