

Fort Worth's Stormwater Management Program and Fiscal Year 2024 Fee Increase

January 8, 2024
ASCE Meeting

Jennifer Dyke- Assistant Director

Lane Zarate- Assistant Director

Transportation & Public Works, Stormwater Management



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Agenda

- Stormwater Program Background
- Fiscal Year 2023 Accomplishment Highlights
- Current Work Highlights
- Fiscal Year 2024 Stormwater Utility Fee Increase & Future Plans
 - Program Needs
 - Capital Flood Mitigation Improvements
 - Maintenance Service Level Improvements

Stormwater Program Background

Why was the Stormwater Utility Created?

- **2004** - Five fatalities due to flooded roadways and significant flooding to 300 homes and businesses
- **2006** - Utility created to provide dedicated funding to address stormwater needs



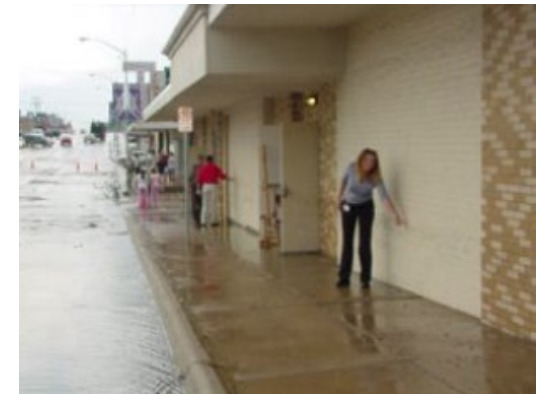
April 2004:
3 fatalities
E. Butler St. &
McClure St.



June 2004:
E. Butler St. & McClure St.
Flooding



June 2004:
Westcliff



June 2004:
Berry Street Urban
Village

Working to Achieve Council's Strategic Vision

Strategic Vision Priorities

Quality of Life

**Economic
Development &
Community
Investment**



**Community
Safety**



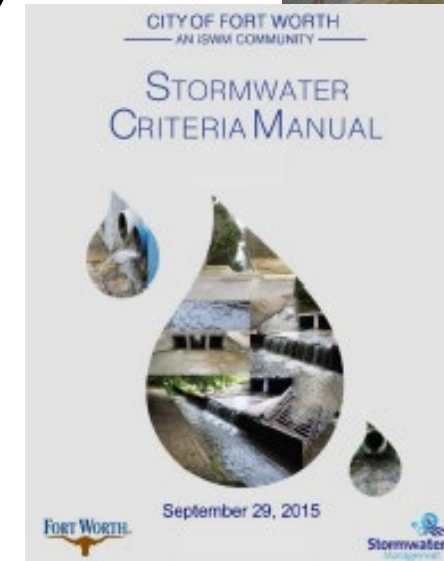
**Infrastructure,
Responsible
Growth & Fiscal
Responsibility**



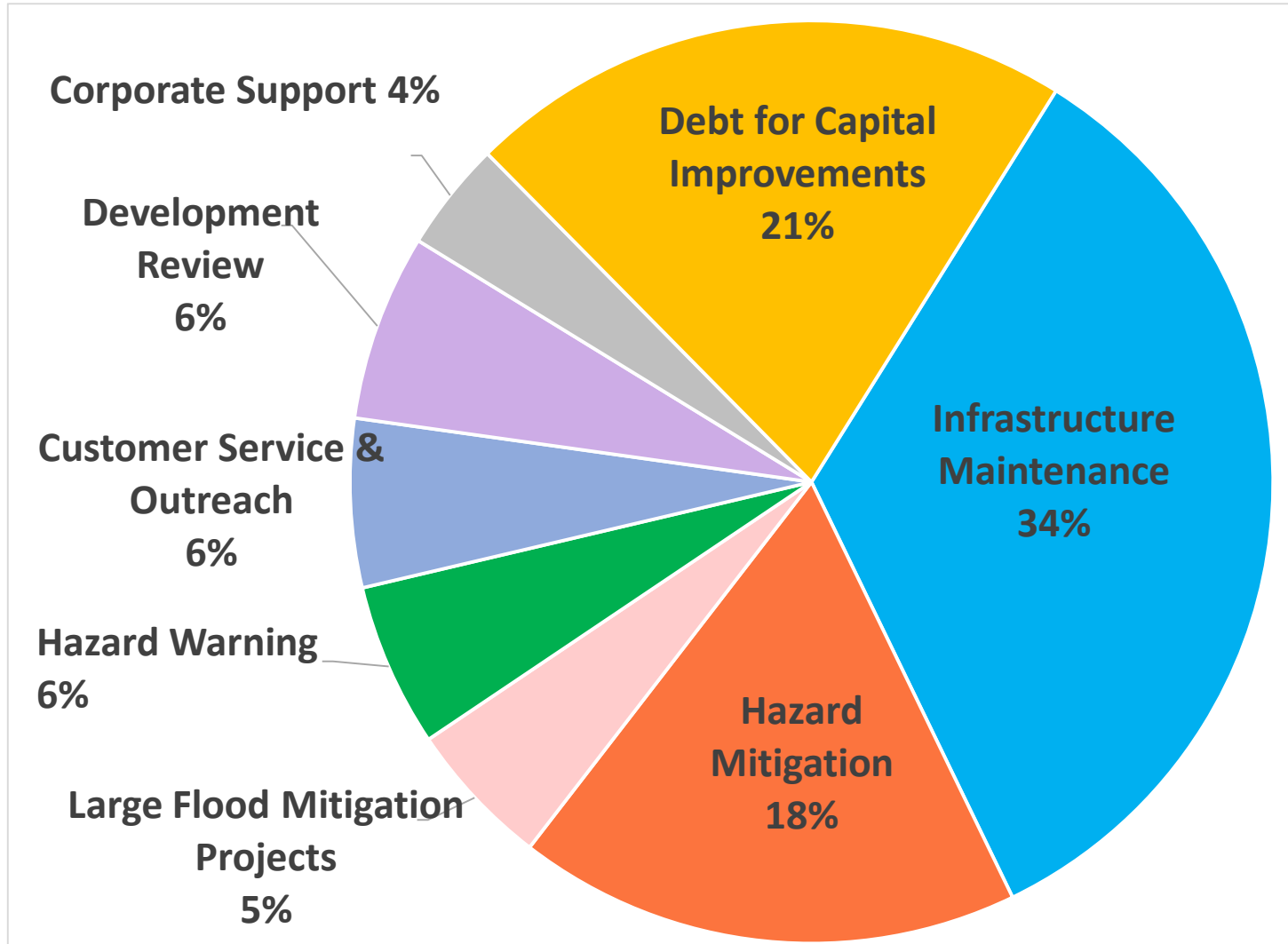
Stormwater Program Mission- To Protect People and Property from Harmful Stormwater Runoff

Primary Functions

- Maintain Infrastructure (pipes, channels, etc.)
- Mitigate Hazards (flooding and erosion)
- Warn about Hazards (flooding and erosion)
- Review Development (compliance with City standards)



FY24 Adopted Budget \$58 million



- **127 Authorized Positions**
 - 11 in Stormwater Development Services in General Fund
- Hazard Mitigation includes:
 - Minor Drainage Improvements
 - Hazardous Rd Overtopping Mitigation
 - Channel Rehab
 - Flooding Assessments

Note: Infrastructure Maintenance includes Storm Drain Rehab

Fiscal Year 2023 Accomplishment Highlights

Completed Major Hazardous Roadway Overtopping Mitigation Project

28th Street at Decatur - \$6.7M



FY23 - Completed 15 HRROM Safety Projects



Yates Street



NE 36th at Lebow



Everman-Kennedale-Burleson



Risinger Road



Maddox at Sycamore



Wycliff at Royal Channel

Completed 19 Capital Pipe Rehabilitation Projects



Carroll St and Merrimac St SDR



7th St and Burnett St SDR



E 2nd and Jones SDR

Completed 13 Reactive Projects



Clifford Storm Drain Repair



Golden Triangle SD Improvements



Lebow Channel Bank Stabilization



Eastern Hills Manhole

Completed Clark Road Flood Mitigation Project

Partnership with Crowley ISD - \$1.43M

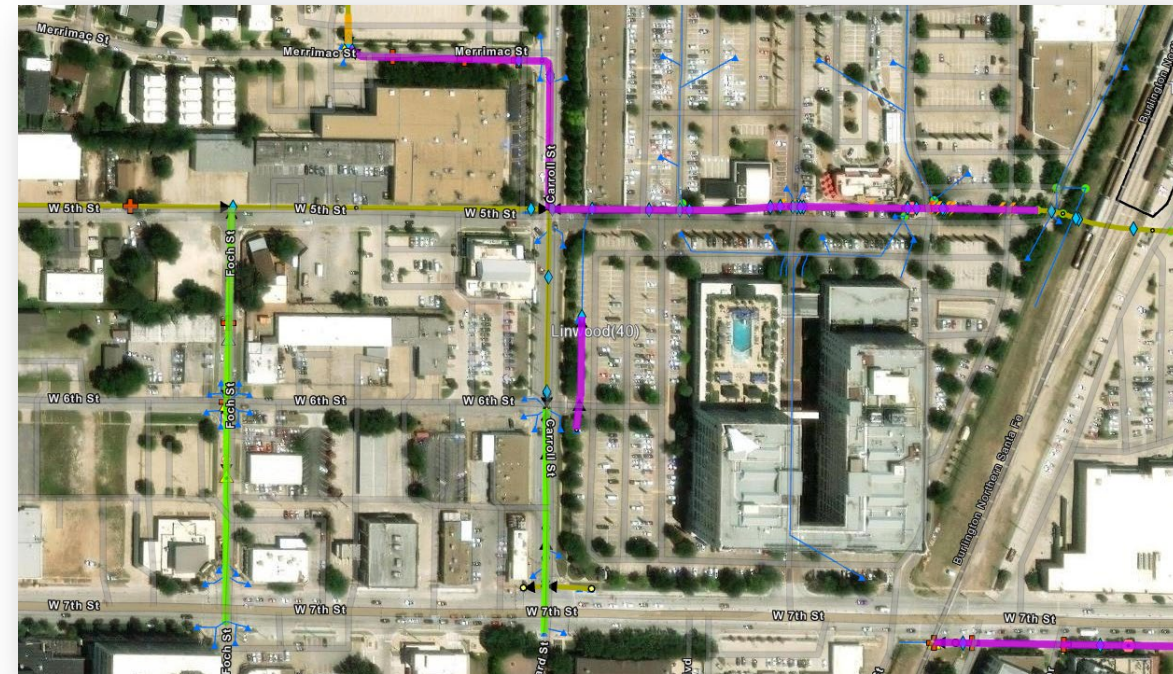


Storm Drain Rehabilitation Program

Achievements 2020 to 2023

- 115+ miles inspected with CCTV
- 66 miles evaluated for corrective actions
- 47 sinkhole concerns (void risks) identified, investigated, and scheduled for repair
- Optimizing acquired data for partnership opportunities
- Strong TPW collaborative efforts - Infrastructure, Field Ops, Capital Delivery, and GIS

Linwood area rehabilitation projects





Shoreview Culvert Improvements Project

American Public Works Association, Texas Chapter, Project of the Year award for Environment (less than \$2M).

Michael Wellbaum, City Project Manager
Misty Christian Kimley Horn, and IBCTX



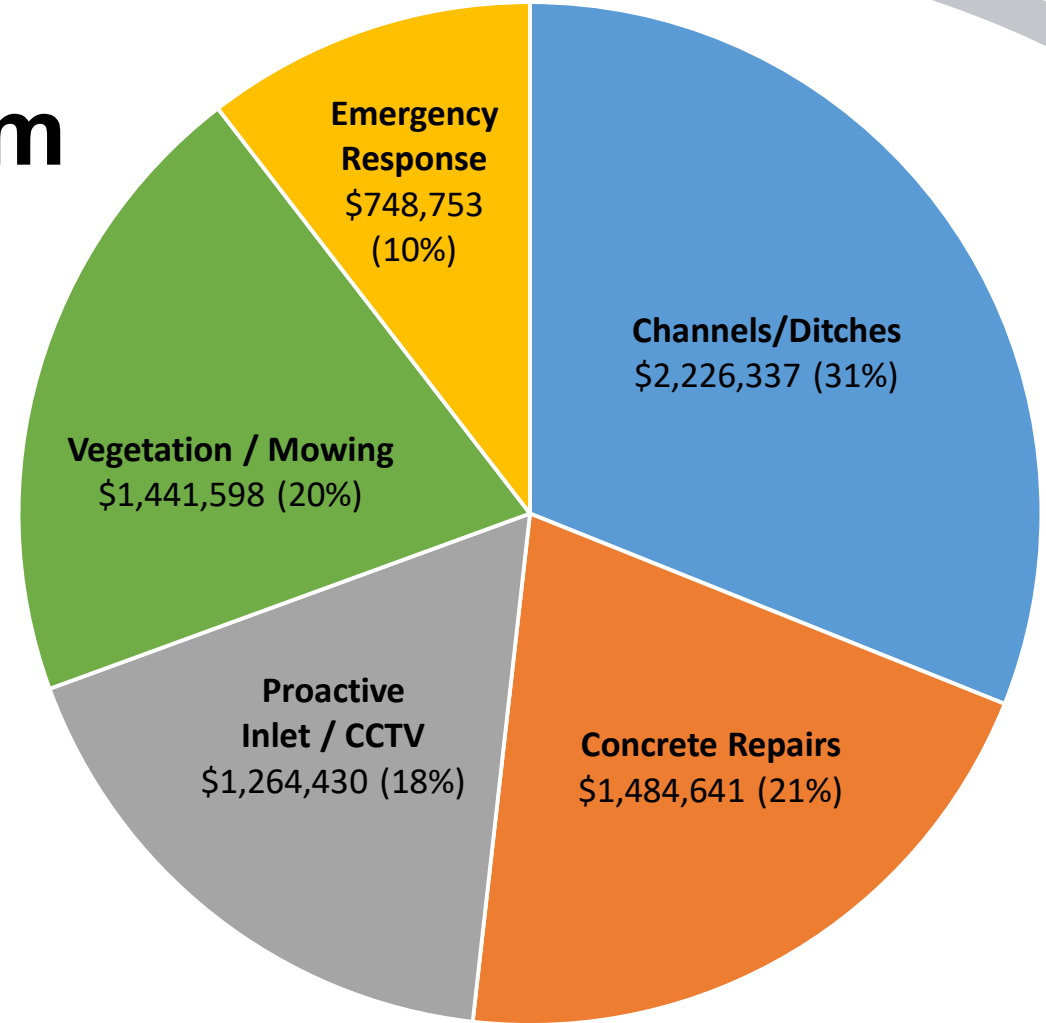
Hazardous Road Overtopping Mitigation Project Development

City Project Manager, Justin Naylor
Freese & Nichols

State & National Award: A: Studies, Research and Consulting Engineering Services, Gold Medal Winner 2023

Existing Maintenance Program

- Proactive Inlet/CCTV Programs ~ 30,000 Inlets
- Concrete Repairs ~ 1,000 miles
- Channel / Ditches ~ 230 miles
- Vegetation / Mowing ~ 520 Acres
- Emergency Response ~ 12 Events



Total Expenditure = \$7,165,760

FY23 Channel Team Accomplishments

- Channel Maintenance
 - 31,574 Linear Feet
- Channel Restoration
 - 6,600 Linear Feet
- Bar Ditches
 - 25,978 Linear Feet



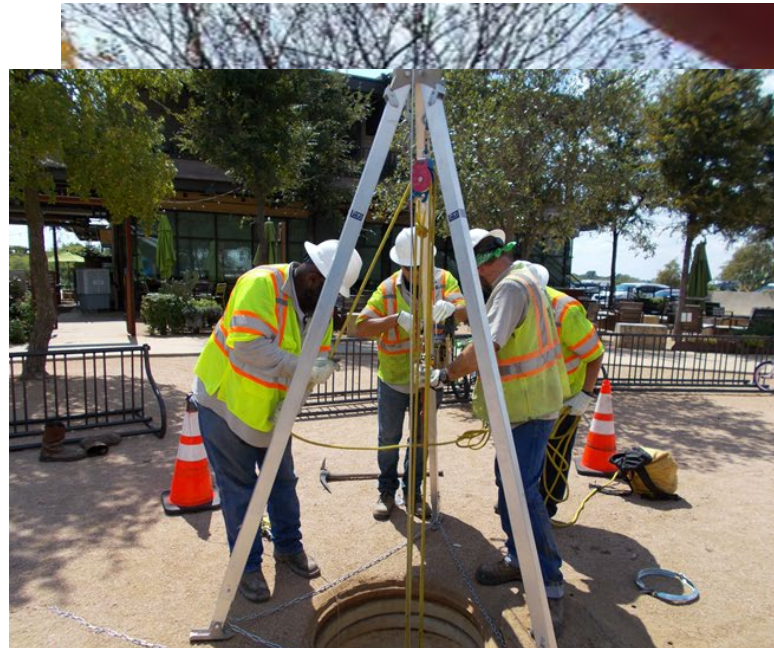
FY23 Vegetation Team Accomplishments

- Mowing
 - 1,506 Acres
- Culvert Cleaning
 - 457 Culverts



FY23 Inlet/CCTV Team Accomplishments

- Inlet Inspection
 - 6,501 Inlets
- Inlet Cleaning
 - 2,946 Inlets
- Water Quality Devices
 - 36 Devices



FY23 Inlet/CCTV Team Accomplishments

- Pipe Inspection
 - 132,000 LF
- Pipe Cleaning
 - 31,680 LF
- CCTV Level 2
 - 52,800 LF



FY23 Concrete Team Accomplishments

- Structure Repair
 - 45 Structures
- Joint Repair
 - 64 Joints
- Major Infrastructure
 - 1,827 SqYds
- Pipe Replacement
 - 74 Linear Feet



2023 TxAPWA Project of the Year <\$2M

Awarded to City of Fort Worth Storm Water Division
For the C.P. Hadley Park Channel Restoration Project



Before



During



After

Current Work Highlights



Flood Risk Mapping

1. FEMA Floodplains

2. Non-FEMA Flood Risk Mapping

- Potential High Water Areas
- City Flood Risk Areas

Flood Risk Viewer





Stormwater Data Download Viewer

The screenshot displays the web application interface for the Stormwater Data Download Viewer. At the top left, there are navigation tabs: Home, Layers, Legend, and Stormwater Data. The 'Layers' tab is active. Below these tabs is a list of layers with checkboxes: Floodplain Model Download (checked), Elevation Certificate (checked), Floodplain Permits and Studies (checked), Drainage Studies and SWMP (checked), City Stormwater Studies (checked), Mapshed Boundary (checked), and Basemap (unchecked). The main map area shows a city map of Fort Worth with various colored overlays: green for floodplains, purple for mapsheds, and orange for boundaries. Major roads like I-35W Expressway, North-South Fwy, West Fwy, and East Fwy are labeled. A search bar at the top right contains the text 'Search for ...'. A toolbar at the top of the map area includes icons for Stormwater Data, Elevation Certificates, Locate Address or Cross Street, Identify, Draw, Measure, All Markup, Buffer, and Clear Markup. The Fort Worth logo is in the top right corner of the map area.



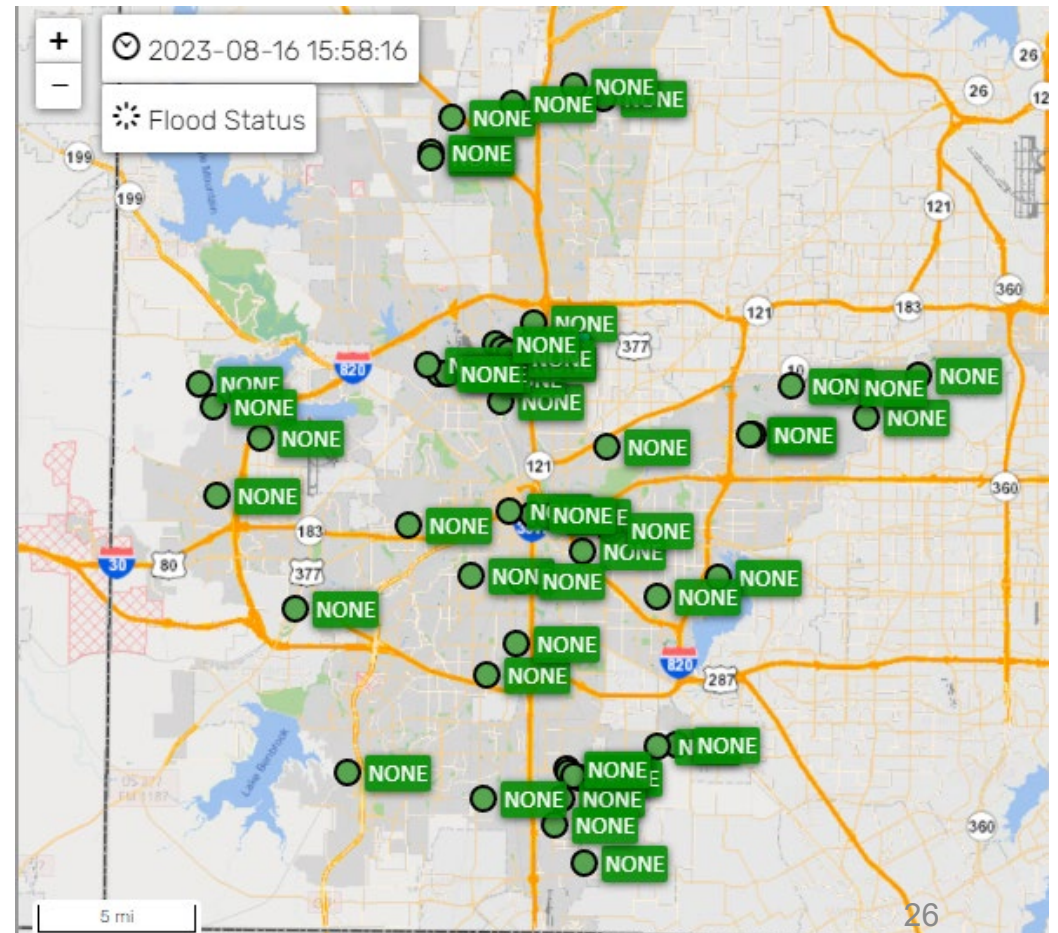
High Water Warning System (HWWS) Update

Equipment Upgrade:

- Recently completed telemetry update to ALERT2 to reduce transmission errors
- Improved site visibility and maintenance

Forecasting:

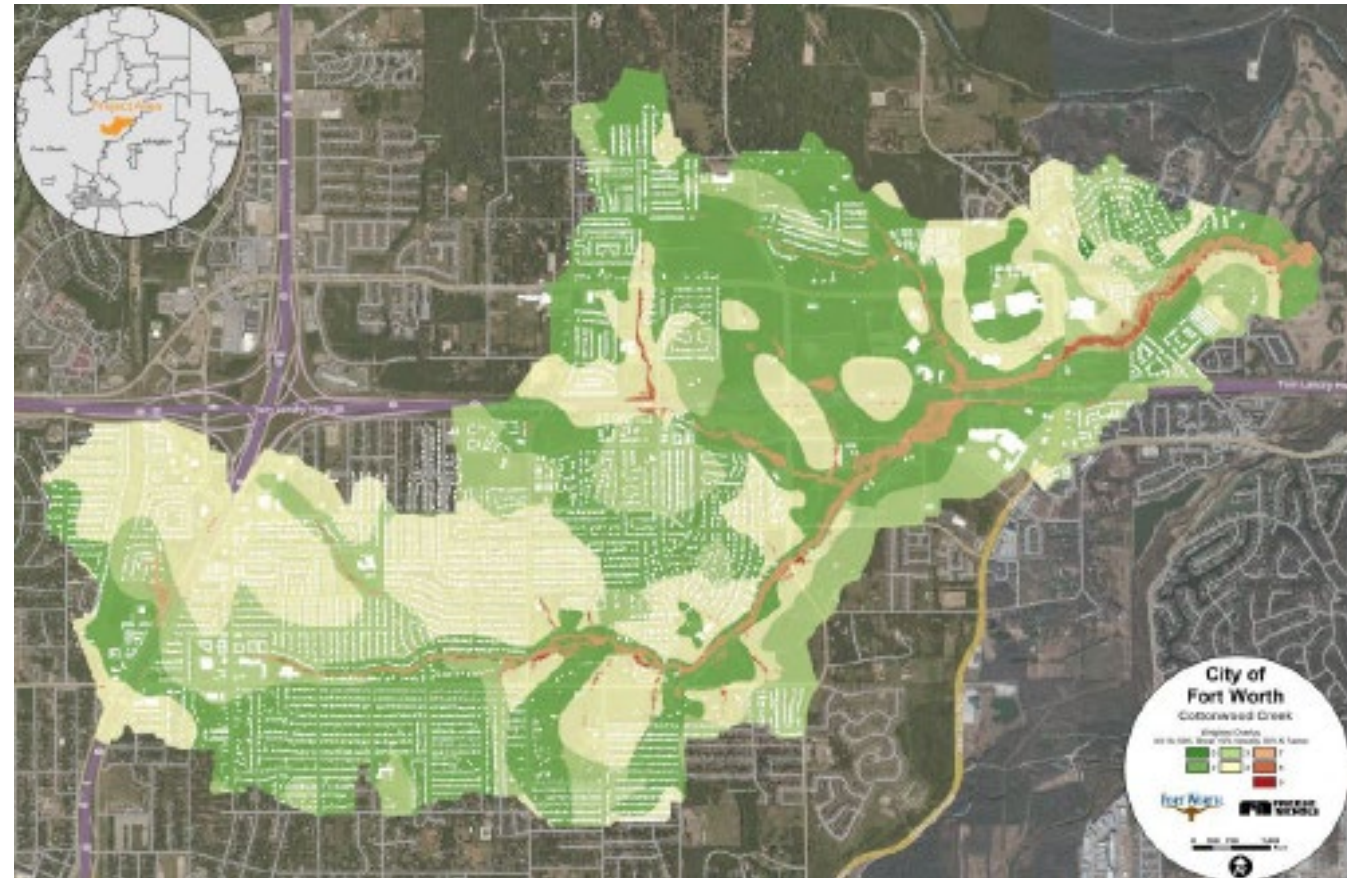
- Prediction of flooding at HWWS and adjacent street crossings from real-time rainfall and flood stage
- Citywide forecasting by end of FY24



Citywide Erosion Risk Mapping

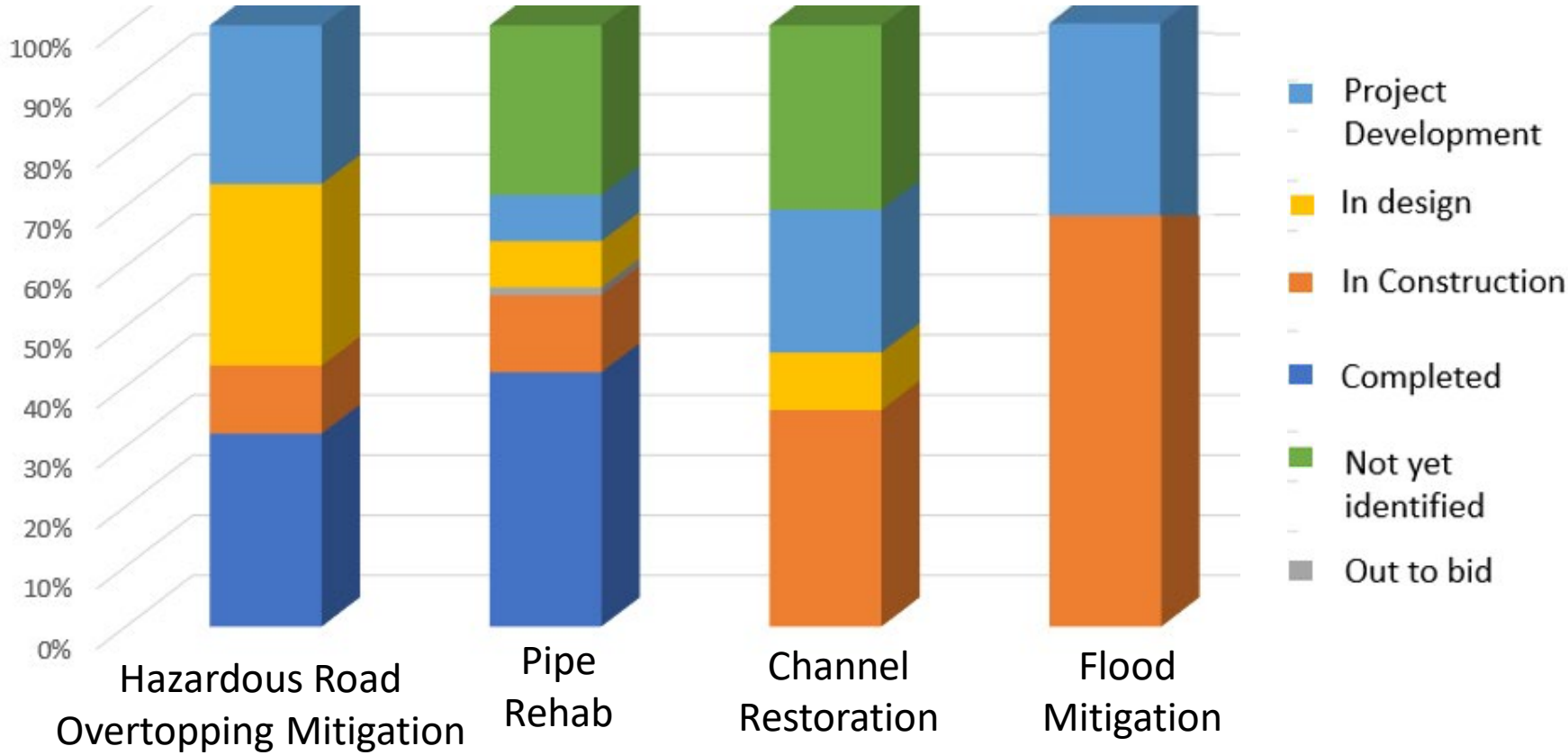
Erosion Risk Mapping (FY24-25):

- Will recommend creek setbacks based on bank slopes, height, and historical erosion rates
- Used to communicate erosion risk
- Could potentially result in establishment of buffer zones and/or recommendations to regulate building proximity near creeks
- Future stakeholder engagement



2020 Fee Increase Revenue Bond Program ~\$96.24M Debt + Pay-Go Highlights

Goals: 38 Locations 60 Projects 1.8 Miles 3 Project Phases



Note: Initial 2019 estimated goals have been updated due to actual debt issuances, higher project costs (inflation, project development refinement of estimates initially based on high level planning), changing how delivery is measured, and Aug. 2022 flooding showing need for reallocation toward flood mitigation project development. Progress as of Oct. 2023

Fiscal Year 2024 Stormwater Utility Fee Increase and Future Plans

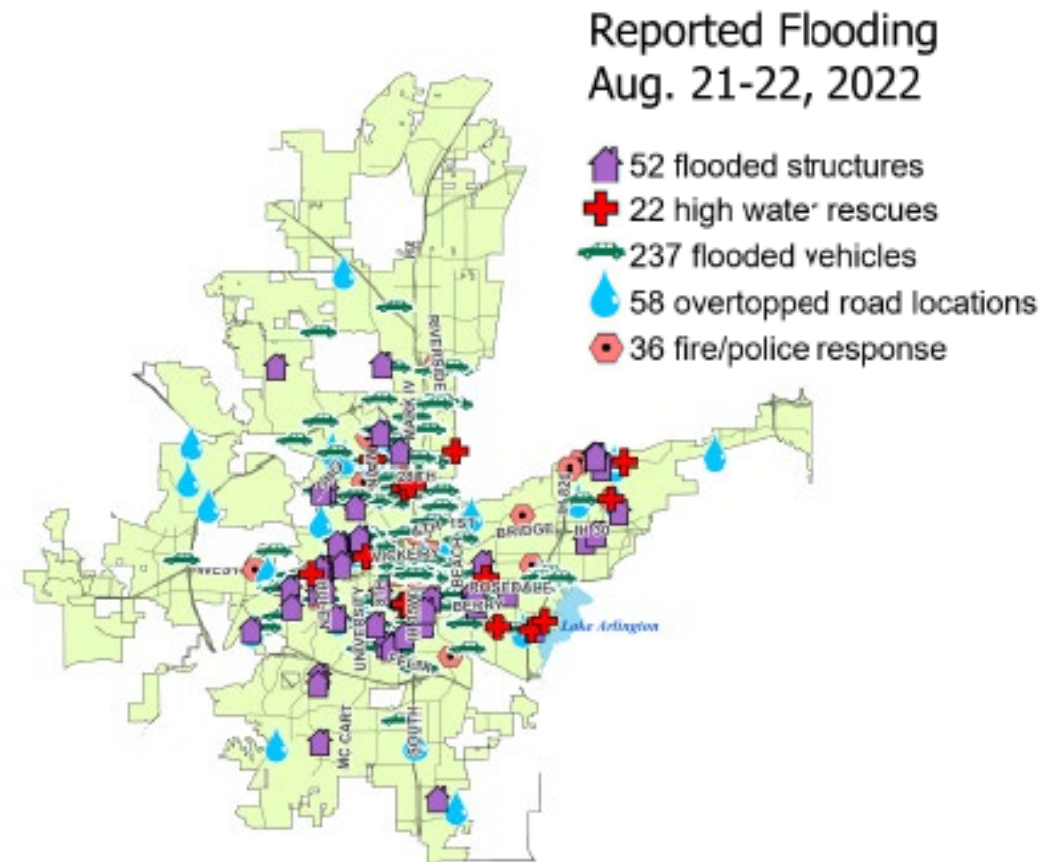


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Why was a Stormwater Utility Fee Increase Needed?

- Increased asset growth and aging infrastructure
- Continued repetitive flooding
- Need to continue to invest in drainage system maintenance and infrastructure improvements

Benefits	
Reduce flooding and emergency response	✓
More effective Asset Management	✓
Increase maintenance service levels reducing the need for costly capital projects	✓
Improve public safety & quality of life	✓
Save the City & residents money	✓



FY24 Stormwater Utility Fee Increase

- 15% fee increase split 50/50 between Capital and Maintenance
 - Current fee \$5.75/billing unit/month
 - New fee starting Jan 1, 2024: \$6.61/billing unit/month
- Increased revenue with fee increase:
 - FY24 (9 months- New fee would take effect Jan. 2024) ~\$5.9m
 - FY25 (full fiscal year) ~\$7.7m
 - Provides capacity to issue ~\$160m debt in 4 tranches for capital flood mitigation improvements over 12 years

SO SAFE



Large Scale Flood Mitigation

Large Scale Flood Mitigation Needs

Goal: Begin to tackle large scale flooding problems in known problem areas

Initial Improvement Needs: ~\$225M Est. Target Need

Project	Estimated Cost of Overall Project	Est. Phase 1 Funding	Est. Future Funding	CD
Upper Lebow	\$75M	\$25M	\$50M	2
Linwood / W. 7th	\$110M	\$69M	\$41M	9
Berry / McCart	\$40M	\$24M	\$16M	9

SO SAFE



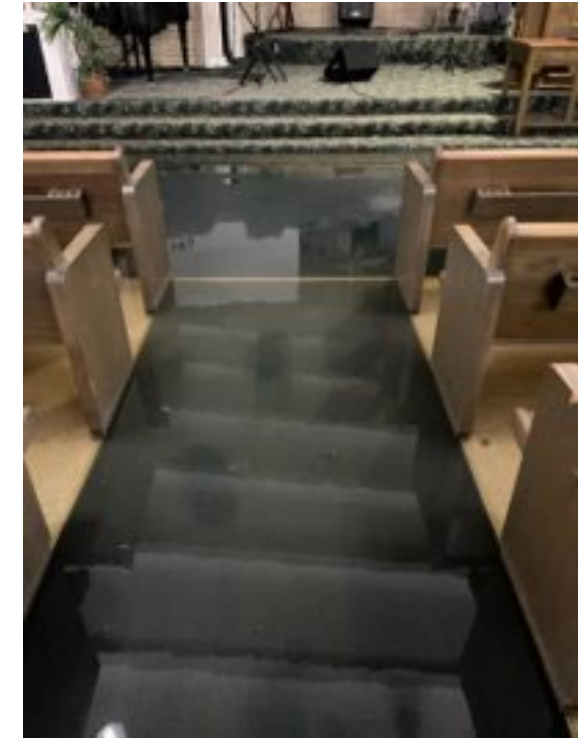
Notes:

1. All cost and funding values are 2023 dollars (\$)
2. Phase 1 funding and project delivery projections consider a 5% annual cost inflation and that revenues are collected, and contracts are awarded, between FY24 and FY37
3. Project components, design & construction phasing, and cost estimates to be refined during upcoming Project Development (currently based on high level planning)

Upper Lebow

Overall Project Benefits

- Improve 8 hazardous road crossings to 100yr level of service (flashers currently)
- Mitigates ~130 structures ~100yr flood risk
 - ~ 33 structures already purchased
 - Recreational opportunities potentially at detention basin*



Funded with Proposed FY24
Stormwater Utility Fee Increase

Phase 1a in FY25
Phase 1b in FY32
Phase 1c in FY35

Remaining Phases

\$50M



* Upper Lebow detention funded with FY23 Bond funds

Linwood / W. 7th

Overall Project Benefits

- Mitigates 100yr flood risk for ~40 structures
- Partially mitigates flood risk for ~200 structures

Proposed Improvements

~ \$110M

- 2 major underground bypasses and outfalls

~(+\$155M) ★

- Optional Future Pump Station for Baileys Sump (not included in table)



<p><u>Funded with Proposed FY24 Stormwater Utility Fee Increase</u></p> <p>Phase 1a in FY26 Phase 1b in FY35</p>	<p><u>Remaining Phases</u></p> <p>\$41M (excludes pump station)</p>
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Berry / McCart

Overall Project Benefits

- 5 year:
 - Reduces flood depth by 2.8 ft @ Berry St
 - Mitigates ~40 structures for 5yr flood risk
- 100 year:
 - Reduces flood depth by 3.4 ft @ Berry St
 - Mitigates ~ 50 structures for 100yr flood



Funded with Proposed
FY24 Stormwater Utility Fee Increase

Phase 1a in FY29

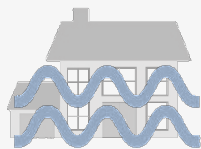
Phase 1b in FY32

Remaining
Phases

\$16M

0

Current 100 Year Flood Mitigation



200

Proposed 100 Year Flood Mitigation, Overall Project

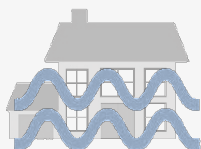


* One Structure = 40 Structures

100 Year Flood Mitigation & Varied Flood Mitigation

0

Current Varied Flood Mitigation



240

Proposed Varied Flood Mitigation, Overall Project



* One Structure = 40 Structures

~440 structures benefited by three overall projects



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Maintenance

Improves Asset Performance, Reducing Flood Risk City-Wide

Reduces City Cost by Keeping the Good Assets Good

Reduces Contracted Work, Frees up Capital Funds

5 Year Plan with 15% Fee Increase

	FY24	FY25	FY26	FY27	FY28
ESTIMATED REVENUE FROM 15% FEE INCREASE	\$5,970,586	\$7,691,576	\$7,960,782	\$8,239,409	\$8,527,788
MAINTENANCE FUNDING AVAILABLE (50%)	\$2,985,293	\$3,845,788	\$3,980,391	\$4,119,705	\$4,263,894
Channel Maintenance (CapEx)		\$2,204,800	\$682,560		
Channel Maintenance (O & M)				\$1,059,424	\$1,097,260
CCTV Inspection/Cleaning Team (CapEx)	\$1,070,000				
CCTV Inspection/Cleaning Team (O & M)	\$881,888	\$916,897	\$800,963	\$830,628	\$860,293
Additional CCTV Crew (CapEx)			\$486,000		
Additional CCTV Crew (O & M)					\$276,956
Proactive Culvert Program (CapEx)	\$460,000	\$52,000			
Proactive Culvert Program (O & M)	\$500,216	\$520,045	\$447,166	\$463,728	\$480,290
Pipe Rehab Repairs Additional Crew (CapEx)			\$1,190,160		
Pipe Rehab Repairs Additional Crew (O & M)				\$1,402,980	\$1,453,086
TOTAL FUNDING USED	\$2,912,104	\$3,693,742	\$3,606,849	\$3,756,760	\$4,167,887

Unused Maintenance Funds Can Roll-Over to Capital

The Remaining Roll-Over Amount Increases after First Five Years

Culvert Inspection and Clearing Team



Problem:

- Sediment Accumulation or Blockages, Result in Dangerous Roadway Overtopping and Property Flooding.
- The City Has 4,000 Culverts City-wide, But We Only Inspect 200 a Year And Clean 360 a Year
- Developers Are Limited to Not Using Medium Size Culverts Because We Don't Have the Right Equipment to Clean them Safely.

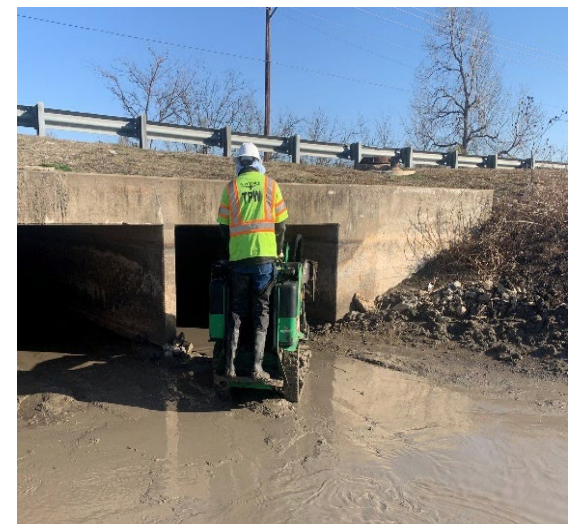
FY24 Solution:

- Add a 5 Person Dedicated Team to Inspect and Clean Culverts.
- Purchase Needed Remote Controlled Equipment and Remove Developer Restrictions.

Fee Increase Funded Cost: \$960K

Benefits of Funding:

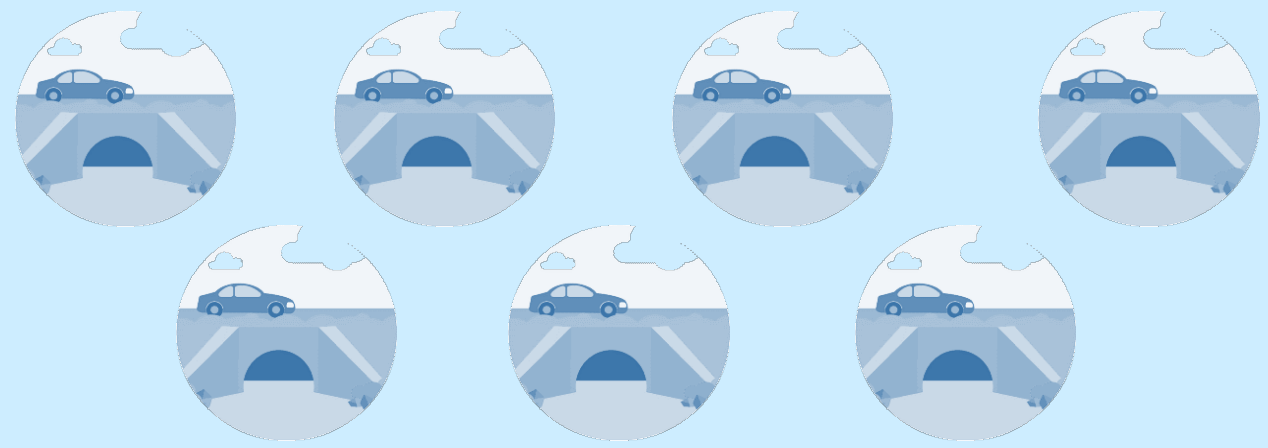
- Reduces Risk of Hazardous Roadway Overtopping.
- Will Allow For Proactive Culvert Inspection.
- Minimize Expensive and Time-Consuming Emergencies.
- Allow for Safe Maintenance of All Existing Culvert Sizes.
- Improve Economic Development By Reducing Developer Costs.
- Accelerates Removal of Sediment and Debris



200 Current Culverts Inspected/ Year



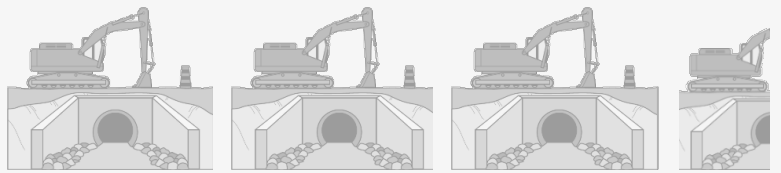
1,400 Proposed Culverts Inspected/ Year



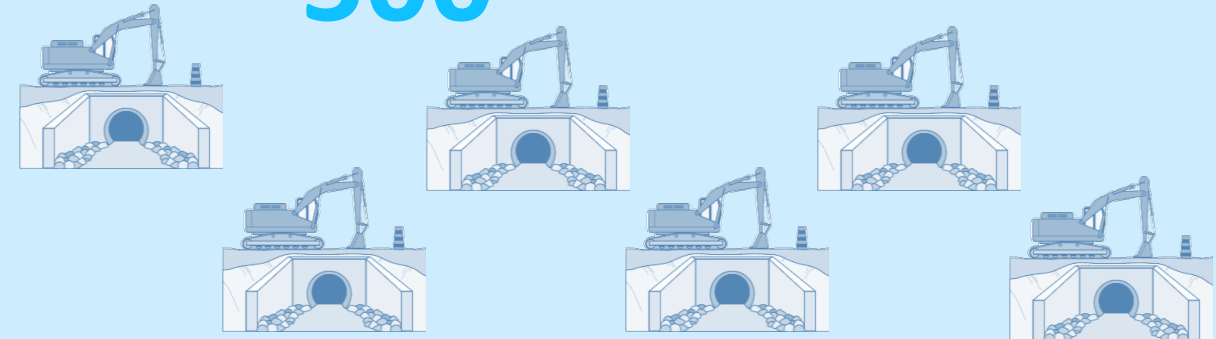
* One Inspection = 200 Inspections

Current Vs. Proposed Culvert Inspection & Cleaning

360 Current Culverts Cleaned / Year



500 Proposed Feet Cleaned / Year



* One Cleaning = 100 Cleanings

Pre-CCTV Pipe Inspection and Cleaning



Problem:

- The New In-house CCTV Program is Cost-effective and Reduces the Risk, But the Program's Limiting Factor is Inspecting and Cleaning in Advance of CCTV Operators.
- Unknown Pipe Blockages Results in Stopping and Re-mobilizing Multiples Times.

FY24 Solution: Add a 7 Person Dedicated Team to Inspect, Clean and Proactively Plan Ahead of CCTV Operators.

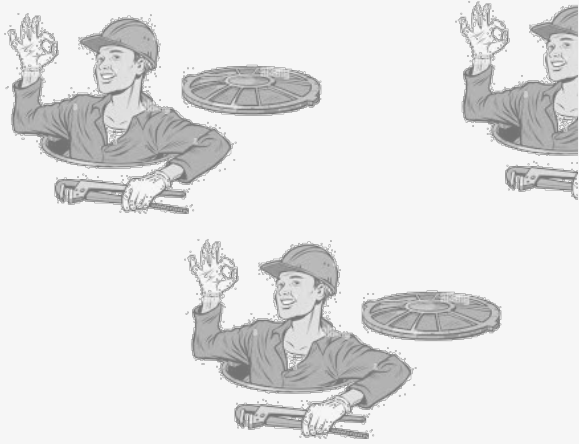
Fee Increase Funded Cost: \$2M

Benefits of Funding :

- Reduces Cost by 44% = \$558,360 Annually
- CCTV Assessments Support the Storm Drain Rehab.
- Reduce City Risk of Issues Like Sink-Hole Voids
- Improves CCTV Program Efficiency
- Increases our 10% Asset Condition Information.
- Accelerate Removal of Trash and Debris from Pipes



132,000 Current Feet Pre-Inspected / Year



264,000 Proposed Feet Pre-Inspected / Year



** One Inspector = 52,800 Feet of Pre-Inspection*

Pre-CCTV Pipe Inspection and Cleaning

5,280 Current Feet Cleaned / Year



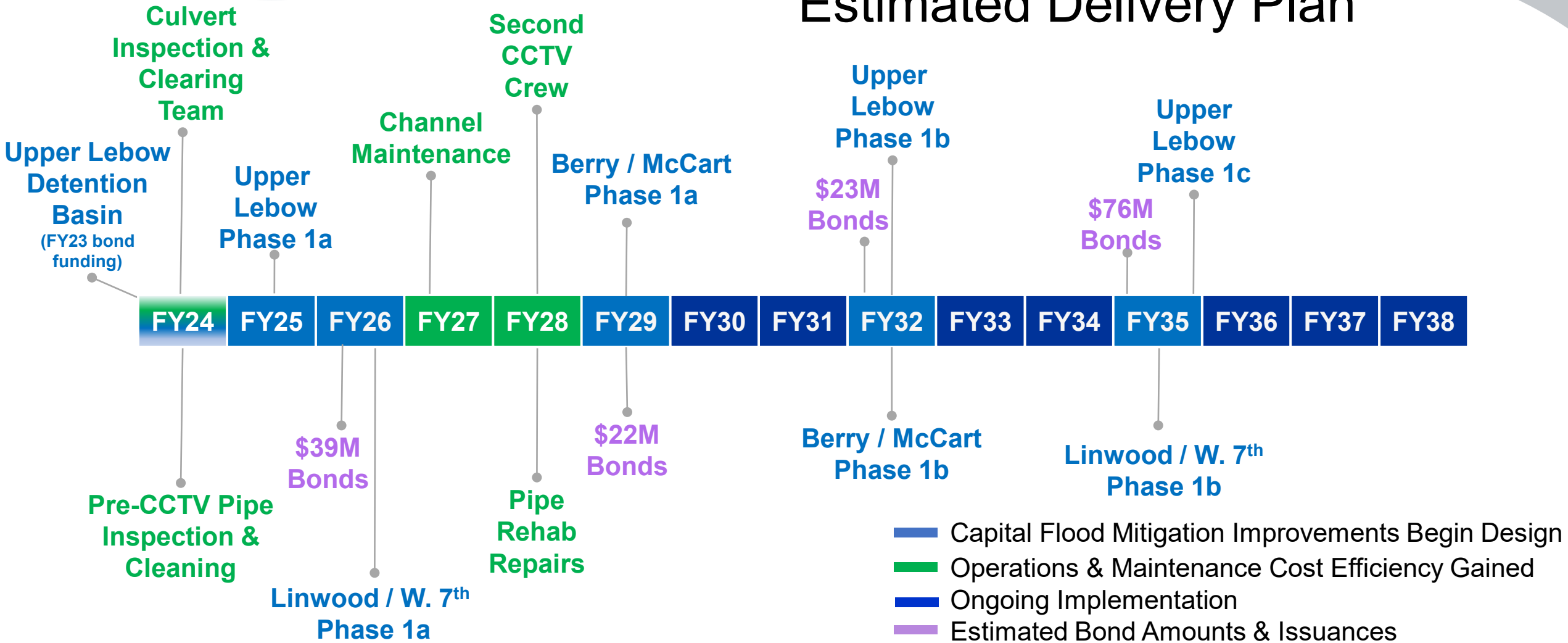
15,840 Proposed Feet Cleaned / Year



** One Cleaner = 5,280 Feet of Pre-Cleaning*

FY24 Fee Increase Wrap Up

15% Fee Increase Estimated Delivery Plan*



*Overall delivery plan may be adjusted due to changes in utility fee revenue projections, debt sale interest rates, and Project Development to define capital project components, design and construction phasing, and cost estimates in more detail

Overview of Proposed Additional Benefits

Protecting People and Property from Harmful Stormwater Runoff

	100-YR Flood Mitigation	Varied Flood Mitigation	Culverts Inspected/Cleaned	Pre-Inspected Feet of Pipe	Pre-Cleaned Feet of Pipes	Feet of Channels Maintained	Pipes Repaired	Feet of CCTV
CURRENT	0	0	200/360	132,000	5,280	26,400	25	52,800
PROPOSED	200	240	1,400/500	264,000	15,840	42,240	50	105,600

Thank You!

Jennifer Dyke

Jennifer.Dyke@FortWorthTexas.gov

Lane Zarate

Lane.Zarate@FortWorthTexas.gov

For more information about the Stormwater Management Program:

<https://www.fortworthtexas.gov/departments/tpw/stormwater>

