

STORMWATER INFRASTRUCTURE UPDATE

PUBLIC WORKS COMMITTEE

September 9, 2025

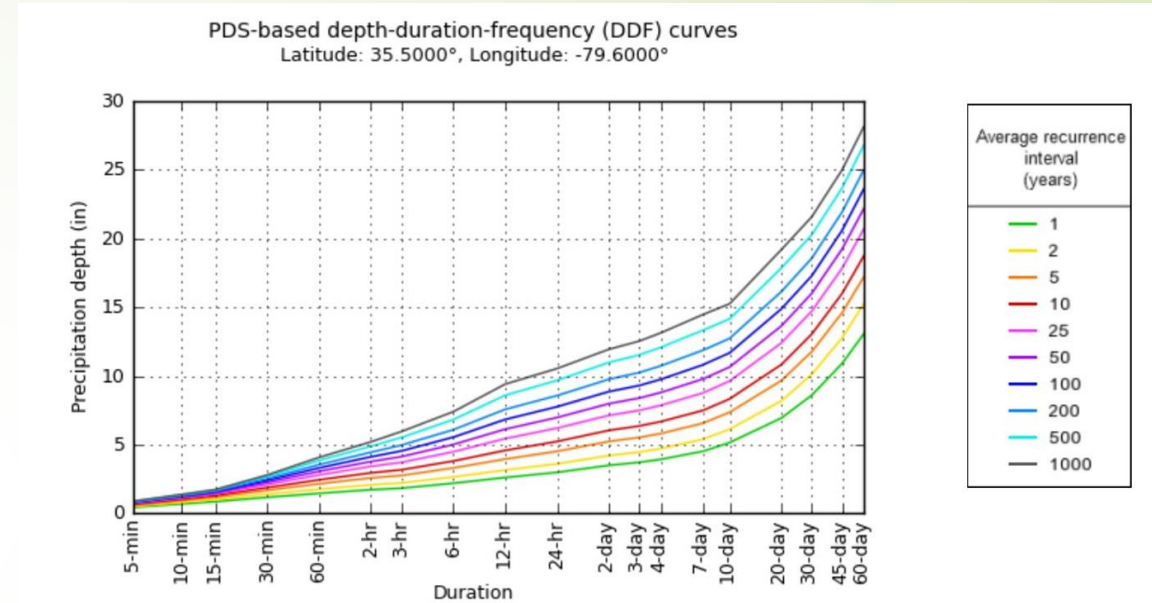


Outline

- Stressors to our drainage infrastructure.
- What drainage systems does the City Own?
- Update on current emergency drainage projects.
- Process changes moving forward.

STRESSORS TO OUR DRAINAGE INFRASTRUCTURE

- Record rainfall amounts over the last couple of years.
- The storm events we receive continue to grow in number and intensity (i.e. now the 10-year storm event occurs multiple times each year).
- Many of our drainage systems were installed decades ago (i.e. in the 1940's, 1950's and have exceeded their hydraulic lifetime).
- Some drainage systems show little warning before failure.



STRESSORS TO OUR DRAINAGE INFRASTRUCTURE

- Over 30 major repair projects throughout the city and new projects are added regularly.
- Priority capital projects list over \$30,000,000 and growing.
- Over 20 years to complete.
- Does not include bridge maintenance/replacement projects.
- Failure of this drainage infrastructure forces road closures and could impact other utilities such as water, sewer, gas etc.



WHAT DRAINAGE DOES THE CITY OWN?

- City of Winston-Salem owns, operates and maintains all of the pipes, catch-basins and structures within the public R/W and on City owned property (over 24,000 inventoried structures and conveyances).
- Repairs/Upgrades to the public drainage system and City owned stormwater controls (i.e. retention ponds, sand filters and other treatment devices).
- Street sweeping.



CITY OWNED STORMWATER CONTROLS

- ▶ City of Winston-Salem owns stormwater retention devices on city property (i.e. Blum Park, Washington Park, Fire Stations, Lowery Street Facility etc.).
- ▶ Infrastructure failures on city owned properties can result in significant capital expenses (in the last seven years Lockland Park, Spring Park and Washington Park cost over 3 million dollars).
- ▶ Maintenance of stormwater control measures is a National Pollutant Discharge Elimination System (NPDES) Permit requirement.



PRIVATE PROPERTY DRAINAGE

- Staff respond to over 350 private property drainage calls per year.
- Currently the City does not have an active program to participate in private property drainage issues (legislative moratorium).



Emergency Drainage Projects

- Culvert: **Canal Drive**
- Ward: North
- Damages: Embankment failure of Peters Creek. Roadway rendered was compromised to the point of being impassable. Only source of access for owners.
- Approximate Replacement Cost: \$ 90,000
- Construction is complete and roadway is open.



Emergency Drainage Projects

- Culvert: **Hawthorne Road**
- Ward: Southwest
- Damages: culvert settlement, shifting, invert undermining, carries water service to the hospital, access route to the hospital.
- Approximate Replacement Cost: \$ 3,000,000
- Construction is underway eastern section of the culvert is mostly complete. Traffic will be shifted, and construction will start on the western portion.



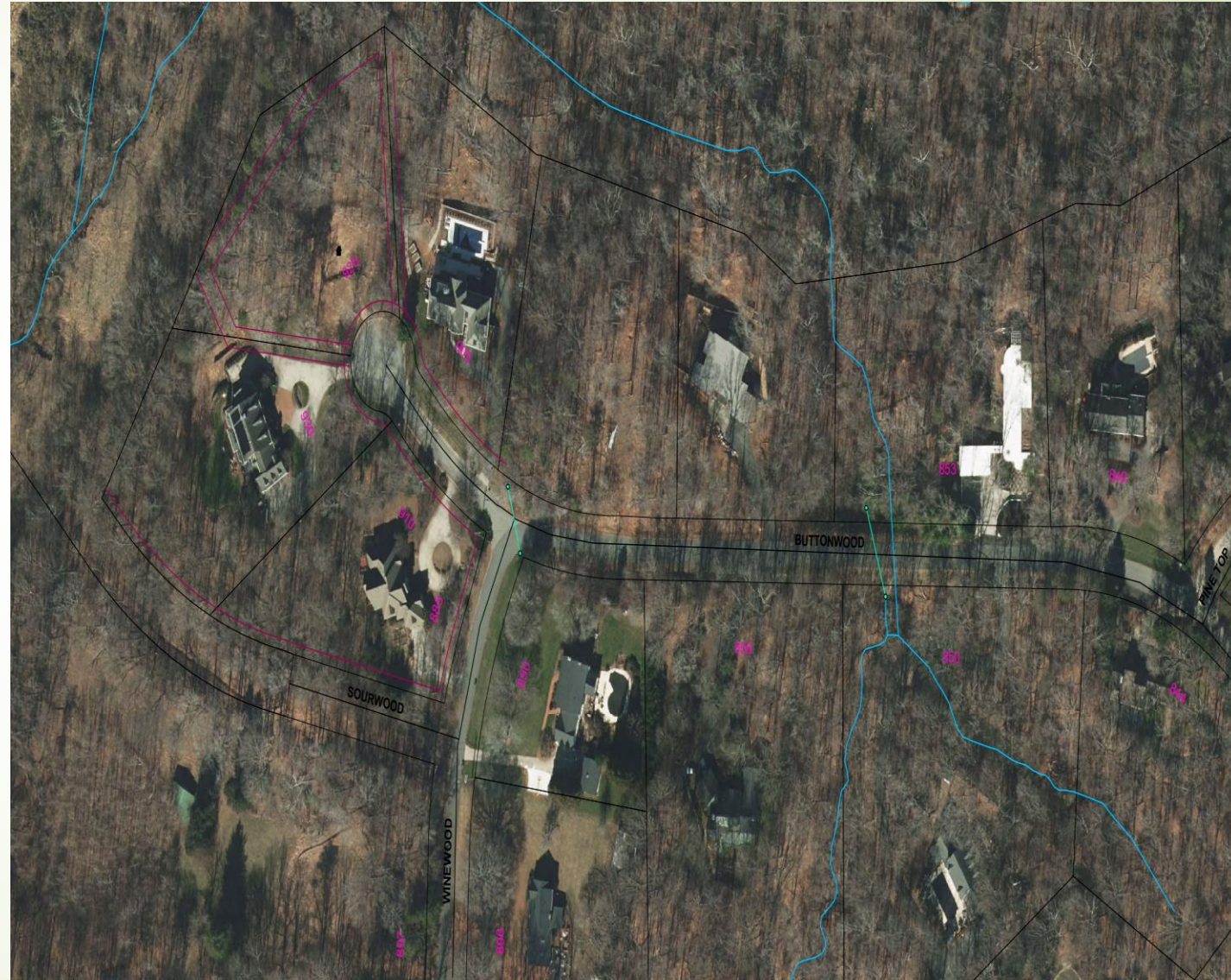
Emergency Drainage Projects

- Culvert: **Reynolda Road**
- Ward: Northwest
- Damages: Failure of a 24" clay stormwater pipe which runs crosses all four travel lanes .
- Approximate Repair Cost: \$220,000
- Pipe bursting of 150 linear feet of 24" clay pipe to 30" High Density Polyethylene Pipe (HDPE) completed. Punch list items remain.



Emergency Drainage Projects

- Culvert: **Buttonwood Drive**
- Ward: West
- Damages: Large class concrete pipe failed out causing a sinkhole and undermining the road. Carries water line and sole ingress/egress for several property owners.
- Approximate Replacement Cost: \$ 800,000.
- Completed and under warranty.




Emergency Drainage Projects

- Culvert: **Bethabara Road**
- Ward: North
- Damages: Large class arch metal pipe on concrete footings has failed. Road carries a 24" and 12" water mains.
- Approximate Replacement Cost: \$ 2,000,000
- Completed.



Process Changes Moving Forward

- Detailed inspection of larger class culvert systems and provide priority rankings to guide the CIP process.
- Obtain on-call contractor assistance with pre-established pay items instead of hiring contractor under emergency and negotiating when the infrastructure has failed.



Founded 1998
ALPHA & OMEGA GROUP
CIVIL | STRUCTURAL | WATER RESOURCES

CULVERT INSPECTION REPORT
INSPECTION TYPE: Routine

COUNTY:	FORSYTH	CULVERT NO.:	11579	ACTION ITEMS:
ROUTE:	BUCHANAN ST	MPH:	35	
LOCATION:	2945 BUCHANAN ST			
ACROSS:	UNNAMED TRIBUTARY			
LATITUDE:	36° 3' 26.94" N	LONGITUDE:	80° 15' 8.13" W	
CULVERT TYPE:	CIP Concrete Box (RCBC)			
SPANS:	(1) BARREL(S): 8' X 8' BOX, 44' ALONG CENTERLINE OF CULVERT			
PRESENT CONDITION:	FAIR	PERFORMANCE RATING:	POOR	
INSPECTION DATE:	4/1/2025			
POSTED SV:	NOT POSTED	POSTED TTST:	NOT POSTED	
INSPECTION DIRECTION:	UPSTREAM TO DOWNSTREAM			



LOOKING EAST

...Begin with the End in Mind...

Questions?

