

Stormwater Flood Mitigation and Maintenance Needs

August 24, 2023
Council Budget Work Session

Jennifer Dyke- Assistant Director

Stephen Nichols- Stormwater Program Manager

Lane Zarate- Assistant Director

Transportation & Public Works, Stormwater Management



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Agenda

- Stormwater Program Background and Needs
- Proposed Stormwater Utility Fee Increase
 - Capital Flood Mitigation Improvements
 - Maintenance Service Level Improvements

Stormwater Program Background and Needs

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



Westcliff
June 2004

Berry Street
Urban Village
June 2004



E Butler St & McClure St
Flooding June 2004



Working to Achieve Council's Strategic Vision

Strategic Vision Priorities

Quality of Life

**Economic
Development &
Community
Investment**



**Community
Safety**



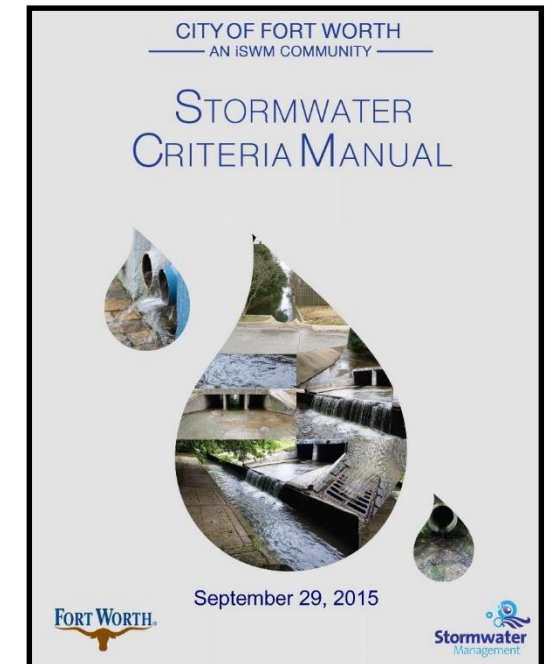
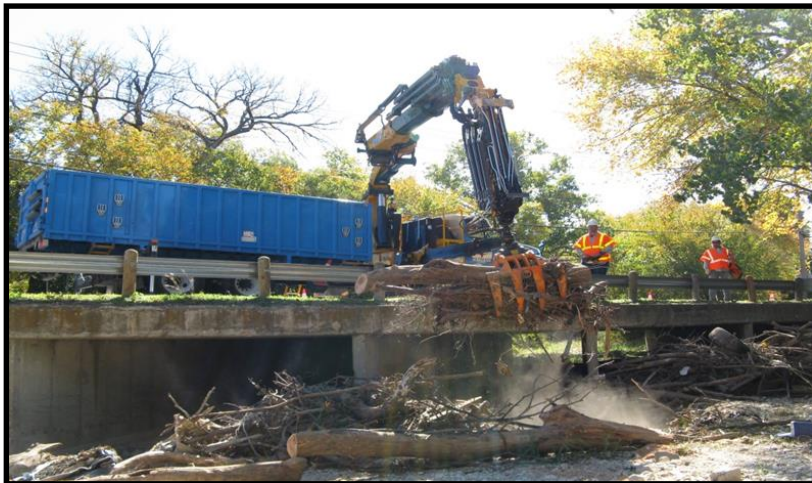
**Infrastructure,
Responsible
Growth & Fiscal
Responsibility**



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)



Stormwater Program- Highest Priority Needs

- Current Stormwater Utility Fee revenue is not sufficient for capital and maintenance needs
- Infrastructure condition is not all known
- Asset growth and responsibilities increase annually

Most Common Asset Types	Estimated Asset Class Health/Score	Current Citywide Est. Units	Total Estimated Cost to Address Critical Capital Needs	FY23-27 Paygo + Bond	Est. Annual Maintenance Needs	Annual Maintenance Funding Amount
Road culverts at channels/creeks	C minus: Mediocre to Poor	~4,000	Major: \$600M - \$1B Safety: \$40M - \$50M	\$36.63M	\$670,000	\$343,000
Storm Drain Pipes- condition & capacity	D: Poor. At risk.	~ 950 miles	>\$1B	\$36.06M	\$3.5M	\$1.4M
Channels	C: Mediocre. Requires attention	~ 230 miles	\$280M - \$480M	\$7.93M	\$6.4M	\$2.2M

What will it take to make our community safer from flooding?

Combination of:

- Stormwater Utility Fee Increases
- Tax Increment Finance District Funding
- Partnerships
- Potential Grants (historically not easy to get for stormwater projects)
 - FEMA Flood Mitigation Assistance
 - Texas State Flood Plan- Flood Infrastructure Fund
 - Safe Streets and Roads for All

Proposed FY24 Fee Increase



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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	✓

Proposed FY24 Stormwater Utility Fee Increase

- 15% fee increase split 50/50 between Capital and Maintenance
- Texas Stormwater Utility Fee benchmarking shows our current fee is just above the TX average, while a 15% increase would bring us just below Dallas while remaining less than Arlington and Austin
- 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

Rate Payer Impact

	Rate Payers	Current Monthly Payment <i>\$5.75/billing unit/mth</i>	Monthly Payment Increase <i>\$6.61/billing unit/mth</i>	Current Annual Payment	Annual Payment Increase	New Annual Payment With 15% Increase
	Average Single Family Homeowner	\$5.75	\$0.8625	\$69.00	\$10.35	\$79.35
	Sample Small Commercial (1 acre of impervious cover)	\$96.33	\$14.45	\$1,156.00	\$173.40	\$1,329.40
	Sample Medium Commercial (10 acre of impervious cover)	\$963.33	\$144.50	\$11,560.00	\$1,734.00	\$13,294.00
Top 20 Rate-Payers						
1	City of Fort Worth	\$81,599	\$12,240	\$979,191	\$146,879	\$1,126,070
2	FWISD	\$58,517	\$8,778	\$702,202	\$105,330	\$807,532
3	Walmart	\$23,784	\$3,568	\$285,402	\$42,810	\$328,212
4	Keller ISD	\$22,736	\$3,410	\$272,832	\$40,925	\$313,757
5	Northwest ISD	\$19,646	\$2,947	\$235,756	\$35,363	\$271,119
6	Eagle Mountain Saginaw ISD	\$18,493	\$2,774	\$221,920	\$33,288	\$255,208
7	FEDEX	\$17,800	\$2,670	\$213,604	\$32,041	\$245,645
8	AT Industrial Owner 1 LLC	\$16,986	\$2,548	\$203,826	\$30,574	\$234,400
9	Bell Helicopter	\$14,349	\$2,152	\$172,193	\$25,829	\$198,022
10	TD Industries Inc.	\$13,513	\$2,027	\$162,151	\$24,323	\$186,474
11	Mercantile Partners	\$13,358	\$2,004	\$160,290	\$24,044	\$184,334
12	Crowley ISD	\$12,608	\$1,891	\$151,290	\$22,694	\$173,984
13	Tarrant County	\$11,335	\$1,700	\$136,025	\$20,404	\$156,429
14	Kroger	\$10,984	\$1,648	\$131,803	\$19,770	\$151,573
15	American Airlines	\$10,921	\$1,638	\$131,056	\$19,658	\$150,714
16	Alcon Laboratories Inc	\$9,840	\$1,476	\$118,080	\$17,712	\$135,792
17	Alliance Towncenter Investors	\$9,529	\$1,429	\$114,345	\$17,152	\$131,497
18	All Storage	\$8,456	\$1,268	\$101,476	\$15,221	\$116,697
19	Fort Worth Federal Center	\$7,885	\$1,183	\$94,616	\$14,192	\$108,808
20	Dallas Fort Worth Auto Auction	\$7,873	\$1,181	\$94,477	\$14,172	\$108,649

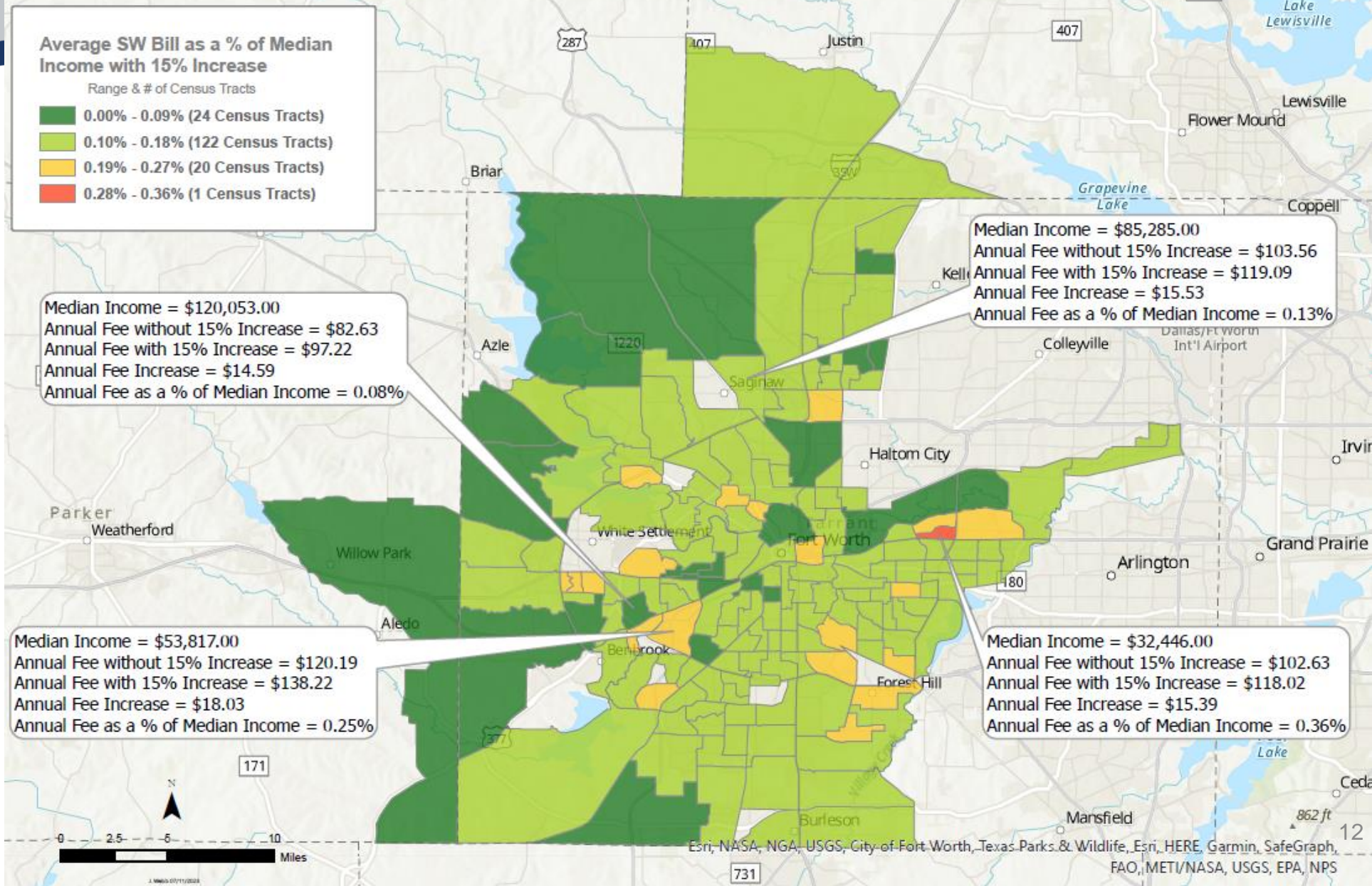
Stormwater Fee credits available for non-residential & high occupancy residential property owners

2024 Rate Increase by 15 Percent

Calculated Using 2022 Average Residential Transaction Rate

Affordability for Single Family Residential

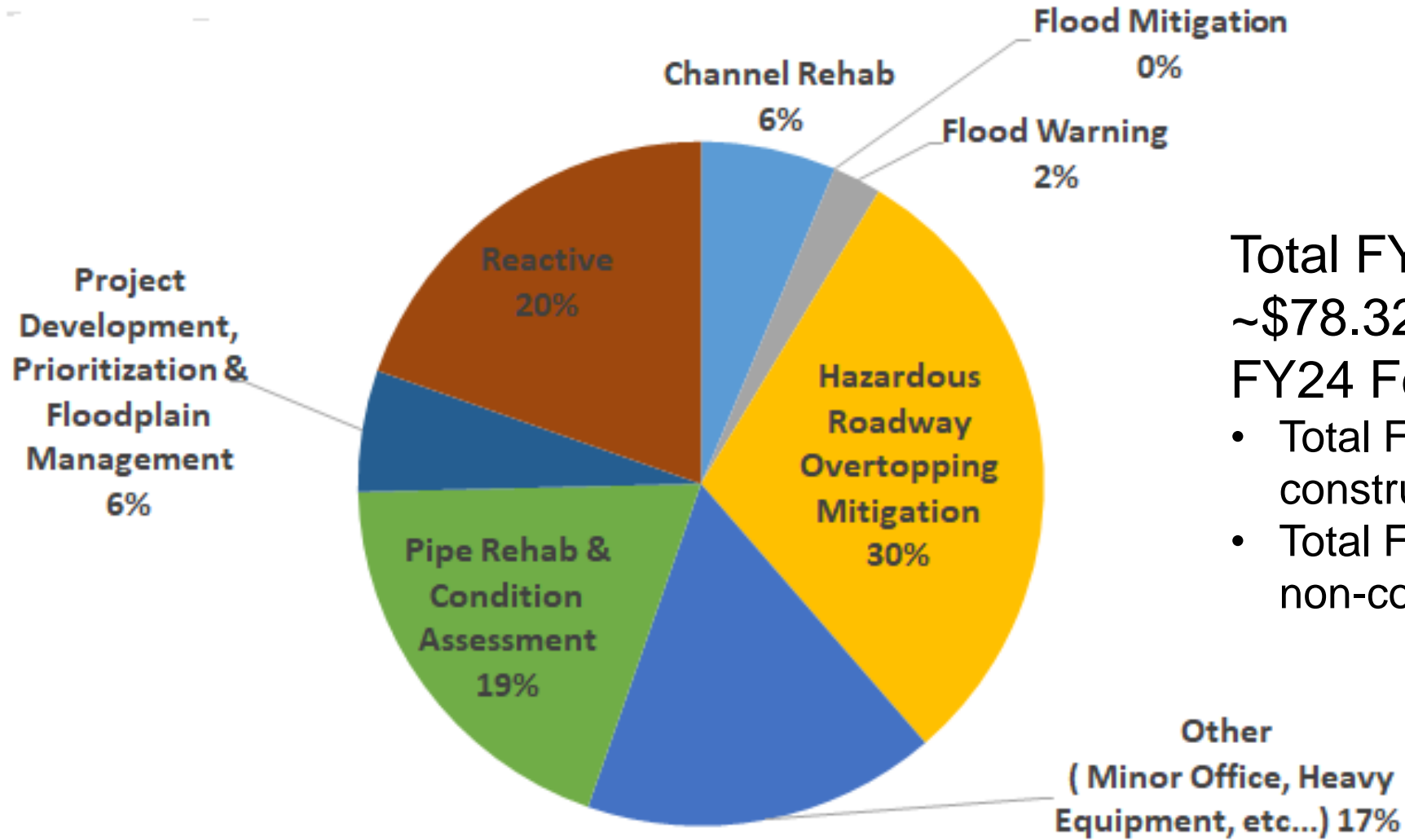
Single family residents would pay < 0.4% / year as a percentage of median income with the 15% fee increase



Large Scale Flood Mitigation



Current Capital Program FY 24-28 Pay-Go Allocation



Total FY 24-28 Pay-Go Funding
~\$78.32M without the proposed
FY24 Fee Increase

- Total Funding for design and construction ~\$58.95M (~\$12M/year)
- Total Funding for other categories and non-construction ~\$19.37M

Current Revenue Bond Program

Capital Delivery Goals

Project Type	Critical Needs	6.5% Fee Increase Total Delivery (\$96M Debt & PayGo)
Hazardous Road Overtopping Mitigation (Major & Safety Improvements)	~ 100 Locations	38 Locations
Pipe Rehabilitation	~ 80 Miles	60 Projects **
Channel Restoration	~ 22 Miles Known	1.8 Miles
Phase of Major Flood Mitigation (project development, design & construct)	??	3
Major Flood Mitigation – Project Development Only	??	3 Projects
FW Central City (FWCC)	NA	6 Projects ***

2019 fee increase of 6.5% (Effective Jan 2020) provides for:

- \$96.25M Total Debt Issuance
- \$78.32M FY24-28 Capital Pay-go

\$53M debt issued in FY21

- Est. 2Q 2024 100% encumbered






\$43.25M debt issued in FY23 (6/23)

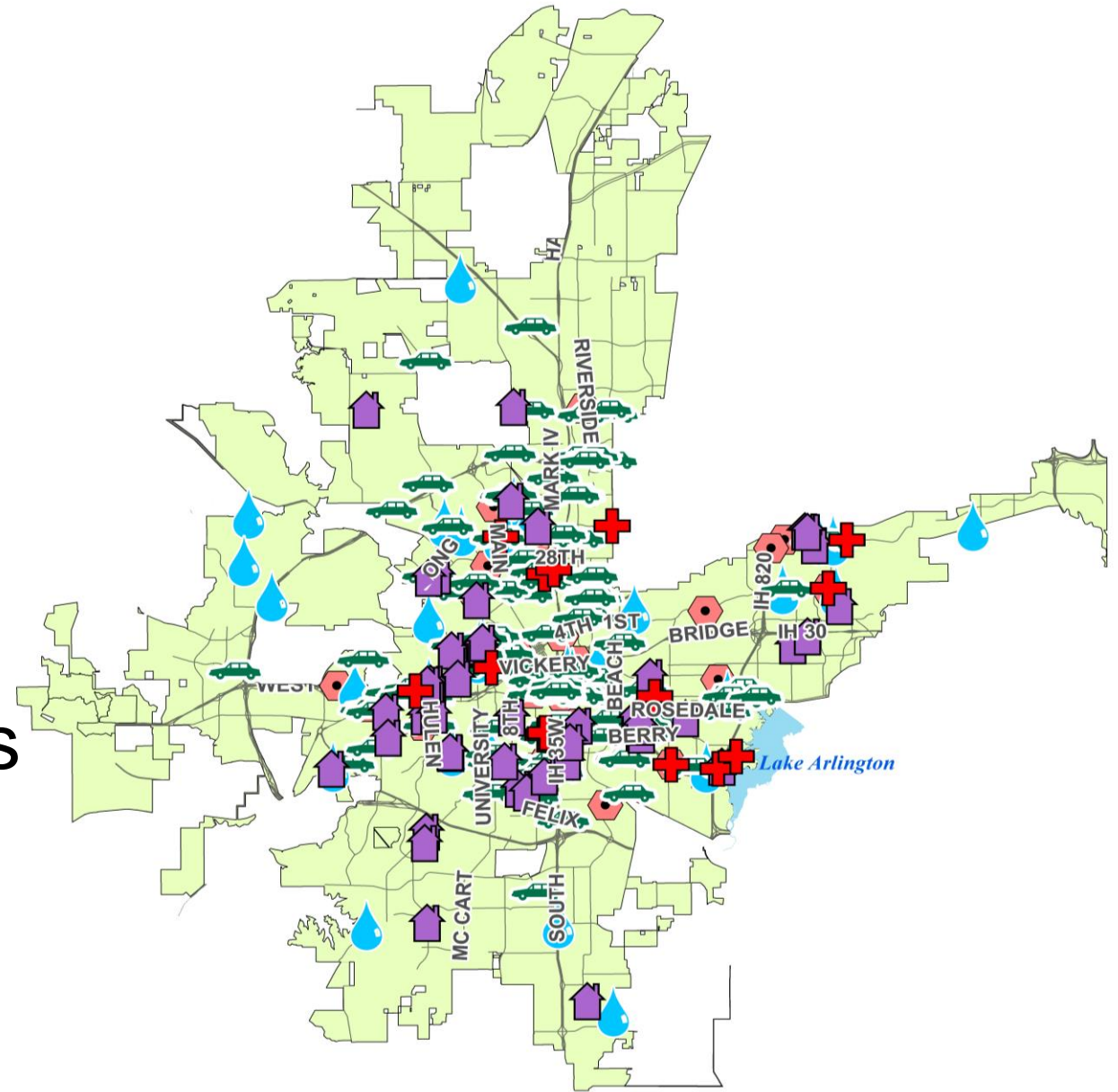
- Est. 1Q 2028 100% encumbered

** Reporting for these changed to # of projects vs. miles

*** Funded via Commercial Paper, Tarrant Regional Water District Reimbursable

Reported Flooding Aug. 21-22, 2022

-  52 flooded structures
-  22 high water rescues
-  237 flooded vehicles
-  58 overtopped road locations
-  36 fire/police response



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



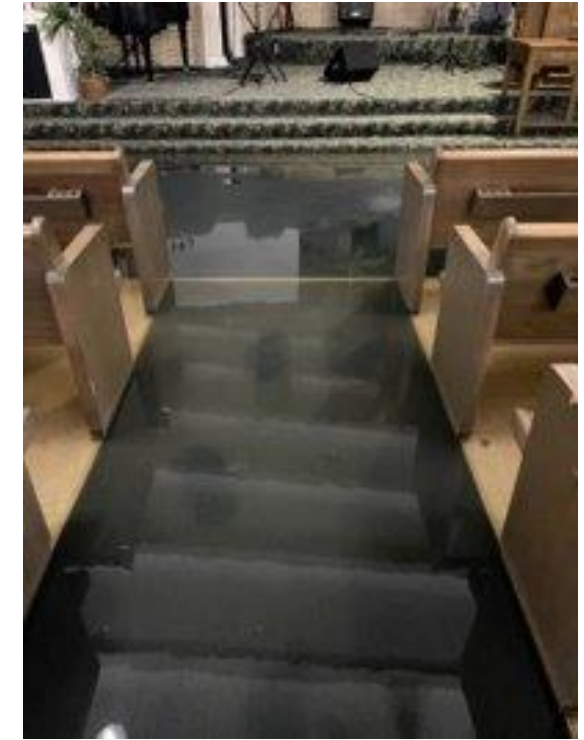
Notes:

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

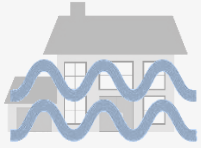
Phase 1b in FY32

Remaining
Phases

\$16M

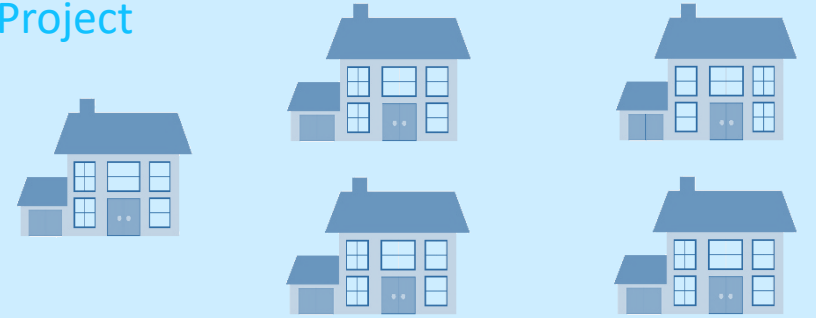
0

Current 100 Year Flood Mitigation



200

Proposed 100 Year Flood Mitigation, Overall Project

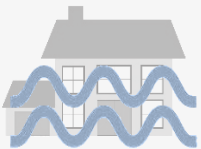


* One Structure = 40 Structures

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

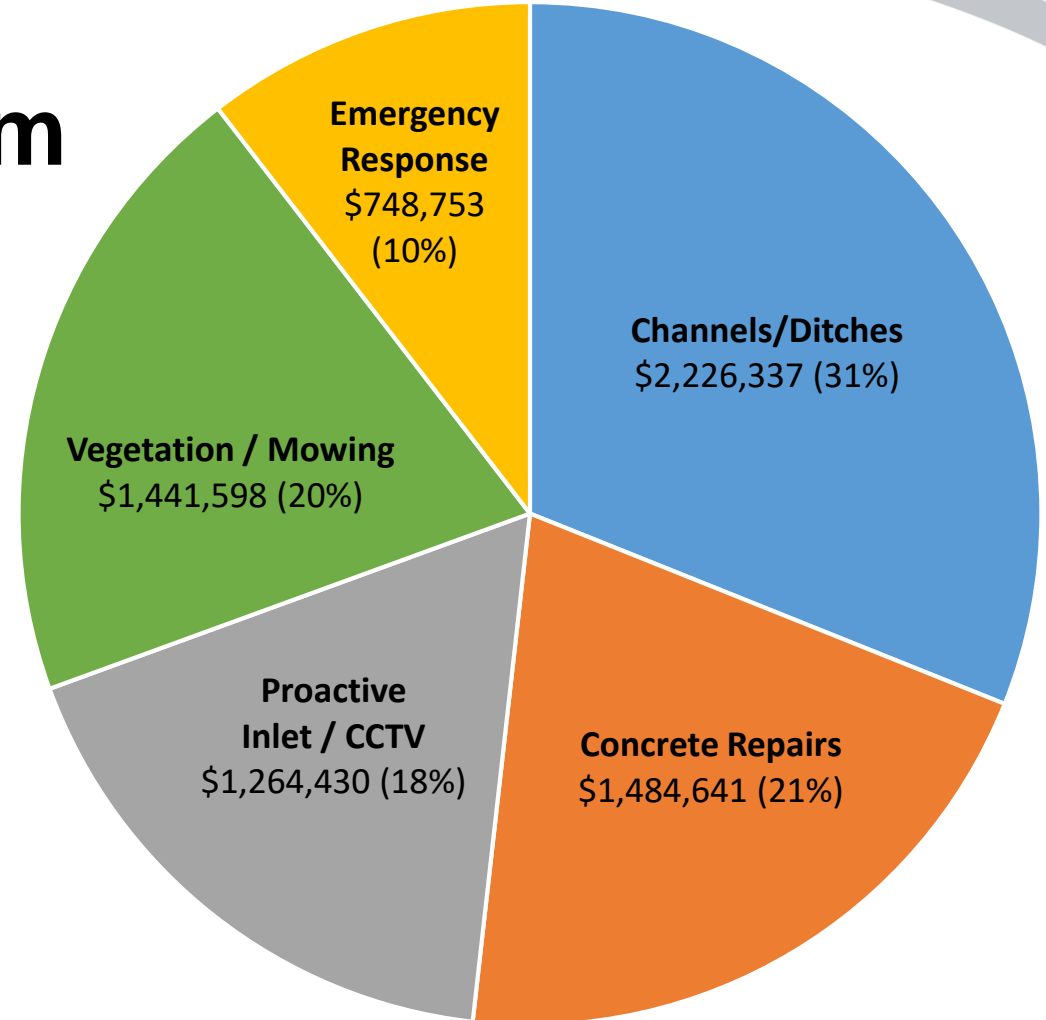
Improves Asset Performance, Reducing Flood Risk City-Wide

Reduces City Cost by Keeping the Good Assets Good

Reduces Contracted Work, Frees up Capital Funds

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 2022 Expenditure = \$7,165,760

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.

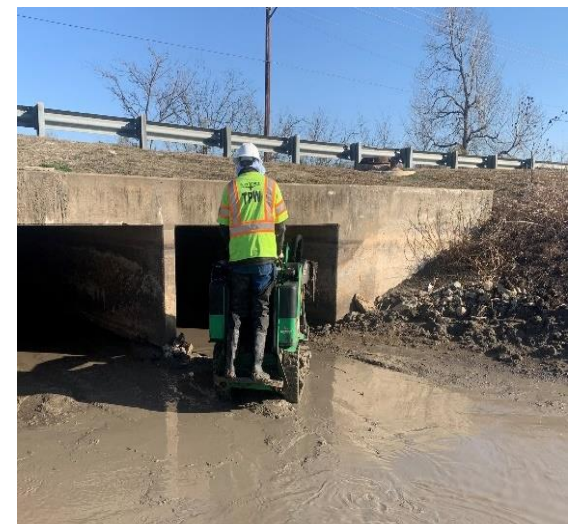
FY24 Solution:

- 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:

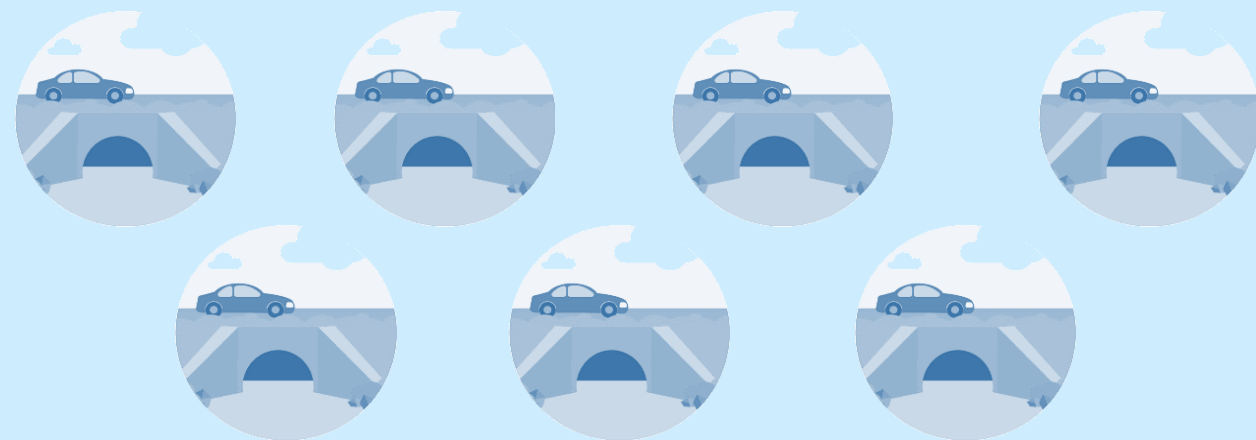
- Reduces Risk of Hazardous Roadway Overtopping.
- Will Allow For Proactive Culvert Inspection.
- Minimize Expensive and Time-Consuming Emergencies.
- Allow for Safe Maintenance of All Existing Culvert Sizes.
- Improve Economic Development By Reducing Developer Costs.
- Accelerates Removal of Sediment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



200 Current Culverts Inspected/ Year



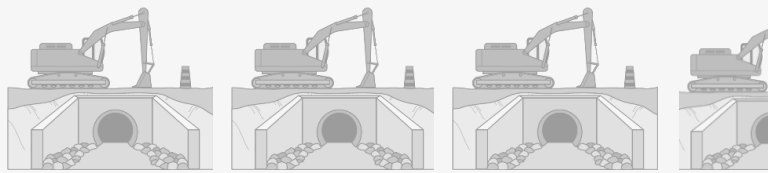
1,400 Proposed Culverts Inspected/ Year



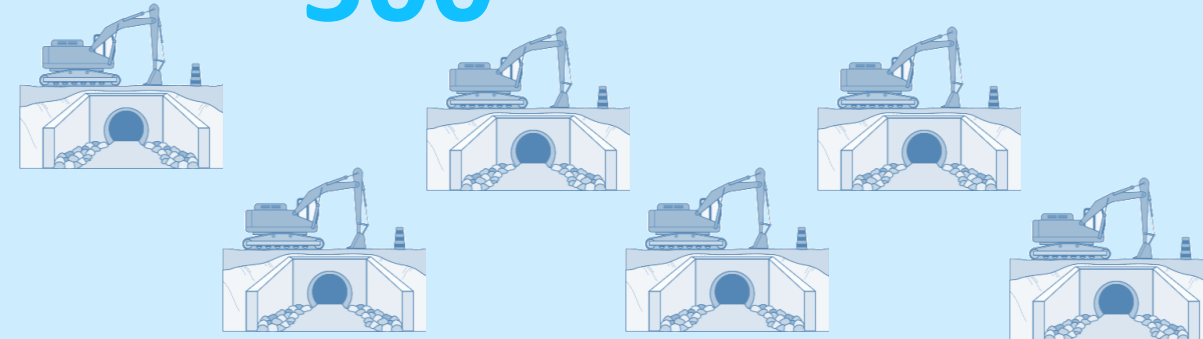
* One Inspection = 200 Inspections

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.

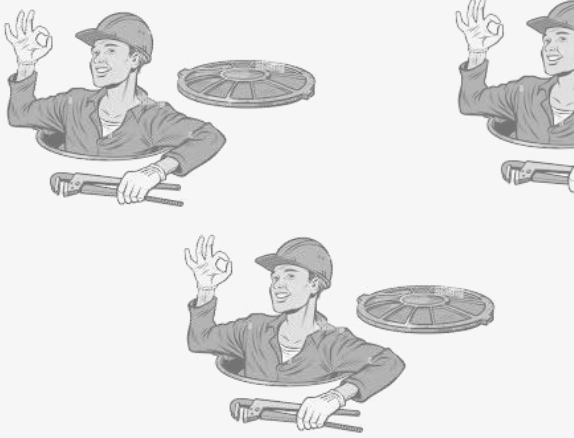
Fee Increase Funded Cost: \$2M

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*

FY27 Additional Channel Maintenance



Problem:

- Erosion and Sedimentation of Existing Channels Significantly Decreases the Channels Capacity to Carry Storm Water Runoff, Increasing the Potential for Flooding.
- City-wide We are Responsible for Maintaining Significantly More Channels Than Our One Existing Crew Can Maintain.
- Outsourcing Major Channel Restoration to Contractors Can Cost Conservatively 300% More

FY27 Solution: Add a 10 Person Channel Maintenance Crew

Fee Increase Funded Cost: \$4M

Benefits of Funding:

- Minimize Risk to Life and Property City-Wide
- Improve Cost Efficiency
 - In-house: Channel Maintenance Cost Per Mile: ~ \$106k
 - In-house: Channel Restoration Cost Per Mile: ~\$845k
 - Contractor: Channel Restoration Cost Per Mile: ~\$2.5M



Before

After

Current Vs. Proposed Channel Maintenance

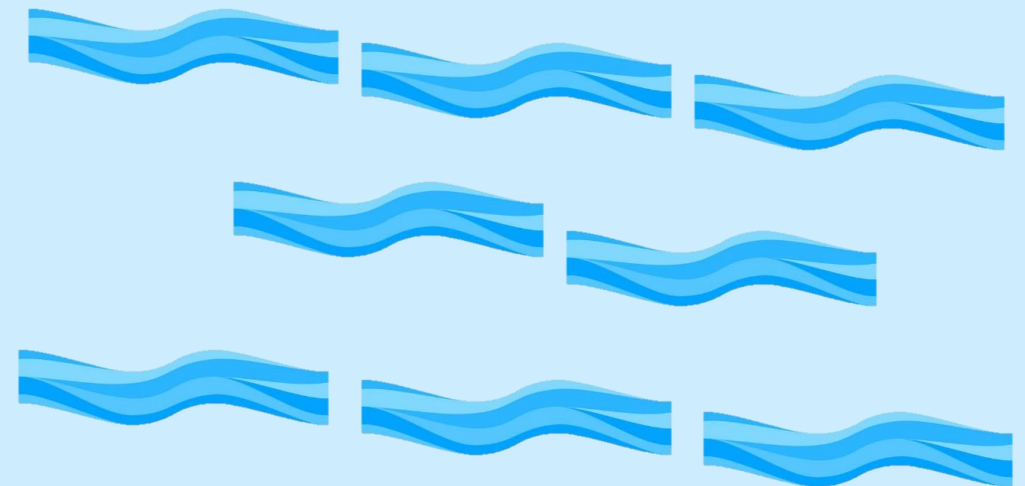
26,400

Current Feet
Maintained / Year



42,240

Proposed Feet
Maintained / Year



* One Channel Section = 5,280 Feet of Channel Maintenance



FY27 Additional Pipe Repair Crew

Problem:

- The CCTV Program Will Identify Considerably More Repair Needs Across the City, Resulting in an Increased Backlog.
- Outsourcing Repairs to Contractors is 584% more expensive

FY27 Solution: Add a 2 Person Concrete Repair Crew and Equipment

Fee Increase Funded Cost: \$2.7M

Benefits of Funding :

- Minimize Risk to Life and Property City-wide
- Improve Cost Efficiency

Concrete Team Yearly Benefit – Point repairs

- Contractor Cost - \$450k
- In-house Cost - \$77k

Concrete Team Yearly Analysis

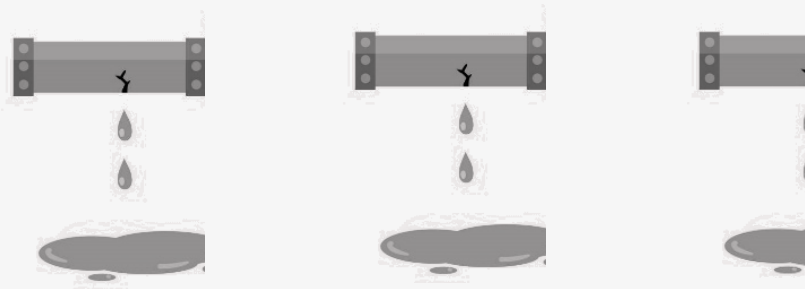
- 5 Years ~ \$1.8M*
- 25 Years ~ \$9.3M*

*numbers do not take into consideration of inflation

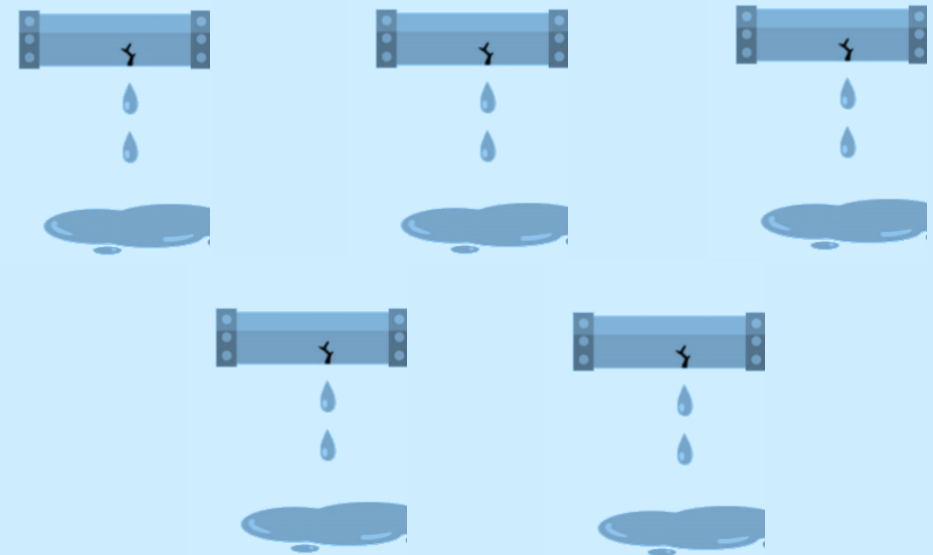


Current Vs. Proposed Pipe Repairs

25 Current Pipes
Repaired / Year



50 Proposed Pipes
Repaired / Year



* One Pipe Leak = 10 Pipe Repairs

FY28 Additional CCTV Crew

SO SAFE

SO CLEAN



Problem:

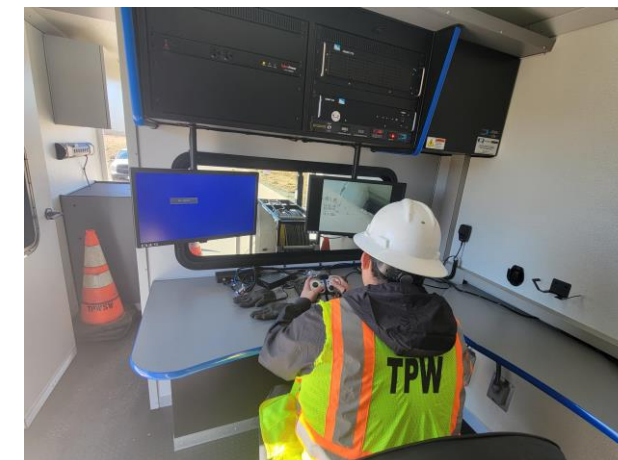
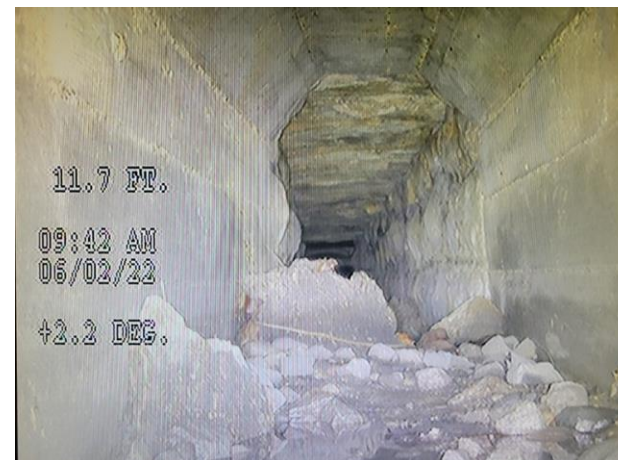
- CCTV Pipe Condition Assessment is Necessary to Identify Pipe Condition Issues, But the City Only Knows the Condition of 10% of the Storm Drain lines.
- Currently 75% of our CCTV Storm Drain Assessments are Contracted, Because We Only Have One In-house CCTV Truck Purchased in 2022.
- The Contracted CCTV Costs 29% More Than the In-house CCTV and is Subject to the Contractor's Availability, Which Causes Delays for Emergency Sink-hole Investigations.

FY28 Solution: Add a 2 person CCTV Crew and CCTV Outfitted Truck

Fee Increase Funded Cost: \$789K

Benefits of Funding:

- Minimize Risk to Life and Property City-wide
- Improve Cost Efficiency
- Improve Responsiveness to Emergencies

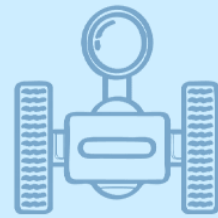


Current Vs. Proposed CCTV Inspection



52,800

Current Feet Inspected/ Year



105,600

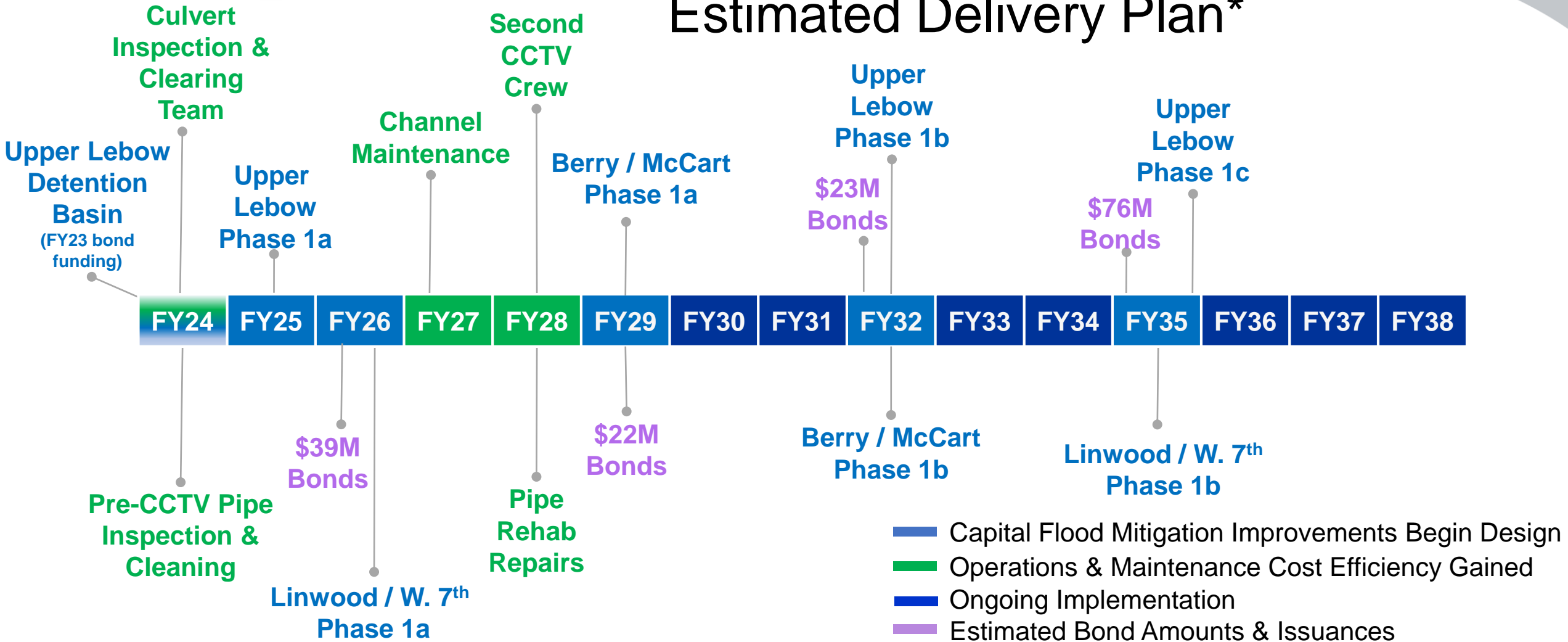
Proposed Feet Inspected/ Year



* One Pipe Section = 13,200 Feet of Pipe

Wrap Up

FY24 Proposed 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

Discussion

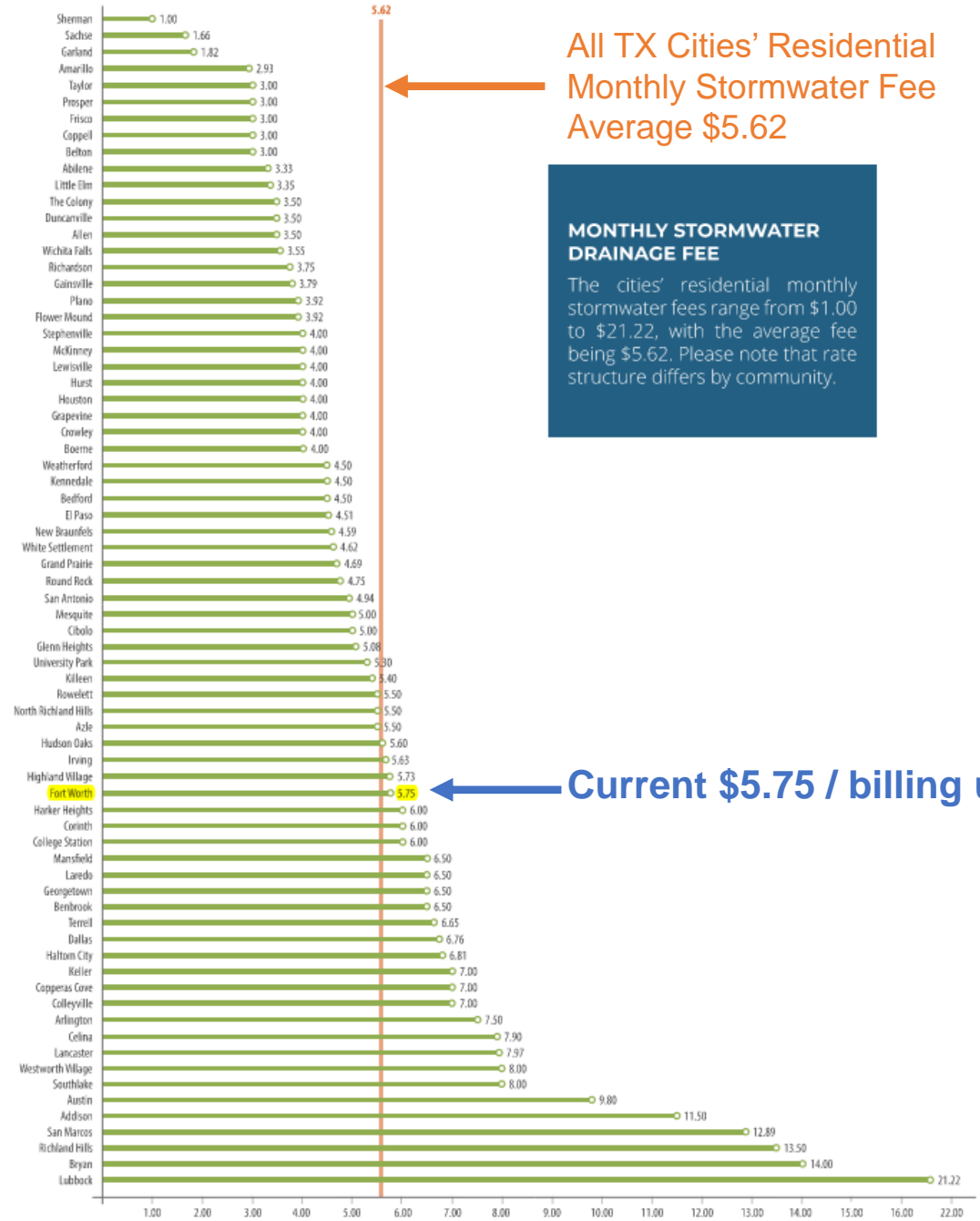


FORT WORTH®


Residential Monthly Stormwater Drainage Fee Comparison to Other Texas Cities

Ft Worth

Texas Cities



All TX Cities' Residential Monthly Stormwater Fee Average \$5.62

MONTHLY STORMWATER DRAINAGE FEE
 The cities' residential monthly stormwater fees range from \$1.00 to \$21.22, with the average fee being \$5.62. Please note that rate structure differs by community.

Current \$5.75 / billing unit / mth

Residential Monthly Stormwater Drainage Fee Comparison to Other Texas Cities

