
City of Tulsa
Repetitive Loss Area Analysis
Joe Creek Basins

August 18, 2026



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Introduction

The National Flood Insurance Program (NFIP) is a federal program administered by the Federal Emergency Management Agency (FEMA) that provides flood insurance to property owners in participating communities. In exchange, communities agree to adopt and enforce floodplain management regulations designed to reduce future flood risk. These regulations establish minimum standards for development in flood-prone areas and are intended to minimize damage to structures and infrastructure over time. The City of Tulsa has adopted its floodplain management regulations in Title 11A of the City's Code of Ordinances.

To encourage communities to go beyond these minimum requirements, FEMA established the Community Rating System (CRS). The CRS is a voluntary program that provides flood insurance premium discounts to policyholders in communities that implement additional floodplain management, public outreach, and hazard mitigation activities.

Over time, the NFIP has continually faced the job of balancing flood claim payments with insurance premium affordability, particularly while some properties flood more frequently than others. A subset of properties that cause a disproportionate impact to this balance are repetitive loss properties. FEMA defines repetitive loss properties as any property that has been paid two or more flood insurance claims of \$1,000 or more in a 10-year period. These repetitive loss properties account for approximately 25 to 30 percent of the NFIP's total claim payments, or about \$200 million annually, while representing only 1 percent of NFIP-insured properties nationwide. To aid in managing this issue, one of the requirements of the CRS is that communities identify all repetitive loss properties in their jurisdiction and work with the owners in finding ways to reduce or eliminate future flood damage. This initiative has been very successful in reducing flood losses and claims.

Using NFIP repetitive loss data, communities must analyze and map the surrounding areas where similar flooding conditions may exist. These areas are referred to as Repetitive Loss Areas (RLAs). For each RLA, the community is required to follow a 5-step process: notify affected property owners, assess potential flood risks, and develop strategies to reduce or eliminate future flood damage. As a CRS Class 1 Community, the City of Tulsa is required to update these reports in time for its program verification cycle. The updates must review the flooding and building conditions and modify the repetitive loss areas and their analyses accordingly. This 2026 update to the repetitive loss area analysis is intended to fill this verification requirement.

Background

The City of Tulsa's flooding history dates back to before statehood and has grown with the City. In the post-World War II era, the City experienced rapid development and expansion into what has become the Mingo and Joe Creek watershed. Most of this development occurred in the low-lying floodplains of these creeks which resulted in increased flood risk.

Tulsa's rapid development during this time was not singular, many communities across the country were experiencing urbanization and increased flood loss. In response, the U.S.

Congress established the National Flood Insurance Program in 1968. The City of Tulsa joined the NFIP in 1974.

By the 1980s, Tulsa had been experiencing floods in rapid succession, with nine floods occurring over 15 years¹. Two specific storms contributed largely to the number of repetitive loss properties in the City of Tulsa: the June 1979 and May 1984 floods. As of this 2026 update, the 1984 flood is still maintained as the City's Flood of Record.

Many of the City's repetitive loss properties filed claims in 1979. Significant flooding that year occurred in the Little Joe Creek and Dirty Butter Creek watersheds². According to a June 1979 National Oceanic and Atmospheric Administration (NOAA) publication titled *Storm Data and Unusual Weather Phenomena*, four to six inches of rain fell over a two-hour period in South Tulsa accompanied by high winds³—causing damage to dozens of buildings. The impact of the storm was felt the most in the Joe Creek watershed with Little Joe Creek overtopping its banks.

Numerous repetitive loss properties in the City of Tulsa list the May 1984 storm as their most recent flood insurance claim. The creeks that were the most heavily impacted were Mingo Creek, Bigheart Creek, Harlow Creek, Flatrock Creek, Dirty Butter Creek, Coal Creek, Little Joe Creek, and Haikey Creek. A slow-moving storm caused approximately six to fifteen inches of rain to fall over an eight-hour period, occurring primarily overnight. The largest rainfall totals occurred in the Mingo Creek watershed⁴.

The 1984 storm was severe, causing 14 fatalities and injuries to hundreds of people. The impacts on infrastructure were significant, with more than 5,000 buildings affected and total losses estimated at approximately \$180 million⁵ (about \$575 million in 2026 dollars). Following the event, President Ronald Reagan issued a federal disaster declaration.

After the 1984 flood, the City created a Flood Hazard Mitigation Team to guide recovery and long-term mitigation efforts. The City has since worked to acquire flood-prone properties, implement major flood control projects, and develop basin-wide master drainage plans.

The City's ongoing investment in mitigating flood risk has resulted in a comprehensive floodplain management program. At the turn of the century, FEMA classified Tulsa as first in the nation for its floodplain management program, leading to the lowest flood insurance premiums for residents in the US. The City has continued to improve their program, joining the NFIP's Community Rating System (CRS) in 1991. As a result, Tulsa has been awarded Class I, which grants its residents a 45 percent discount on the cost of NFIP flood insurance for structures.

¹ <https://www.cityoftulsa.org/floodcontrol>

² United States Army Corps of Engineers, Southwestern Division, Tulsa District. *Tulsa Urban Study: Flooding Overview Report*. October 1982.

³ National Oceanic and Atmospheric Administration (NOAA), Environmental Data and Information Service, National Climatic Center. *Stormwater Data Volume 21, No.6*. Asheville, NC, June 1979.

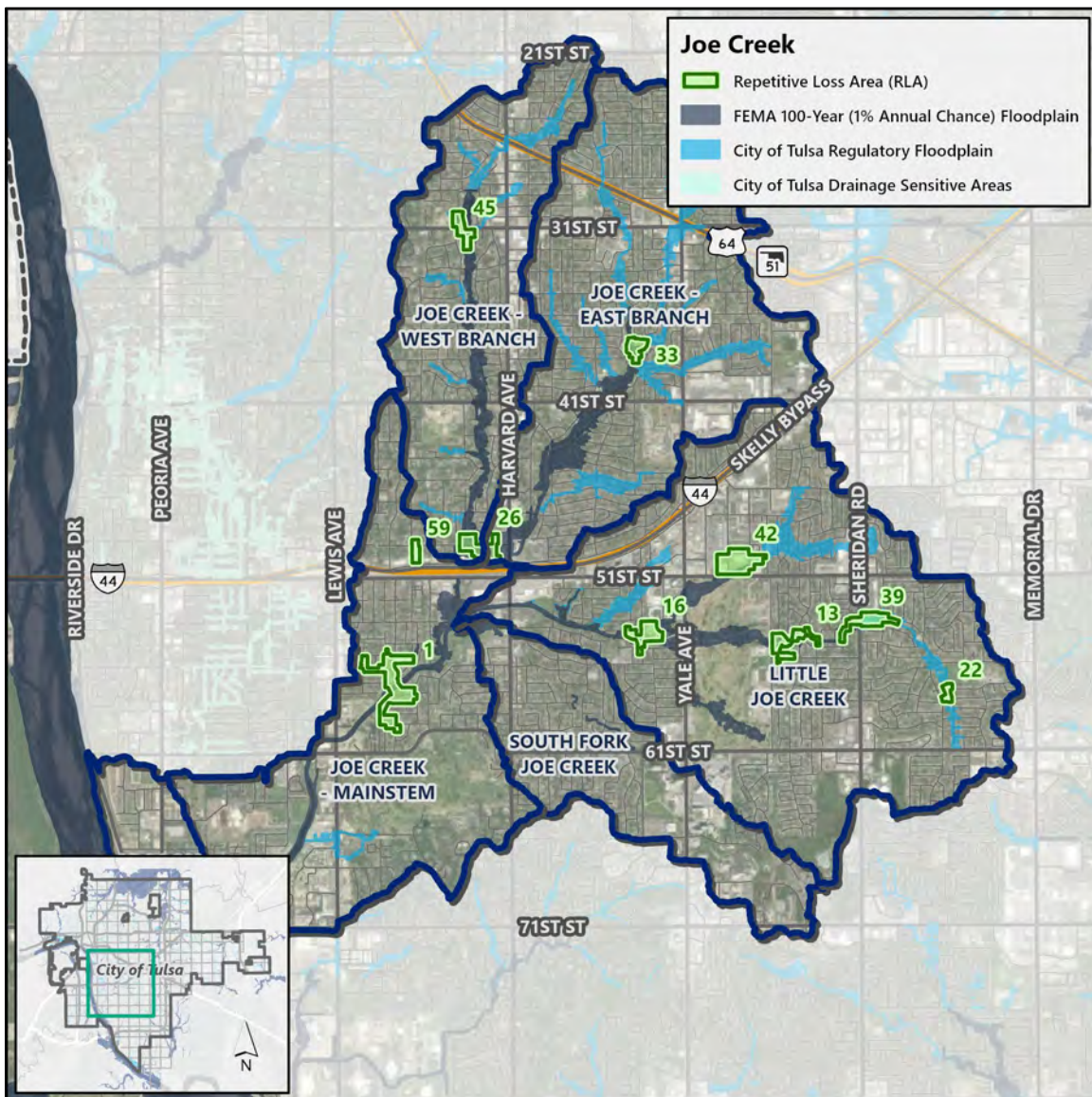
⁴ National Weather Service. *Tulsa Memorial Day Flood of May 26-27, 1984*.
https://www.weather.gov/tsa/1984may26_tulsamemorialdayflood

⁵ United States Army Corps of Engineers, Southwestern Division, Tulsa District. *Flood of May 27, 1984*. May 1985.

Location and Drainage

The Joe Creek basin group is located between E. 21st St. and E. 71st St. Most of this area is covered with residential and commercial land use. The commercial development occurs primarily in corridors along S. Yale Ave., S. Harvard Ave. and S. Sheridan Rd. The largest concentration occurs along S. Yale Ave. between E. 41st St. and E. 51st St. There are two large swaths of open space in this basin at LaFortune Park and Southern Hills Country Club. This basin group is covered by council districts 2, 4, 5, 7, 8, and 9.

Figure 1: Joe Creek



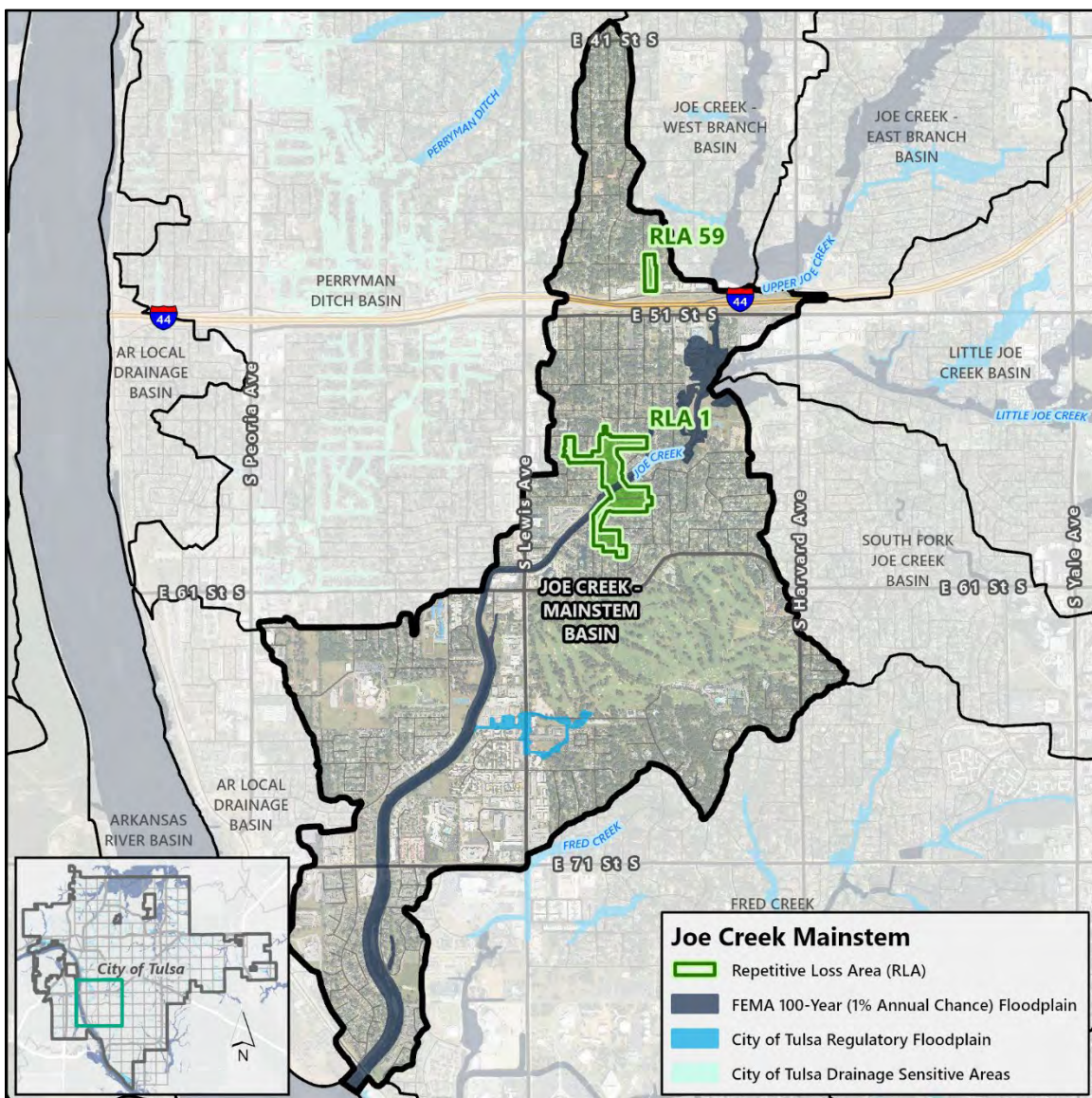
The Joe Creek Basin Group contains five subbasins: Joe Creek Mainstem, Joe Creek East Branch, Joe Creek West Branch, Joe Creek South Fork, and Little Joe Creek, and eleven repetitive loss areas. The creeks within the Joe Creek Basins' floodplains are located within Special Flood

Hazard Area and the City Regulatory floodplain. This area historically was subject to a mix of overbank flooding and overland flooding. There are four basins containing twenty-four unmitigated repetitive loss properties. The unmitigated repetitive loss properties are spread over the eleven areas.

Joe Creek Mainstem

Joe Creek is located in Central Tulsa. This creek is a tributary of the Arkansas River; its mainstem extends approximately 3.58 miles. Joe Creek has five major tributaries: East Branch, West Branch, Southfork, West Tributary, and Little Joe Creek. The total contributing drainage area is 13.48 square miles. The mainstem of Joe Creek has an isolated drainage area of 2.93 square miles. The Joe Creek Mainstem watershed is a mix of residential and commercial land use. The commercial and industrial developments are concentrated along S. Lewis Ave. between E. 61st St. and E. 71st St. This basin contains a large swath of open space at Southern Hills Country Club which has an area of approximately 0.33 square miles.

Figure 2: Joe Creek Mainstem Overview



The lower mainstem originates at the confluence of the noted tributaries, near E. 51st St. and S. Harvard Ave, on the south side of I-44, and flows generally west-southwest until its confluence with the Arkansas River near E. 81st St. and Riverside Dr.

Much of Joe Creek's mainstem is designated FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain. As described in the background section of this report, there were two historic floods that had major impacts along Joe Creek, one in 1979 and one in 1984.

The impacts caused loss of life and damage to property, largely due to the development practices in the region not accounting for floodplain management of the creek and its tributaries. The damage from these floods prompted the City to improve the hydraulic conditions along Joe Creek to ensure improved public safety. This project was completed in coordination with USACE and included the channelization of much of Joe Creek and its tributaries. The project also increased capacity of roadway crossings and storm sewer systems throughout the basin. The Joe Creek Mainstem basin contains two unmitigated RLAs.

RLA 1

Area Specific Flooding

Repetitive Loss Area 1, located in the Joe Creek Mainstem watershed, was established in 2017. This Repetitive Loss Area is comprised of eighty-six properties, located generally on the north and south sides of Joe Creek's mainstem, between the intersections of E. 55th Pl. S. and S. Birmingham Ave. and E. 59th St. S. and S. Birmingham Pl. The properties were mostly developed between 1950 and 1992; one property was developed in 2004. These structures are located outside of the floodplain, Joe Creek's 100-year floodplain is maintained within the channel—the result of a large mitigation project completed in the 1980s. RLA 1 is a combination of three historic RLAs (RLA 1, 20, and 23).

Drainage conditions in this RLA indicate that historic flooding is due to overland flow, storm sewer backup, and overbank flooding. Overbank flooding along this stretch of Joe Creek was a persistent issue. Nearly sixty properties in this area are within the historic flood extents of the 1984 flood. Eighteen properties submitted claims to the NFIP. The terrain on which these properties are situated is relatively flat, gently sloping toward the creek from the north and south. Overland drainage paths cross through backyards before entering the storm sewer systems, leading to ponding in the sumps along backyards and roadways.

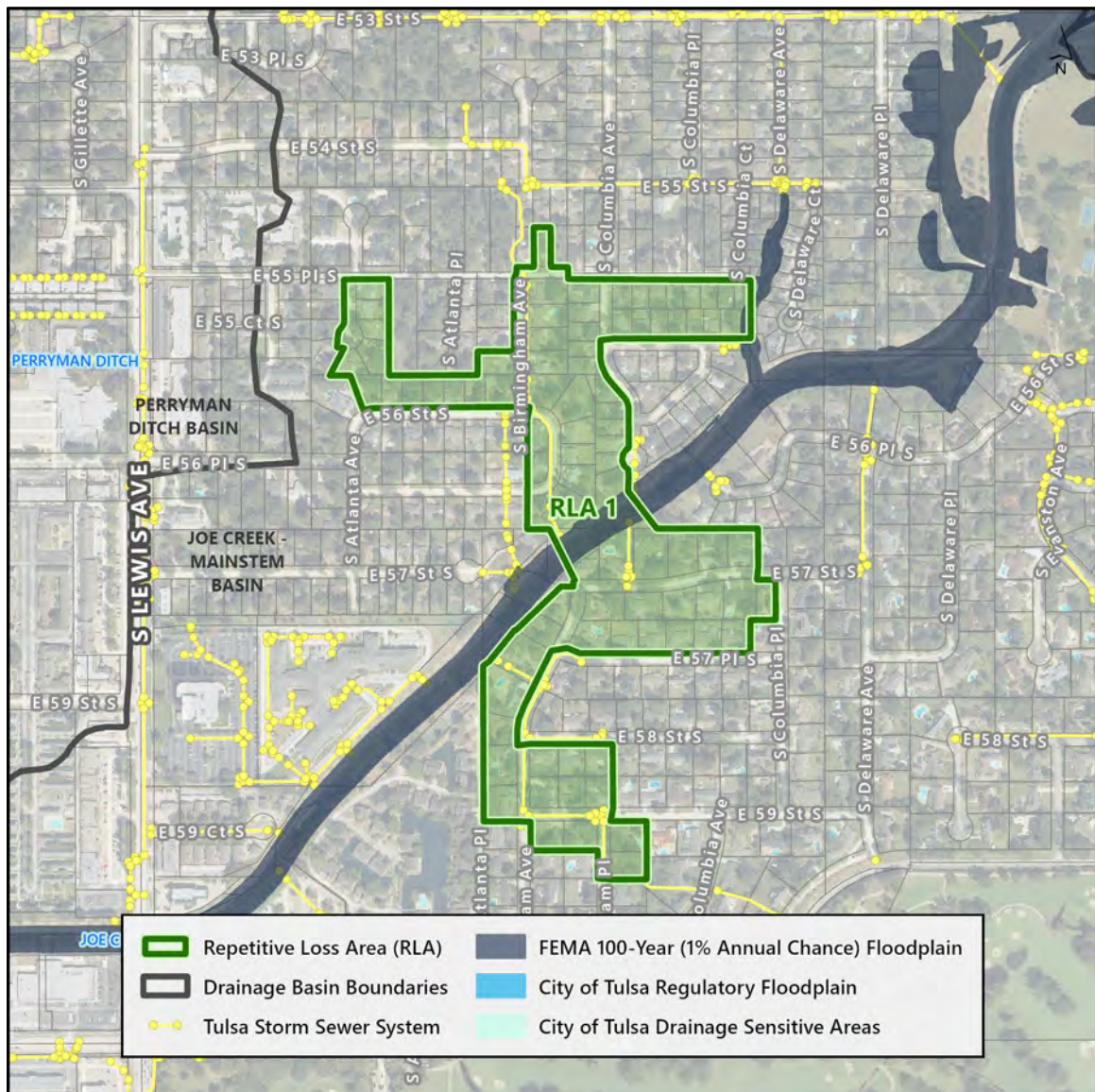
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem areas JC-01, -02, and -03. This MDP describes the remaining flood threat in this area as attributed to overland flooding. There have been continued reports of street flooding, the most recent in 2022, which supports this claim. The 2024 MDP report proposed storm sewer improvements and extensions, improved overland flow paths, creating berms/swales to direct runoff away from residences, and acquisition and relocation.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

Improvements were made to the Joe Creek channel by the City and the US Army Corps of Engineers between 1978 and 1981. These projects largely solved the riverine flooding problems and removed this stretch of Joe Creek from both FEMA's SFHA and the City's regulatory floodplain. The City also enlarged the storm sewer system within the basin, near E. 55th St. and S. Delaware Ave., to solve chronic storm sewer backup problems at numerous locations during times of heavy rainfall. Though these improvements have not completely mitigated the area.

Figure 3: RLA 1



Claims Data

FLOOD INSURANCE DATA There are four repetitive loss properties in this RLA. Twenty-two properties have carried flood insurance and made thirty-five damage claims to the NFIP, thirty-one of which were paid, totaling \$90,696. Thirty of these claims are from before the channel improvements were completed. The last claim for this RLA was filed in 2010. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0354M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, August 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #1, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #20, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #23, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Crawl Space	1960	Avg +
Property 2	Residential	Crawl Space	1961	Avg +
Property 3	Residential	Crawl Space	1960	Avg +
Property 4	Residential	Crawl Space	1960	Good
Property 5	Residential	Crawl Space	1959	Avg +
Property 6	Residential	Crawl Space	1960	Avg +
Property 7	Residential	Crawl Space	1957	Avg +
Property 8	Residential	Crawl Space	1958	Avg +
Property 9	Residential	Crawl Space	1957	Avg +
Property 10	Residential	Crawl Space	1955	Good
Property 11	Residential	Crawl Space	1957	Good
Property 12	Residential	Slab	1959	Excellent
Property 13	Residential	Crawl Space	1955	Good +
Property 14	Residential	Crawl Space	1959	Avg +
Property 15	Residential	Crawl Space	1958	Avg +
Property 16	Residential	Crawl Space	1956	Avg +

Property 17	Residential	Crawl Space	1956	Avg +
Property 18	Residential	Crawl Space	1956	Good +
Property 19	Residential	Crawl Space	1956	Avg
Property 20	Residential	Crawl Space	1957	Avg +
Property 21	Residential	Crawl Space	1956	Good
Property 22	Residential	Crawl Space	1956	Good +
Property 23	Residential	Crawl Space	1957	Avg +
Property 24	Residential	Crawl Space	1959	Avg +
Property 25	Residential	Crawl Space	1955	Good
Property 26	Residential	Crawl Space	1956	Avg +
Property 27	Residential	Slab	1960	Very Good +
Property 28	Residential	Crawl Space	1957	Good
Property 29	Residential	Crawl Space	1955	Avg +
Property 30	Residential	Crawl Space	1955	Good
Property 31	Residential	Crawl Space	1959	Avg +
Property 32	Residential	Crawl Space	1955	Avg +
Property 33	Residential	Crawl Space	1956	Avg +
Property 34	Residential	Slab	1955	Avg +
Property 35	Residential	Crawl Space	1955	Good
Property 36	Residential	Crawl Space	1955	Good
Property 37	Residential	Crawl Space	1955	Avg +
Property 38	Residential	Crawl Space	1955	Avg +
Property 39	Residential	Crawl Space	1950	Good
Property 40	Residential	Crawl Space	1955	Good
Property 41	Residential	Crawl Space	1960	Avg +
Property 42	Residential	Crawl Space	1957	Good +
Property 43	Residential	Crawl Space	1957	Good
Property 44	Residential	Crawl Space	1955	Avg +
Property 45	Residential	Crawl Space	1957	Good +
Property 46	Residential	Crawl Space	1957	Avg +
Property 47	Residential	Crawl Space	1955	Avg
Property 48	Residential	Crawl Space	1955	Good
Property 49	Residential	Crawl Space	1955	Avg +
Property 50	Residential	Crawl Space	1957	Avg +
Property 51	Residential	Crawl Space	1956	Avg +
Property 52	Residential	Crawl Space	1956	Avg +
Property 53	Residential	Crawl Space	1957	Good
Property 54	Residential	Crawl Space	1959	Good
Property 55	Residential	Crawl Space	1992	Avg +

Property 56	Residential	Slab	1987	Good +
Property 57	Residential	Crawl Space	1959	Good +
Property 58	Residential	Crawl Space	1958	Good
Property 59	Residential	Crawl Space	1958	Avg +
Property 60	Residential	Crawl Space	1958	Avg +
Property 61	Residential	Crawl Space	1958	Very Good
Property 62	Residential	Crawl Space	1958	Avg +
Property 63	Residential	Slab	1958	Avg +
Property 64	Residential	Crawl Space	1959	Good
Property 65	Residential	Crawl Space	1958	Good
Property 66	Residential	Crawl Space	1959	Good
Property 67	Residential	Crawl Space	1959	Avg +
Property 68	Residential	Crawl Space	1959	Good
Property 69	Residential	Slab	1958	Good
Property 70	Residential	Crawl Space	1958	Excellent
Property 71	Residential	Crawl Space	1959	Good
Property 72	Residential	Slab	1958	Avg +
Property 73	Residential	Crawl Space	1958	Good +
Property 74	Residential	Crawl Space	1958	Avg +
Property 75	Residential	Crawl Space	1957	Very Good +
Property 76	Residential	Slab	1959	Very Good
Property 77	Residential	Slab	1959	Avg +
Property 78	Residential	Crawl Space	1959	Good +
Property 79	Residential	Crawl Space	1959	Good
Property 80	Residential	Crawl Space	1973	Avg +
Property 81	Residential	Crawl Space	1957	Very Good +
Property 82	Residential	Slab	1957	Avg +
Property 83	Residential	Crawl Space	1957	Avg +
Property 84	Residential	Slab	1956	Avg +
Property 85	Residential	Crawl Space	1956	Good +
Property 86	Residential	Crawl Space	1957	Avg

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historical cause of damage for many of these properties was overbank flooding from Joe Creek during the 1979 and 1984 storms. Twenty-six of the thirty-five historic claims come from these two storms. After the Joe Creek channel project, the risk in this area to overbank flooding was largely reduced as the channel now has a 100-year capacity through this reach. Flood risk from overland flooding persists due to inadequate storm sewer coverage and the generally flat terrain, especially for the slab-on-grade structures in the area.

Ponding occurs during heavy rain events and complaints have been made as recently as 2022. Some storm sewer improvements have been completed but they have not sufficiently reduced the risk of flooding. The MDP recommended storm sewer improvements and extensions, improved overland flow paths, creating berms/swales to direct runoff, away from residences, and acquisition and relocation. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 1



Google Earth

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6.40 ft

RLA 59

Area Specific Flooding

Repetitive Loss Area 59, located in the Joe Creek Mainstem watershed, was established in 2017. This Repetitive Loss Area is comprised of five buildings on two properties near the intersection of E. 49th St. and S. Columbia Pl. The properties were developed between 1930 and 1979. These structures are located outside of the floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flow, undersized roadside ditches, and development practices. The terrain on which these properties are located is sloped inward from the east and west, draining to the south. The structures are not significantly elevated above the grade of the roadway, and the surrounding terrain is generally sloped downward away from the roadway, therefore when the roadside ditches become overwhelmed in heavy storms, the excess runoff is directed through backyards until it reaches its next point of collection, the storm sewer system along Skelly Dr.

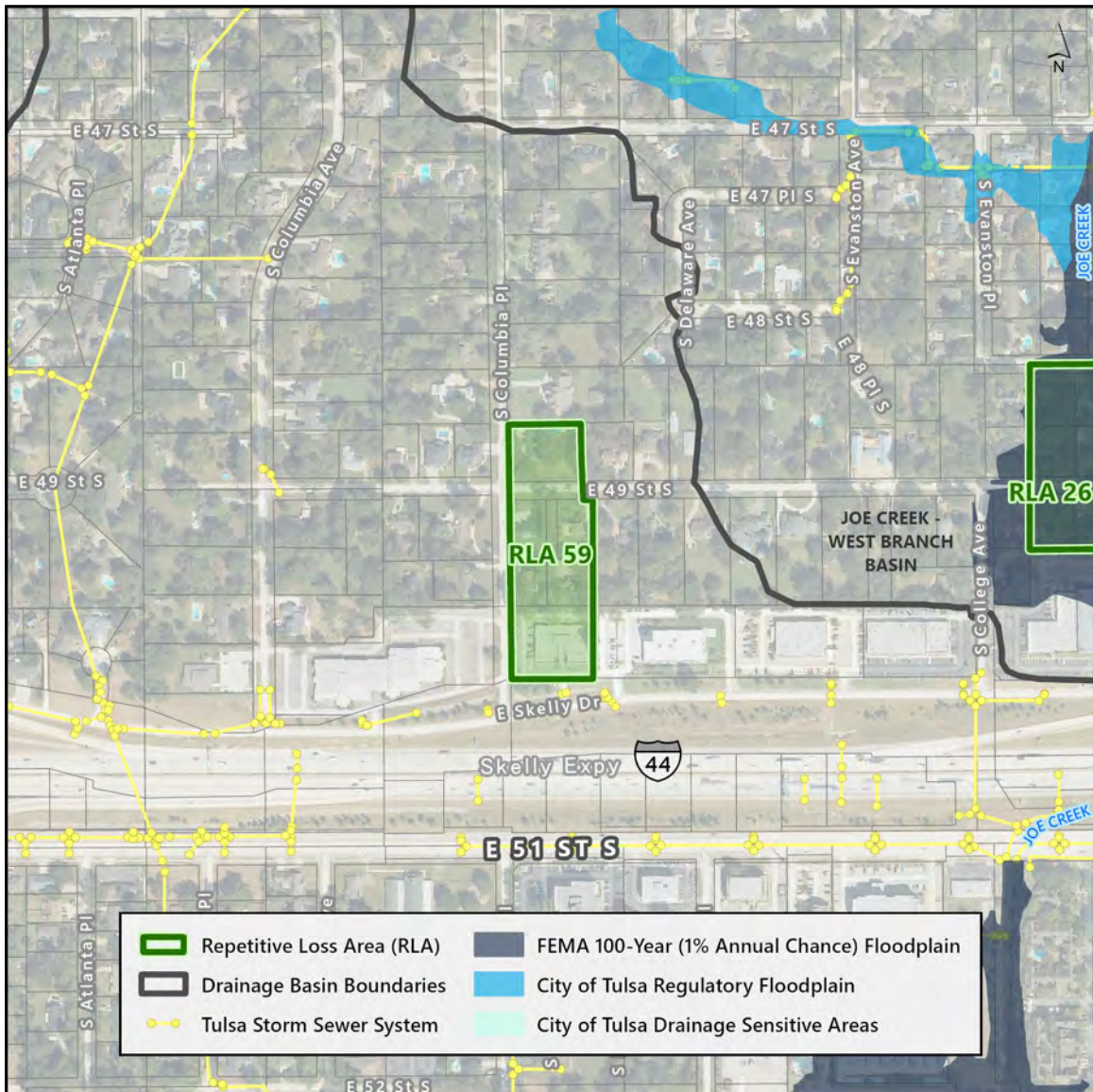
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem area JC-05. The 2024 MDP report proposed storm sewer improvements and extensions, acquisition and relocation, and upstream detention.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 in 2010-2012 increased drainage beneath the freeway and reduced backup flooding in the area along Skelly Dr. In 2025, the City modified the ditches to improve the capacity near the intersection of E. 49th St. and S. Columbia Pl.

Figure 4: RLA 59



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. One property has carried flood insurance and made two damage claims to the NFIP, both of which were paid, totaling \$11,688. The last claim for this RLA was filed in 2010. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

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- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, August 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #59, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of residential and commercial buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Slab	1951	Avg
Property 2	Residential	Slab	1979	Avg
Property 3	Residential	Crawl Space	1948	Avg
Property 4	Commercial	Slab	1971	Good
Property 5	Residential	Crawl Space	1930	Avg

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding. The MDP recommended storm sewer improvements and extension, acquisition and relocation, and upstream detention. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 59



Google Earth

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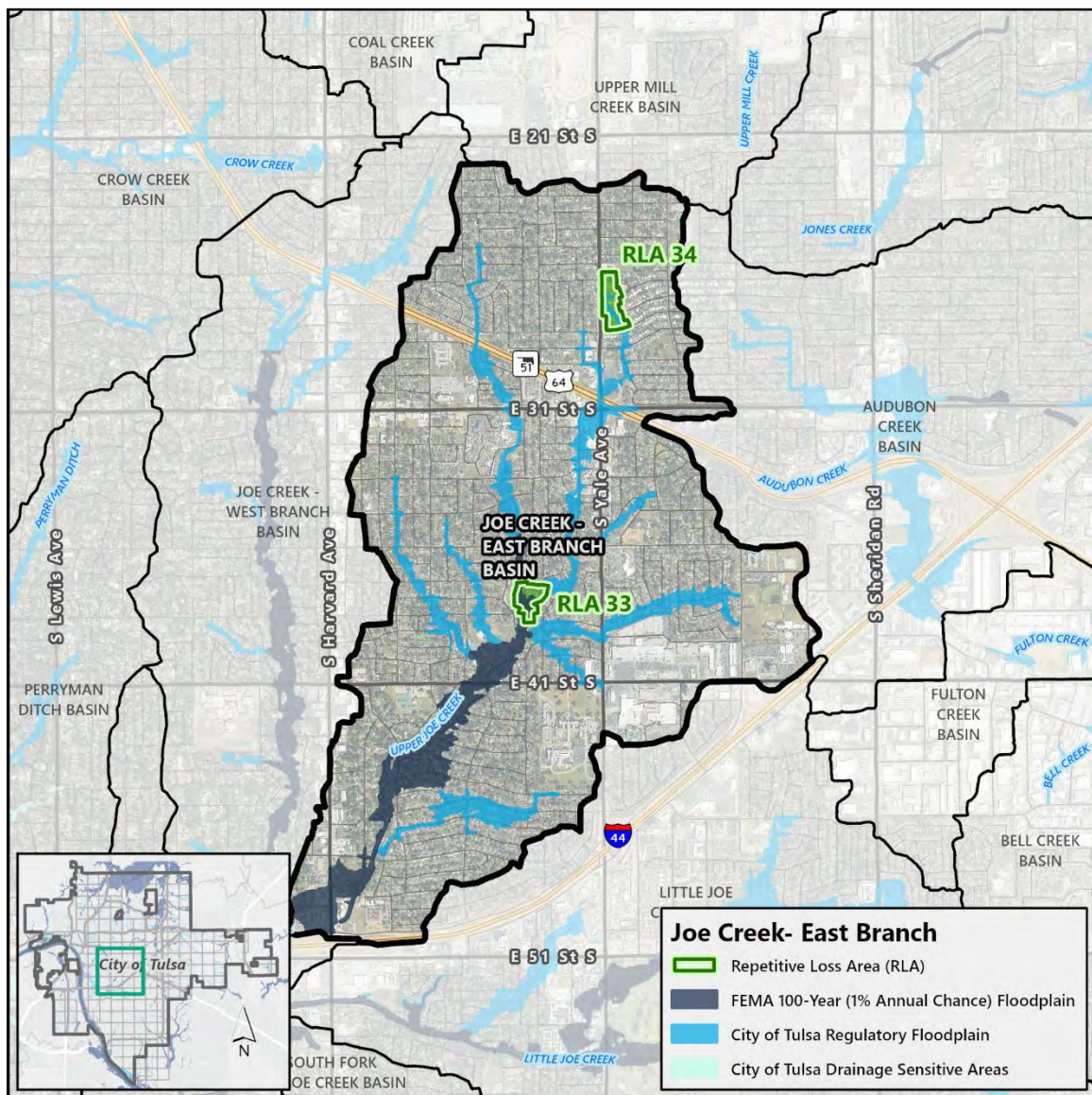
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Joe Creek East Branch

Joe Creek East Branch is located in Central Tulsa. This creek is a tributary of Joe Creek's Mainstem; it extends approximately 1.6 miles as a primarily open channel until E. 38th St. where it begins to be conveyed primarily by storm sewer for another 1.5 miles. This stream has a contributing drainage area of 3.08 square miles. The watershed is covered with primarily residential land use. Dedicated open space is limited to Whiteside and Langenheim Park. The commercial development is concentrated in the eastern portion of the basin at the Southroads Shopping Center at E. 41st St. and S. Yale Ave.

Figure 5: Joe Creek East Branch Overview



The creek has four branches at the upper end of its drainage basin that come to a confluence at E. 41st St. in Whiteside Park. These branches are entirely conveyed by storm sewer. Joe Creek

East Branch generally flows west-southwest until its confluence with the West Branch to form the Joe Creek Mainstem near E. 51st St. and S. Yale Ave.

Much of the Joe Creek East Branch's mainstem is designated as FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain. The FEMA study extent is at E. 36th St. The East Branch's tributaries are designated City of Tulsa regulatory floodplain. As with Joe Creek Mainstem, the East Branch also experienced devastating flooding during the 1979 and 1984 floods. The Joe Creek East Branch basin contains two unmitigated RLAs.

RLA 33

Area Specific Flooding

Repetitive Loss Area 33, located in the Joe Creek East Branch watershed, was established in 2017. This Repetitive Loss Area is comprised of five buildings on seventeen structures on eighteen properties near the intersection of E. 37th Pl. and S. Sandusky Ave. The properties were developed between 1950 and 1962. Thirteen of the structures are located within the FEMA SFHA and City regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup along the historic creek beds of the East Branch of Joe Creek and its tributary which are now primarily conveyed by storm sewer through this reach. This RLA is located at the confluence of these two streams. All of the properties are located in the estimated flood extents of the 1984 storm. The terrain is relatively flat, sloping toward the historic creek beds. Several of the homes have finished basements.

This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem area EBJC-04. Though there have been downstream capacity improvements along I-44, and general upgrades to the storm sewer systems throughout the Joe Creek basin, according to the MDP, the storm sewer system in this area has the capacity equivalent to 75% of the 100-year flow. The 2024 MDP report proposed acquisition and relocation to mitigate flooding potential to these properties.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 in 2010-2012 increased drainage beneath the freeway and reduced backup flooding in the area along Skelly Dr. Despite these improvements, the storm sewer system through this reach still has an inadequate capacity for the 100-year event. One property was purchased and has been maintained as a drainage easement

Figure 6: RLA 33



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Seven properties have carried flood insurance and made fifteen damage claims to the NFIP, nine of which were paid, totaling \$178,311. The last claim for this RLA was filed in 1993. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0356M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, August 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #33, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Crawl Space	1950	Good +
Property 2	Residential	Crawl Space	1951	Good +
Property 3	Residential	Crawl Space	1953	Good
Property 4	Residential	Crawl Space	1953	Good
Property 5	Residential	Crawl Space	1950	Good +
Property 6	Residential	Crawl Space	1950	Good
Property 7	Residential	Crawl Space	1951	Good +
Property 8	Residential	Crawl Space	1962	Good
Property 9	Residential	Crawl Space	1954	Good
Property 10	Residential	Crawl Space	1953	Good +
Property 11	Residential	Crawl Space	1955	Good
Property 12	Residential	Crawl Space	1951	Good +
Property 13	Residential	Crawl Space	1951	Good
Property 14	Residential	Crawl Space	1952	Good
Property 15	Residential	Crawl Space	1951	Good
Property 16	Vacant			
Property 17	Residential	Crawl Space	1953	Good
Property 18	Residential	Crawl Space	1953	Good

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding due to inadequate storm sewer capacity. This is especially threatening to those properties with finished basements below the BFE. One property was purchased and has been maintained as a drainage easement. The MDP recommended acquisition and relocation to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 33



Google Earth

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7.56 ft



RLA 34

Area Specific Flooding

Repetitive Loss Area 34, located in the Joe Creek East Branch watershed, was established in 2017. This Repetitive Loss Area is comprised of thirty-five properties near the intersection of E. 26th Pl. and S. Yale Ave. The properties were developed between 1954 and 1960. This RLA is located within the City regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup along the historic creek beds of the East Branch of Joe Creek which is now primarily conveyed by storm sewer through this reach. This RLA is located at the confluence of these two streams. The terrain is relatively flat, sloping toward the historic creek beds.

This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem area EBJC-10. Though there have been downstream capacity improvements along I-44, and general upgrades to the storm sewer systems throughout the Joe Creek basin, according to the MDP, the storm sewer system in this area has the capacity equivalent to 35% of the 100-year flow. The 2024 MDP report proposed storm sewer improvements and downstream detention to mitigate flooding potential to these properties.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 in 2010-2012 increased drainage beneath the freeway and reduced backup flooding in the area along Skelly Dr. Despite these improvements, the storm sewer system through this reach still has an inadequate capacity for the 100-year event.

Figure 7: RLA 34



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Ten properties have carried flood insurance and made thirteen damage claims to the NFIP, twelve of which were paid, totaling \$166,438. The last claim for this RLA was filed in 1984. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0356M and 40143C0243L, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, March 2021
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #34, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Slab	1954	Good
Property 2	Residential	Slab	1954	Good
Property 3	Residential	Slab	1954	Good
Property 4	Residential	Slab	1955	Good
Property 5	Residential	Slab	1954	Good
Property 6	Residential	Slab	1954	Good
Property 7	Residential	Slab	1954	Good
Property 8	Residential	Slab	1955	Good
Property 9	Residential	Slab	1954	Good
Property 10	Residential	Slab	1960	Good
Property 11	Residential	Slab	1954	Good
Property 12	Residential	Slab	1954	Good +
Property 13	Residential	Slab	1956	Good
Property 14	Residential	Slab	1954	Good
Property 15	Residential	Slab	1954	Good
Property 16	Residential	Slab	1954	Good
Property 17	Residential	Slab	1954	Good
Property 18	Residential	Slab	1954	Good
Property 19	Residential	Slab	1954	Good
Property 20	Residential	Slab	1954	Good
Property 21	Residential	Slab	1955	Good

Property 22	Residential	Slab	1954	Good
Property 23	Residential	Slab	1954	Good
Property 24	Residential	Slab	1954	Good
Property 25	Residential	Slab	1955	Good
Property 26	Residential	Slab	1955	Good
Property 27	Residential	Slab	1955	Good
Property 28	Residential	Slab	1955	Good
Property 29	Residential	Slab	1954	Good
Property 30	Residential	Slab	1954	Good
Property 31	Residential	Slab	1954	Good
Property 32	Residential	Slab	1954	Good
Property 33	Residential	Slab	1954	Good
Property 34	Residential	Slab	1955	Good
Property 35	Residential	Slab	1954	Good

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding due to inadequate storm sewer capacity. This is especially threatening to those properties with slab-on-grade foundations. The MDP recommended storm sewer improvements and downstream detention to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 34



Google Earth

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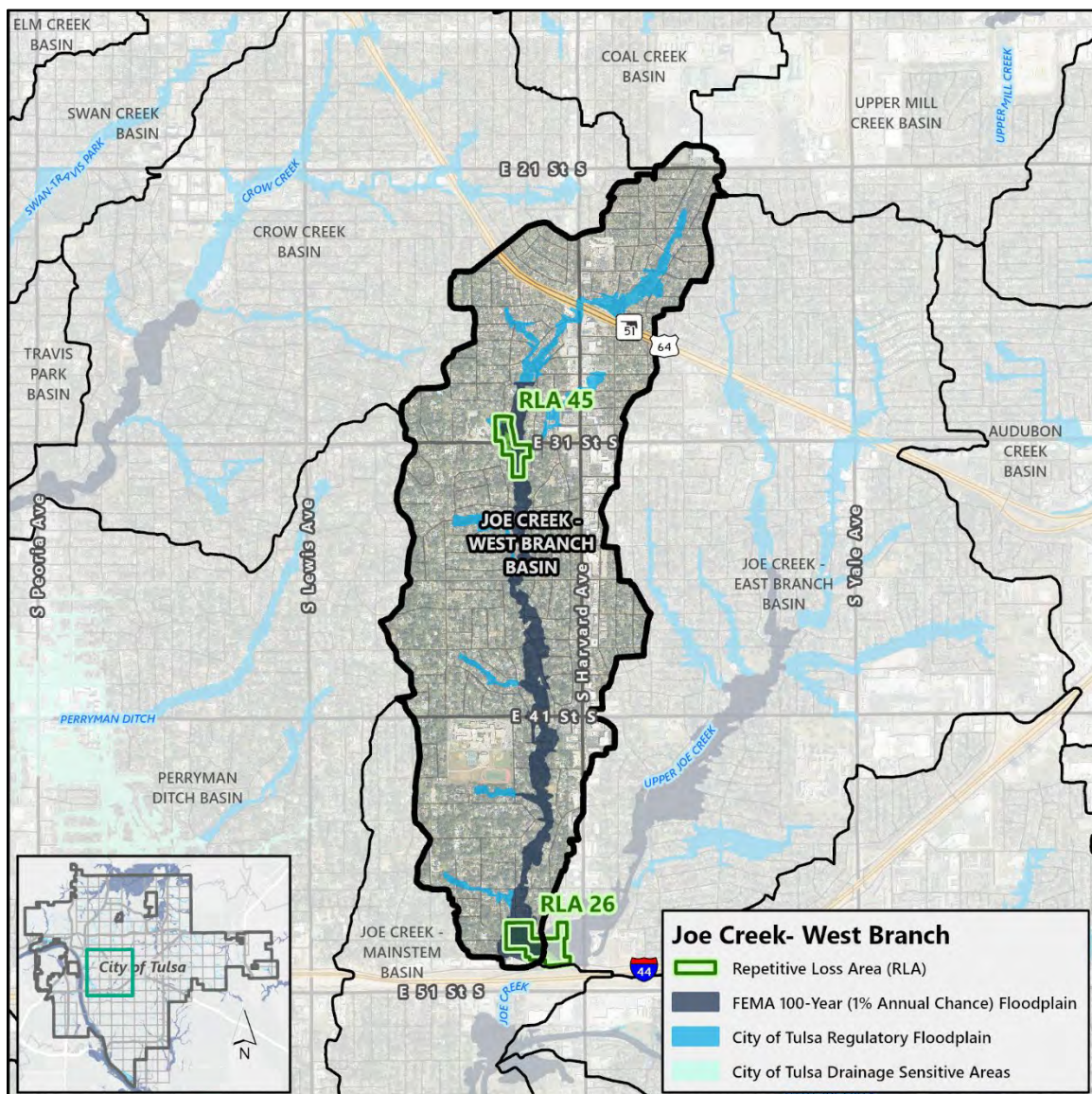
6.13 ft



Joe Creek West Branch

Joe Creek West Branch is located in Central Tulsa. This creek is a tributary of Joe Creek's Mainstem; it extends approximately 3.2 miles and is conveyed primarily by storm sewer along the historic stream bed. The stream's natural channel is maintained between E. 36th St. and E. 31st St in the Ranch Acres neighborhood, downstream of Joe Lake. This stream has a contributing drainage area of 1.95 square miles. The watershed is covered with primarily residential land use. There is a commercial district between E. 21st St. and E. 51st St. along Harvard Ave. Joe Creek West Branch generally flows south until its confluence with the East Branch to form the Joe Creek Mainstem near E. 51st St. and S. Yale Ave.

Figure 8: Joe Creek West Branch Overview



Much of the Joe Creek West Branch's mainstem is designated as FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain. The FEMA study extent is at E. 28th St. The West Branch's tributaries are designated City of Tulsa regulatory floodplain. As with Joe Creek Mainstem, the West Branch also experienced devastating flooding during the 1979 and 1984 floods. The Joe Creek West Branch basin contains two unmitigated RLAs.

RLA 26

Area Specific Flooding

Repetitive Loss Area 26, located in the Joe Creek West Branch watershed, was established in 2017. This Repetitive Loss Area is comprised of nineteen structures on twenty properties near the intersection of E. 49th St. and S. College Ave., at the confluence of the East and West Branches of Joe Creek. The properties were developed between 1930 and 1970. This RLA is located within the FEMA SFHA and the City regulatory floodplain. The area was modified from the 2017 RLA to include nine additional properties with similar flooding potential. Four properties are vacant but remain privately owned as of this 2026 update.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup along the historic creek beds of the West Branch of Joe Creek which is now primarily conveyed by storm sewer through this reach. This RLA is located at the confluence of the East and West Branches of Joe Creek. The terrain is relatively flat, sloping toward the historic creek beds. The terrain on which these properties are located is sloped inward from the east and west, draining to the south. The residential structures along E. 49th St. are not well elevated above the grade of the roadway, and the surrounding terrain is generally sloped downward away from the roadway, therefore excess runoff above the ditch capacity is directed through backyards until it reaches its next point of collection, which is especially threatening to the slab-on-grade structures. All of the properties in this area are within the historic flood extents of the 1984 flood and seven of the eleven claims made in this area are single claims from that event.

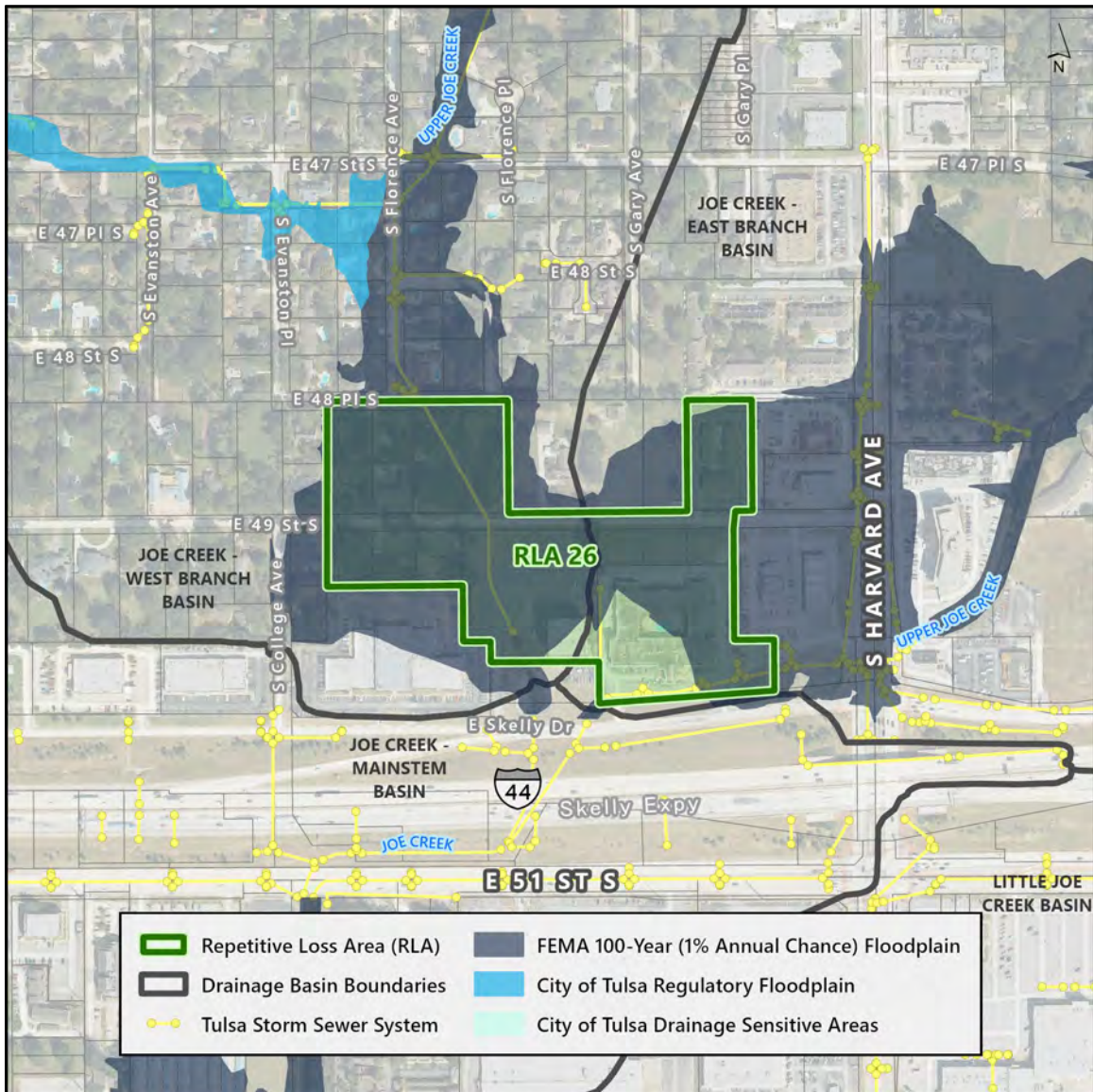
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem area WBJC-01. Though there have been downstream capacity improvements along I-44, and general upgrades to the storm sewer systems throughout the Joe Creek basin, according to the MDP, the storm sewer system in this area has the capacity equivalent to 35% of the 100-year flow. The 2024 MDP report proposed acquisition and relocation, storm sewer improvements and detention to mitigate flooding potential to these properties.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 in 2010-2012 increased drainage beneath the freeway and reduced backup flooding in the area along Skelly Dr. Despite these improvements, the storm sewer system through this reach still has an inadequate capacity for the 100-year event. One home was demolished but the property remains privately owned.

Figure 9: RLA 26



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Eight properties have carried flood insurance and made eleven damage claims to the NFIP, ten of which were paid, totaling \$279,171. The last claim for this RLA was filed in 1994. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0354M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, August 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #26, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of commercial and residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Multiple Unit	Slab	1970	Avg
Property 2	Vacant			
Property 3	Vacant			
Property 4	Vacant			
Property 5	Commercial	Slab	1970	Poor
Property 6	Commercial	Slab	1975	Avg
Property 7	Residential	Slab	1961	Avg
Property 8	Residential	Crawl Space	1960	Avg
Property 9	Residential	Crawl Space	1930	Avg
Property 10	Residential	Crawl Space	1950	Avg
Property 11	Residential	Crawl Space	1956	Avg
Property 12	Residential	Conventional	1939	Avg
Property 13	Residential	Slab	1963	Avg
Property 14	Residential	Slab	1965	Avg
Property 15	Vacant			

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding due to inadequate storm sewer capacity. This is especially threatening to those properties with slab-on-grade foundations. There have been improvements made downstream of this area to the storm sewer, which has reduced the 100-year floodplain but has not mitigated these properties

from flooding. The MDP recommended acquisition and relocation, storm sewer improvements and detention to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 26



Google Earth

© 2026 Google

6.81 ft

RLA 45

Area Specific Flooding

Repetitive Loss Area 45, located in the Joe Creek West Branch watershed, was established in 2017. This Repetitive Loss Area is comprised of nineteen structures on twenty properties near the intersection of E. 31st St. and S. Florence Ave. The properties were mostly developed between 1951 and 1970, one property was developed in 1931, and another was developed in 2010. One property is vacant, left as a drainage easement for Joe Lake. Twelve of the properties in this RLA are located within the FEMA SFHA and the City regulatory floodplain. The area was modified from the 2017 RLA to include four additional properties with similar flooding potential.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup along the historic creek beds of the West Branch of Joe Creek which is now primarily conveyed by storm sewer through this reach. This RLA is located near Joe Lake, which is the confluence of West Branch of Joe Creek and one of its tributaries. The terrain is relatively flat, sloping toward the historic creek beds. The terrain on which these properties are located is sloped inward from the east and west, draining to the south. The structures along Florence Ave. are not well elevated above the grade of the roadway, and the surrounding terrain is generally sloped downward away from the roadway, therefore excess runoff not captured by the storm sewer system is directed through backyards until it reaches its next point of collection - which is especially threatening to the slab-on-grade structures. Most properties in this area are within the historic flood extents of the 1984 flood. Though the data from the NFIP does not show any claims submitted for this event.

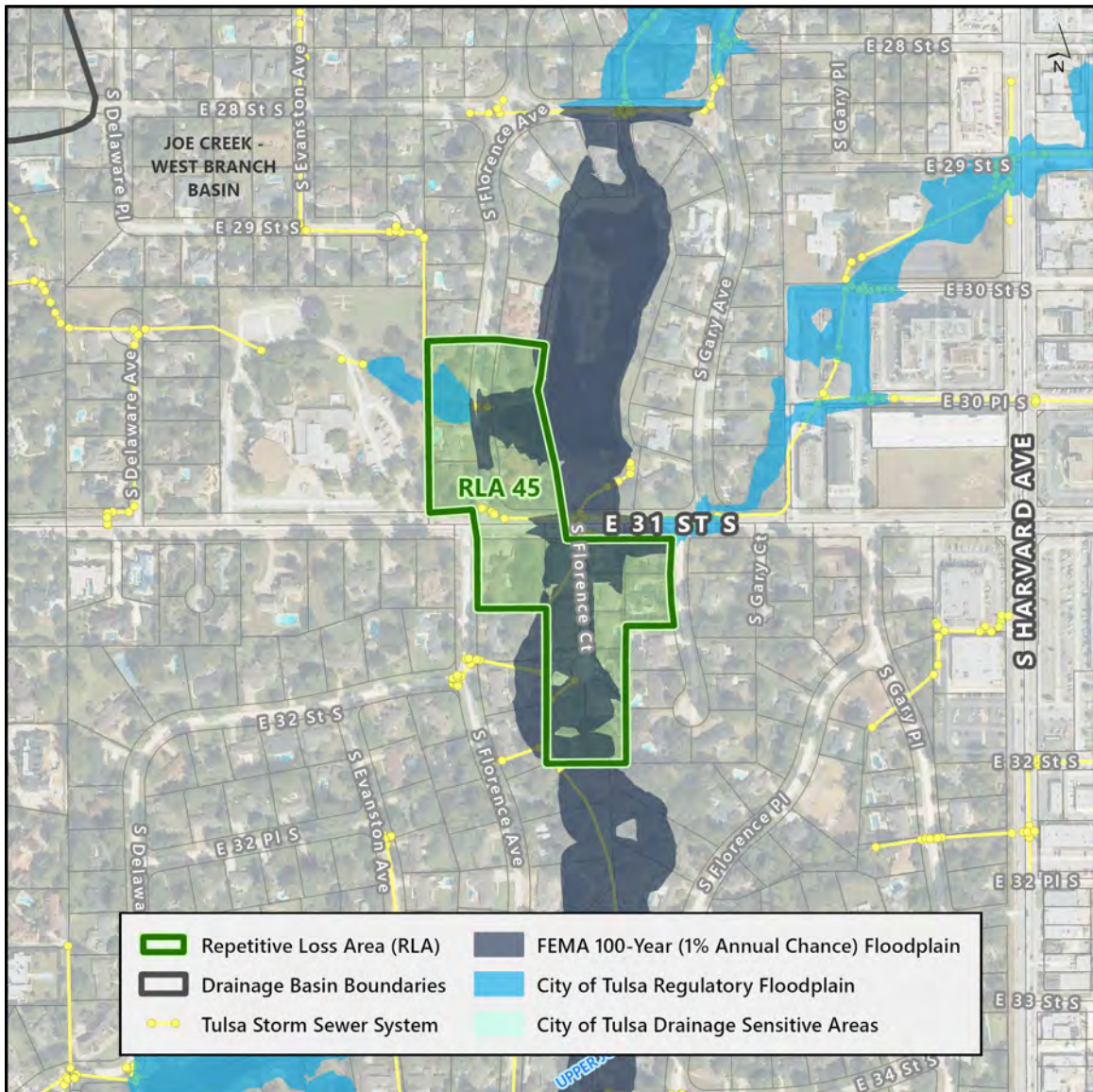
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem area WBJC-03. Though there have been downstream capacity improvements along I-44, and general upgrades to the storm sewer systems throughout the Joe Creek basin, according to the MDP, the storm sewer system in this area has the capacity equivalent to 35% of the 100-year flow. The 2024 MDP report proposed acquisition and relocation to mitigate flooding potential to these properties.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 in 2010-2012 increased drainage beneath the freeway and reduced backup flooding in the area along Skelly Dr. Subsequent improvements to the outfall of Joe Lake and the culvert under E. 31st St. have improved upstream flooding. Despite these improvements, the storm sewer system through this reach still has an inadequate capacity for the 100-year event.

Figure 10: RLA 45



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Seven properties have carried flood insurance and made eight damage claims to the NFIP, seven of which were paid, totaling \$104,371. The last claim for this RLA was filed in 2009. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0352M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, August 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #45, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Vacant			
Property 2	Residential	Slab	1959	Avg
Property 3	Residential	Conventional	1952	Good
Property 4	Residential	Crawl Space	1951	Avg
Property 5	Residential	Slab	2010	Good
Property 6	Residential	Crawl Space	1952	Avg
Property 7	Duplex	Slab	1969	Avg
Property 8	Duplex	Slab	1968	Avg
Property 9	Residential	Crawl Space	1951	Avg
Property 10	Duplex	Slab	1969	Avg
Property 11	Residential	Conventional	1933	Avg
Property 12	Duplex	Slab	1968	Avg
Property 13	Residential	Crawl Space	1950	Avg
Property 14	Duplex	Slab	1968	Avg
Property 15	Duplex	Slab	1968	Avg
Property 16	Residential	Crawl Space	1953	Avg
Property 17	Residential	Slab	1967	Avg
Property 18	Condo	Slab	1970	Very Good
Property 19	Condo	Slab	1967	Avg
Property 20	Condo	Slab	1967	Avg

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding due to inadequate storm sewer capacity and overland flow across the low-lying terrain east of S. Florence Ave. This is especially threatening to those properties with slab-on-grade foundations. The MDP recommended acquisition and relocation to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 45



Google Earth

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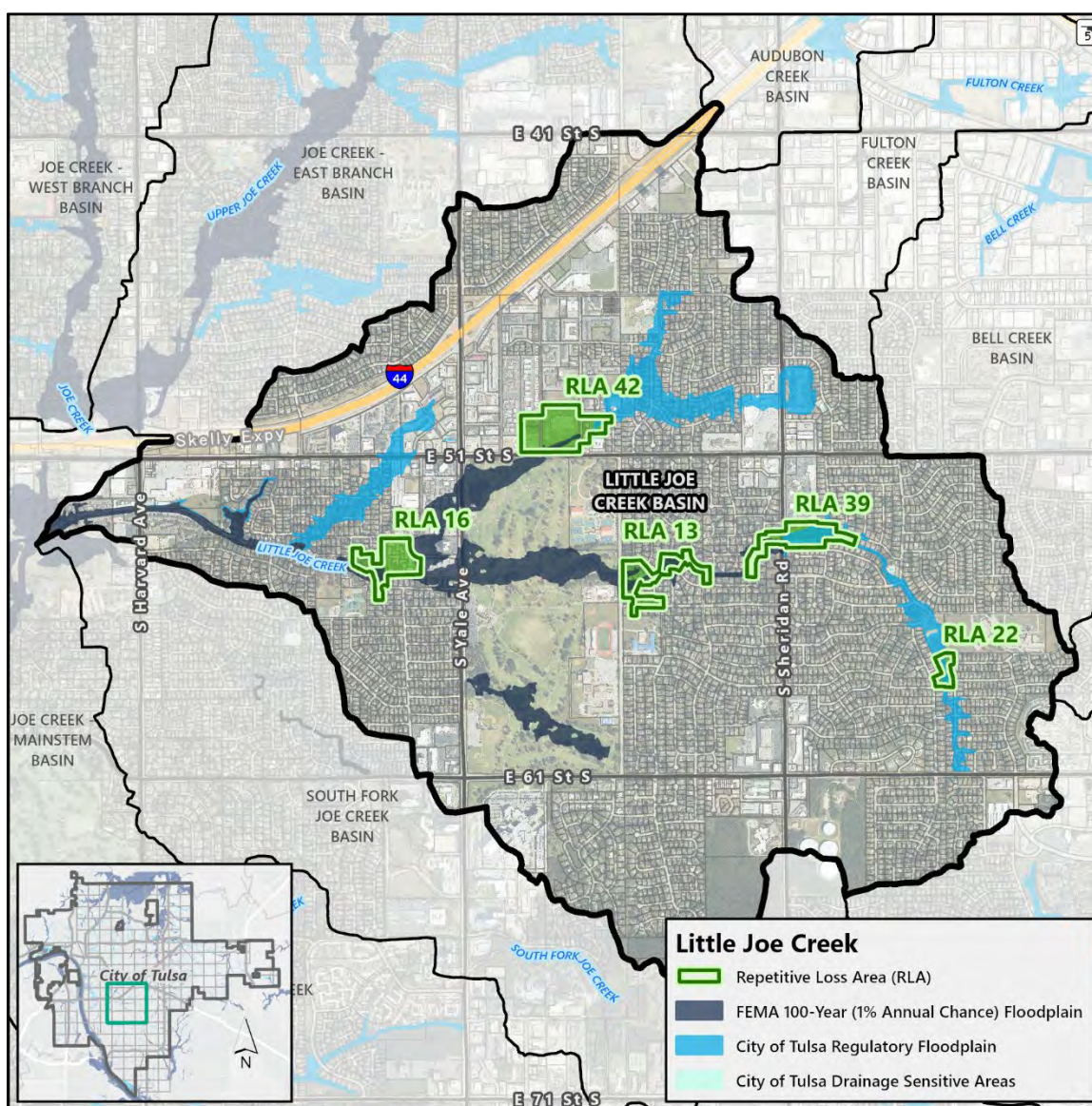
5.55 ft



Little Joe Creek

Little Joe Creek is located in Central Tulsa. This creek is a tributary of Joe Creek's Mainstem; it extends approximately 3.35 miles as a primarily open channel until E. 59th St. where it begins to be conveyed primarily by storm sewer for another 0.4 miles. There are two primary tributaries contributing to the Little Joe Creek Mainstem, the South Fork and North Fork, which come to a confluence around LaFortune Park near E. 55th St. and S. Yale Ave. This stream has a contributing drainage area of 4.27 square miles. The watershed is covered with primarily residential land use. Dedicated open space is limited to LaFortune Park. The commercial development is concentrated to several pockets along I-44, at E. 61st St. and S. Yale Ave., E. 61st St. and S. Sheridan Rd., and E. 51st St. and S. Sheridan Rd.

Figure 11: Little Joe Creek Overview



Both the North and South Fork are open channels through LaFortune Park, then conveyed by storm sewer until their upstream limit. Little Joe Creek's mainstem generally flows west until its confluence with Joe Creek Mainstem in Manion Park. Much of Little Joe Creek, and its North and South Fork are designated as FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain. The FEMA study extent of the Little Joe Creek Mainstem is at S. Sheridan Rd. The North and South Fork FEMA study extents are at S. Hudson Ave. As with the Joe Creek Mainstem, Little Joe Creek also experienced devastating flooding during the 1979 and 1984 floods. The Little Joe Creek basin contains four unmitigated RLAs and one mitigated RLA that is currently undergoing a status change.

RLA 13

Area Specific Flooding

Repetitive Loss Area 13, located in the Little Joe Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of twenty-seven properties near the intersection of E. 56th St. and S. Hudson Ave., just east of La Fortune Park. The properties were developed between 1961 and 1967. Ten properties within this RLA are located within the FEMA SFHA and the City regulatory floodplain. The area was modified from the 2017 RLA to combine three historic RLAs (13, 41, and 63) for this 2026 update.

Drainage conditions in this RLA indicate that flooding is caused by overland flow, storm sewer backup, and overbank flooding from Little Joe Creek. Historically, limited channel capacity along Little Joe Creek contributed to overbank flooding in this area. Since the City and USACE completed channel improvements along Joe Creek and its tributaries, the channel capacity has increased substantially. During the 100-year event, Little Joe Creek now overtops S. Hudson Ave. and S. Joplin Ave. Although ten properties are located within the FEMA SFHA and three are within the floodway, most floodplain properties have estimated finished-floor elevations above the 100-year flood level, based on available elevation certificates and estimates; two appear to remain below that elevation. Nine of the twenty claims in this RLA were associated with the 1984 storm, which remains Tulsa's flood of record, and eight additional claims followed the 1979 storm, which also significantly affected this area. Today, flooding is more commonly caused by overland flow and runoff from storm sewer backup. The properties are located on relatively flat terrain that slopes toward the creek bed, and most homes have slab-on-grade foundations, making them more susceptible to these flooding conditions.

This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem areas LJC-06 and -07. One key issue cited is the storm sewer capacity on the tributary to the south of Little Joe Creek, that runs along E. 56th St. and S. Irvington Pl. The study cites the capacity as 28% of the 100-year flow in addition to the overtopping structures along Little Joe Creek. The 2024 MDP report proposed acquisition and relocation of five properties along S. Joplin Ave. and a storm sewer diversion along the current storm sewer alignment at E. 56th St. and S. Irvington Pl. to manage the 100-year flow.

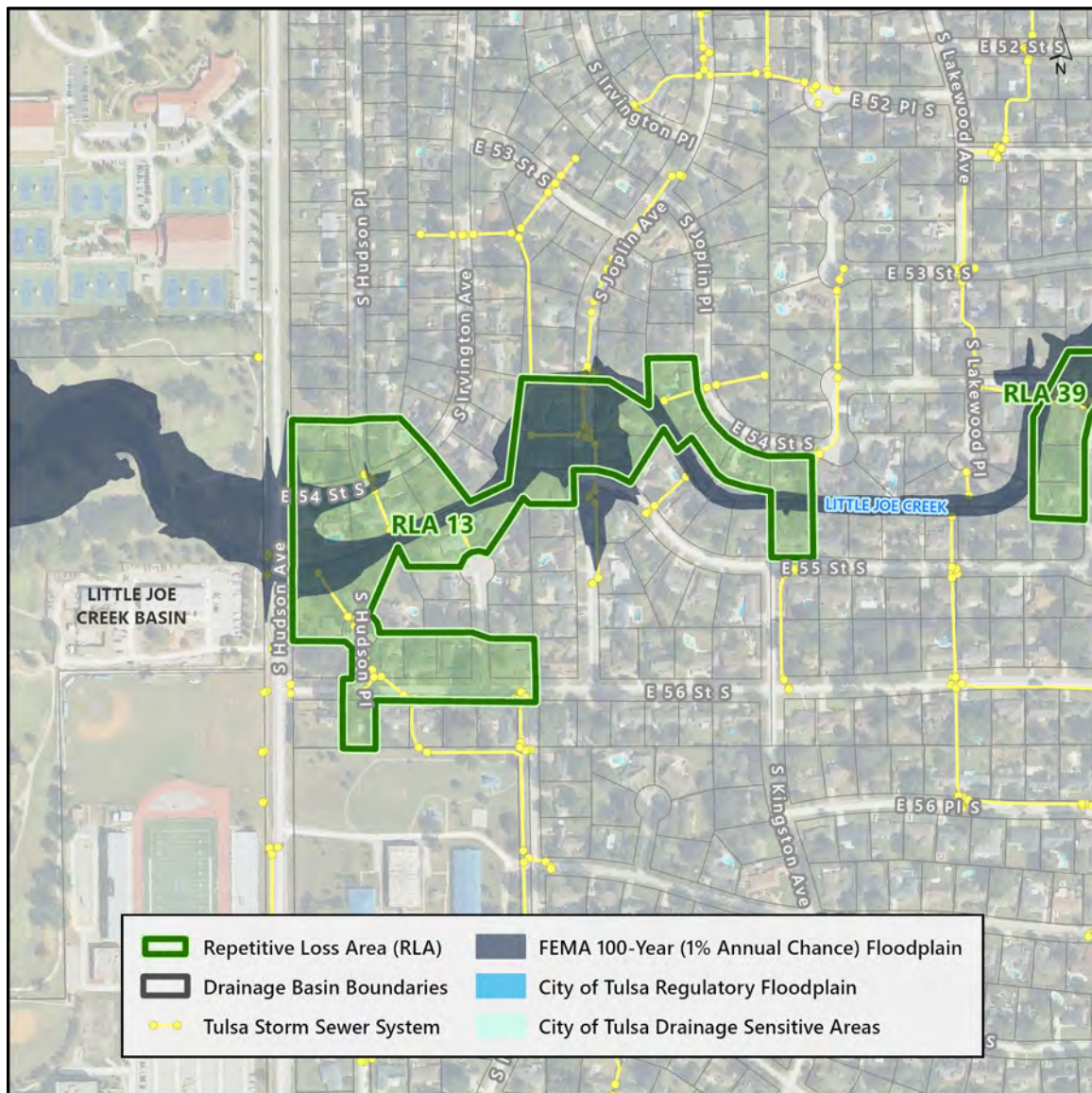
The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to address chronic storm sewer backup problems at several locations in the basin. In this area, the storm sewer along S. Hudson Pl. was replaced; however, as noted above, it remains undersized for the 100-year flow. In the 1980s, the City of Tulsa and USACE completed a major channel improvement project in the Joe Creek basin, channelizing many reaches of Joe Creek and its

tributaries, including Little Joe Creek. The channel generally contains the 100-year event, but several homes in this RLA remain within the floodplain despite these improvements.

Figure 12: RLA 13



Claims Data

FLOOD INSURANCE DATA There are three repetitive loss properties in this RLA. Thirteen properties have carried flood insurance and made twenty damage claims to the NFIP, nineteen of which were paid, totaling \$127,802. The last claim for this RLA was filed in 2000. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0358M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, September 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #13, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #41, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #63, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Slab	1964	Avg +
Property 2	Residential	Slab	1965	Avg +
Property 3	Residential	Slab	1965	Avg +
Property 4	Residential	Slab	1966	Avg +
Property 5	Residential	Slab	1967	Avg +
Property 6	Residential	Slab	1964	Avg +
Property 7	Residential	Slab	1962	Avg +
Property 8	Residential	Slab	1963	Avg +
Property 9	Residential	Slab	1961	Avg +
Property 10	Residential	Slab	1966	Avg +
Property 11	Residential	Slab	1965	Avg +
Property 12	Residential	Slab	1962	Avg +
Property 13	Residential	Slab	1965	Avg +
Property 14	Residential	Slab	1964	Avg +
Property 15	Residential	Slab	1963	Avg +
Property 16	Residential	Slab	1964	Avg +
Property 17	Residential	Slab	1963	Avg +
Property 18	Residential	Slab	1964	Avg +
Property 19	Residential	Slab	1964	Avg +

Property 20	Residential	Slab	1966	Avg +
Property 21	Residential	Slab	1964	Avg +
Property 22	Residential	Slab	1964	Avg +
Property 23	Residential	Slab	1962	Avg +
Property 24	Residential	Crawl Space	1961	Avg +
Property 25	Residential	Slab	1963	Avg +
Property 26	Residential	Slab	1962	Avg +
Property 27	Residential	Slab	1963	Avg +

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historic cause of flooding in many of the claims in this area was overbank flooding along Little Joe Creek, storm sewer backup and overland flow. Much of the overbank flooding concerns were mitigated through the channelization of Little Joe Creek completed in the 1980s, but some threat remains in this area where several properties are located in the SFHA. Since these channel upgrades, the more prominent threat is the damage caused by overland flow and storm sewer backup. This is especially threatening to those properties with slab-on-grade foundations. The MDP recommended acquisition and relocation and storm sewer improvements to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 13



Google Earth

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6.88 ft

RLA 16

Area Specific Flooding

Repetitive Loss Area 16, located in the Little Joe Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of forty structures on fourteen properties near the intersection of E. 53rd St. and S. Yale Ave., just west of La Fortune Park at the confluence of the North Fork and South Fork of Little Joe Creek. The properties were mostly developed between 1951 and 1958; the apartment complex was developed in 1973. Five properties within this RLA are located within the FEMA SFHA and City regulatory floodplain. The area was modified from the 2017 RLA to combine two historic RLAs (16 and 17) for this 2026 update.

Drainage conditions in this RLA indicate that flooding is due to overland flooding due to inadequate drainage paths across properties as well as overbank flooding from Little Joe Creek, itself. Historically the channel along Joe Creek had a limited capacity which caused overbank flooding to be a threat in this area. Since the improvements undertaken by the City and USACE to improve the channels along Joe Creek and its tributaries, this channel has a greatly improved capacity. Now, in the 100-year event along the channel, the creek overtops its banks throughout this RLA. Eleven of the apartment buildings and one residential home were inundated by flooding from overland flow due and storm sewer backup in 1984. Eight of the thirty claims in this RLA were from the 1984 storm- which remains Tulsa's flood of record. An additional seventeen claims were made in 1979 which significantly impacted this area as well. The terrain on which these properties in this RLA are located is relatively flat, sloping toward the creek bed. Additionally, several structures are located within the drainage paths of neighboring properties which promotes runoff to cross through the adjacent properties or high ground before entering the next point of collection. This can lead to flooding of homes, especially those with slab-on-grade foundations or foundations at an elevation lower than the surrounding grade.

This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem areas LJC-03 and -04. The plan cited that the channel capacity is only capable of conveying 75% of the 100-year flow through this reach. The 2024 MDP report proposed acquisition and relocation of the structures along S. Toledo Ave. and detention along the North Fork of Little Joe Creek at E. 54th Pl.

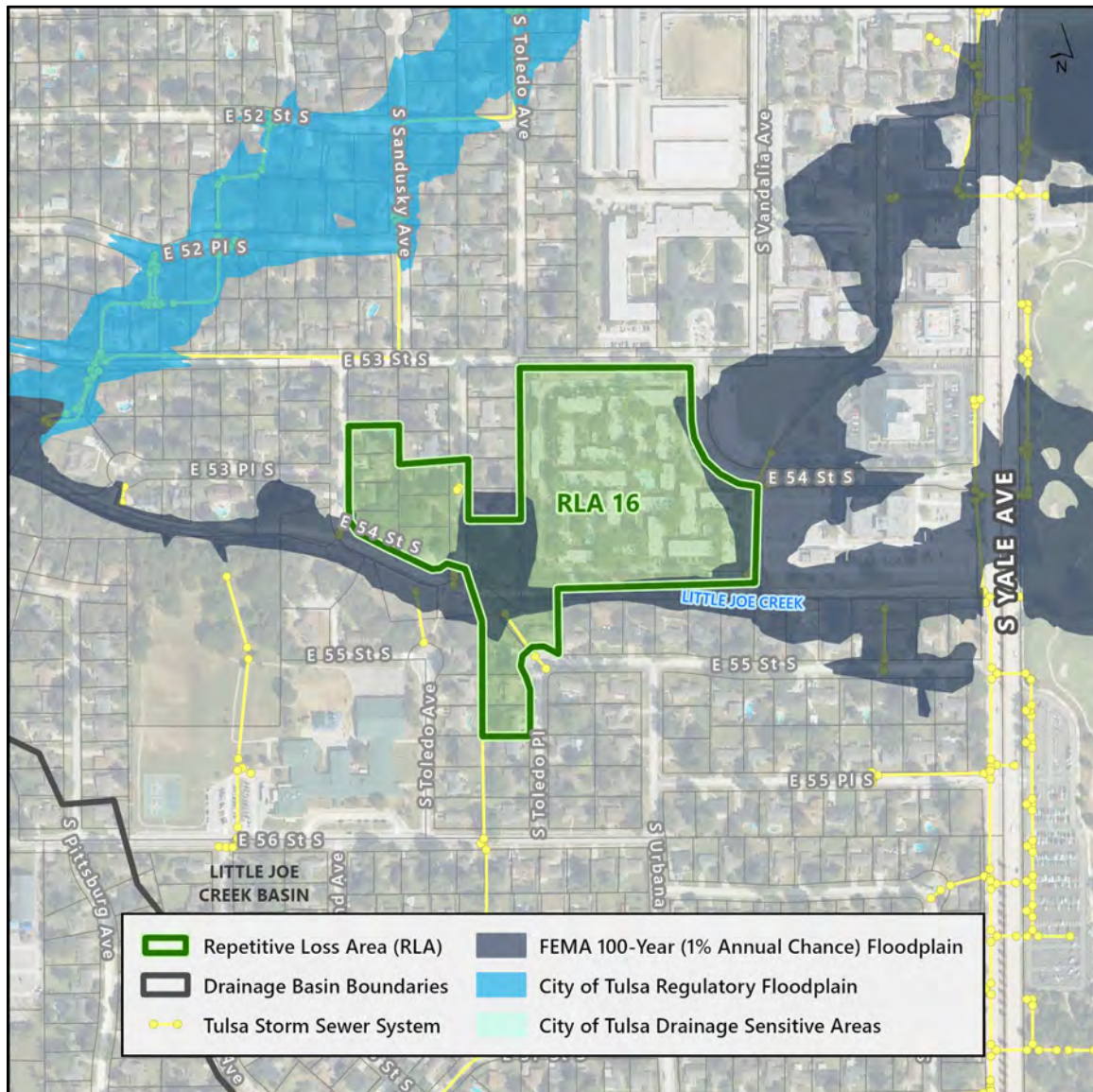
The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. In the 1980s, the City of Tulsa and USACE undertook a large channel improvement project in the Joe Creek basin, channelizing many of the reaches of Joe Creek and its tributaries, including Little Joe Creek. The channel in most places contains the 100-year event. A detention facility was

installed at LaFortune Park and the culverts along the creek under S. Yale Ave. were enlarged in the 1990s. Despite these efforts, the channel cannot contain the 100-year flow through this reach resulting in several homes remaining in the floodplain and overland flow paths through properties still pose a threat to some structures.

Figure 13: RLA 16



Claims Data

FLOOD INSURANCE DATA There are seven repetitive loss properties in this RLA. Twenty-one properties have carried flood insurance and made thirty damage claims to the NFIP, twenty-seven of which were paid, totaling \$96,039. The last claim for this RLA was filed in 1994. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0358M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, September 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #16, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #17, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Multiple Unit	Slab	1973	Avg
Property 2	Residential	Crawl Space	1953	Avg
Property 3	Residential	Crawl Space	1957	Avg
Property 4	Residential	Crawl Space	1954	Avg
Property 5	Residential	Crawl Space	1956	Avg
Property 6	Residential	Crawl Space	1951	Avg
Property 7	Residential	Crawl Space	1957	Avg
Property 8	Residential	Slab	1957	Avg
Property 9	Residential	Crawl Space	1956	Avg
Property 10	Residential	Slab	1958	Avg
Property 11	Residential	Crawl Space	1958	Avg
Property 12	Residential	Conventional	1958	Avg
Property 13	Residential	Conventional	1958	Avg
Property 14	Residential	Conventional	1956	Avg

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historic cause of flooding in many of the claims in this area was primarily due to overland flow and storm sewer backup. Much of the overbank flooding concerns on Little Joe Creek were mitigated through the channelization of the creek completed

in the 1980s, but some threat remains in this area where several properties are located in the SFHA. Several structures in this area are located on low-lying terrain and are not elevated above the surrounding grade causing overland flow paths through properties which can lead to flooding of structures. The MDP recommended acquisition and relocation of several structures and additional upstream detention along S. 54th Pl. to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 16



Google Earth

© 2026 Google

5.88 ft

RLA 22

Area Specific Flooding

Repetitive Loss Area 22, located in the Little Joe Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of ten properties near the intersection of E. 58th St. and S. 73rd E. Ave., just south of Byrd Junior High School. The properties were developed between 1961 and 1966. Five properties within this RLA are located within the City regulatory floodplain. The area was modified from the 2017 RLA to include six additional for this 2026 update.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup which leads to the open channel portions of Little Joe Creek on the upstream and downstream side of E. 58th St. to overtop and flood the adjacent properties. The terrain on which these properties are located is generally sloped from the east and west toward the channel. Additionally, drainage patterns indicate that there are inadequate overland flow paths across several of the properties in the area allowing runoff from adjacent properties and ponding along the roadway to create flooding potential for these slab-on-grade structures. Several improvements to the storm sewer system and channel have been made, reducing flooding potential but not mitigating it entirely in this area. The only claims within the RLA were during the 1979 and 1984 storms, the 1984 storm remains Tulsa's flood of record. Though complaints of the creek flooding have been made as recently as 2020.

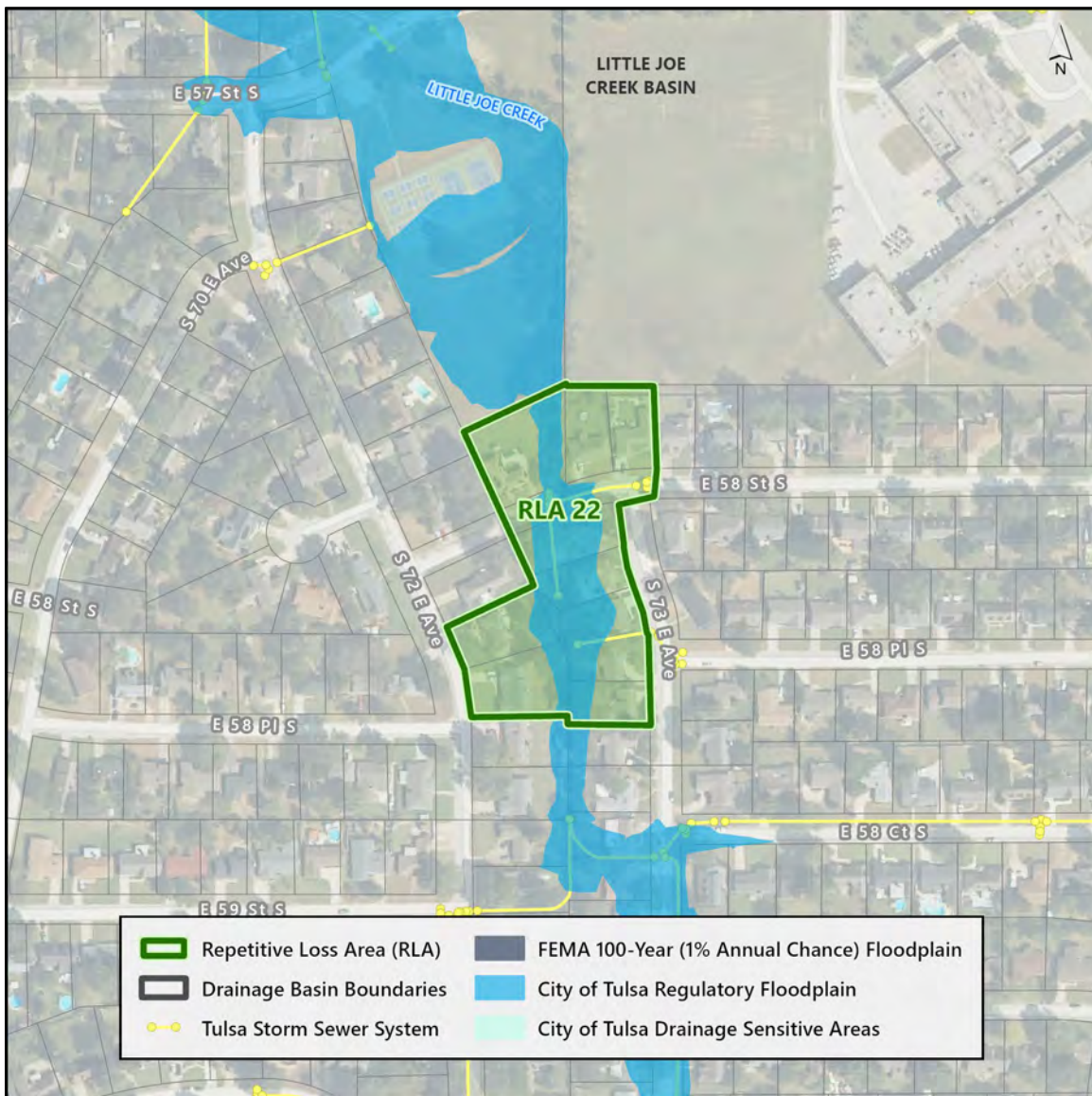
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem areas LJC-11. The plan cited that the storm sewer is only capable of conveying 39% of the 100-year flow through this reach. The 2024 MDP report recommended storm sewer improvements and upstream detention at Byrd Junior High School.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin including along E. 58th St. in this RLA. Additionally, the portion of this creek that is open channel was concrete-lined around the same time. There haven't been additional flood claims since these improvements but there have been citizen complaints about the creek flooding the yards of these properties as well as erosion complaints in the area. Despite the improvements, several homes remain in the floodplain of Little Joe Creek, with storm sewer backup and inadequate overland flow paths through properties still posing a threat to some structures.

Figure 14: RLA 22



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. One property has carried flood insurance and made two damage claims to the NFIP, both of which were paid, totaling \$2,791. The last claim for this RLA was filed in 1984. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0359M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, September 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #22, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Slab	1966	Good
Property 2	Residential	Slab	1963	Good
Property 3	Residential	Slab	1963	Good
Property 4	Residential	Slab	1963	Good
Property 5	Residential	Slab	1963	Good
Property 6	Residential	Slab	1963	Good
Property 7	Residential	Slab	1961	Good
Property 8	Residential	Slab	1961	Good
Property 9	Residential	Slab	1963	Good
Property 10	Residential	Slab	1963	Good

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historic cause of flooding in many of the claims in this area was primarily due to overland flow and storm sewer backup. Much of the overbank flooding concerns on Little Joe Creek were mitigated through the channelization of the creek and increased storm sewer capacity completed in the 1990s, but some threat remains in this area where several properties are located in the City regulatory floodplain. In addition to the threat that overflow from the creek still provides, several structures in this area are located on low-lying terrain along the creek with inadequate overland flow paths that allow for runoff and ponded water to threaten the slab-on-grade structures. The MDP recommended storm sewer improvements and upstream detention to mitigate the flooding in this area. To manage

localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 22



Google Earth

© 2026 Google

8.07 ft

RLA 39

Area Specific Flooding

Repetitive Loss Area 39, located in the Little Joe Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of nineteen properties near the intersection of E. 53rd St. and S. Sheridan Rd., near the Farm Shopping Center. The properties were mostly developed between 1962 and 1978; one was developed in 1945. Four properties within this RLA are located within the FEMA SFHA and City regulatory floodplain and nine additional properties are only within the City regulatory floodplain. The area was modified from the 2017 RLA to combine two historic RLAs (39 and 55) for this 2026 update.

Drainage conditions in this RLA indicate that flooding results from overland flow, storm sewer backup, and overbank flooding from Little Joe Creek. Historically, limited channel capacity along Joe Creek made overbank flooding a concern in this area. Since the City and USACE improved the channels along Joe Creek and its tributaries, Little Joe Creek has substantially greater capacity. During the 100-year event, however, the creek still overtops E. 54th St., S. 67th E. Pl., and S. Sheridan Rd. Storm sewer backup and overland flow continue to threaten properties along the storm-sewered portion of Little Joe Creek between S. Sheridan Rd. and S. 67th E. Pl. Four of the fifteen claims in this RLA were associated with the 1984 storm, which remains Tulsa's flood of record, and four additional claims followed the 1979 storm, which also significantly affected this area. Flood risk from Little Joe Creek remains, along with flooding from overland flow and runoff caused by storm sewer backup. The properties are located on relatively flat terrain that slopes toward the creek bed. Several structures either have basements or are below roadway grade, increasing their susceptibility to flooding.

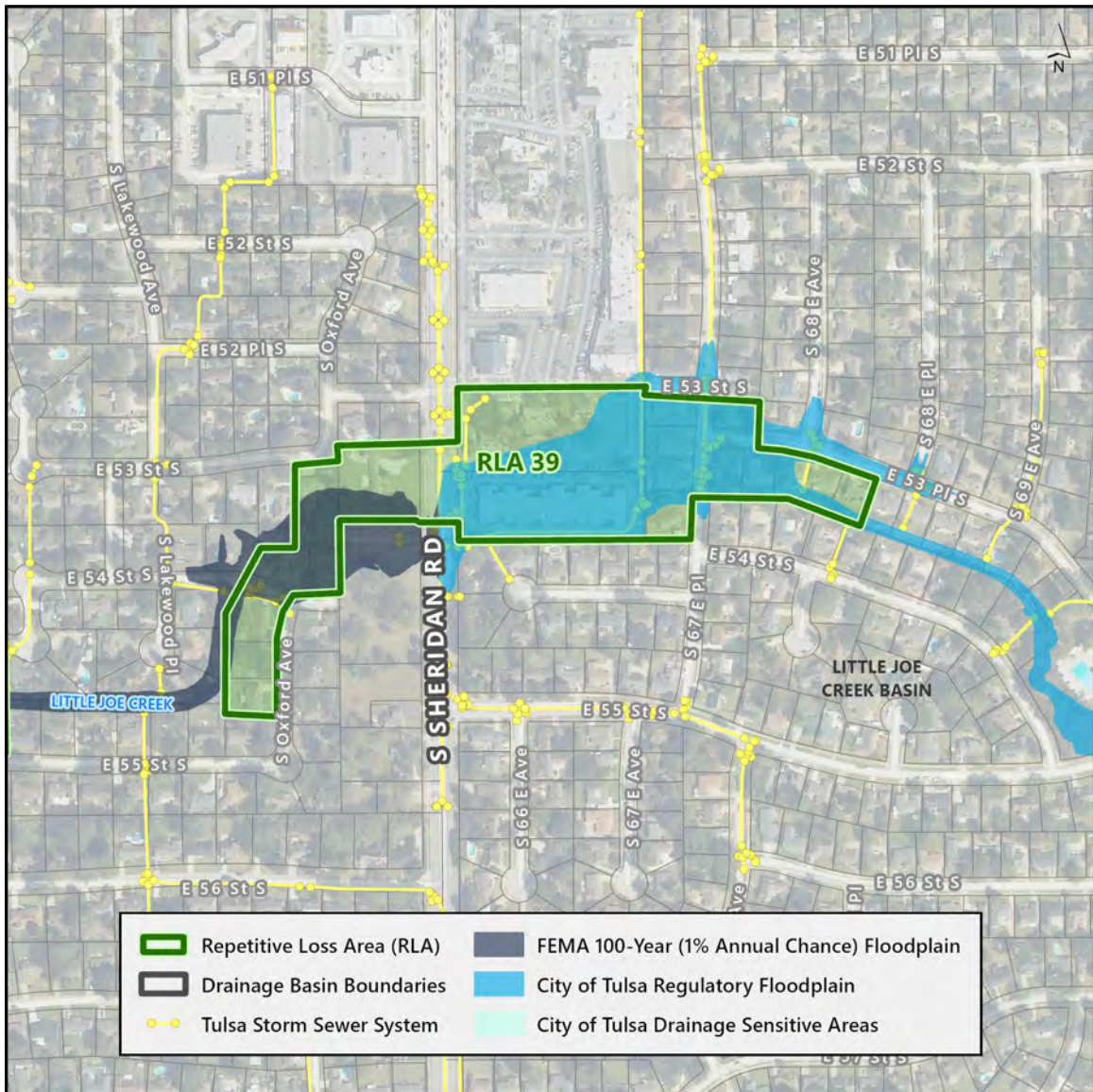
This area is evaluated in the Joe Creek Master Drainage Plan. Specifically, it is analyzed in problem areas LJC-08 and -09. The 2024 MDP report proposed acquisition and relocation of the structures along the west side of S. Sheridan Rd. and a control structure to maintain floodplain storage, in addition to detention upstream of the problem area at Memorial High School.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. In the 1980s, the City of Tulsa and USACE undertook a large channel improvement project in the Joe Creek basin, channelizing many of the reaches of Joe Creek and its tributaries, including Little Joe Creek. The channel in most places contains the 100-year event. Despite these efforts, several homes remain in the floodplain with several structures not being elevated above the roadway grade or having basements. Flood risk from inundation from Little Joe Creek and overland flow remains.

Figure 15: RLA 39



Claims Data

FLOOD INSURANCE DATA There are three repetitive loss properties in this RLA. Six properties have carried flood insurance and made fifteen damage claims to the NFIP, thirteen of which were paid, totaling \$82,192. The last claim for this RLA was filed in 2007. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0359M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, September 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #39, Flanagan & Associates, Swift Water Resources, 2017
- Repetitive Loss Area #55, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of commercial and residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Conventional	1945	Very Good
Property 2	Residential	Slab	1964	Good
Property 3	Residential	Slab	1962	Avg +
Property 4	Residential	Slab	1962	Avg +
Property 5	Residential	Slab	1963	Avg +
Property 6	Residential	Slab	1965	Avg +
Property 7	Residential	Slab	1964	Avg +
Property 8	Residential	Slab	1971	Avg
Property 9	Residential	Slab	1971	Avg
Property 10	Commercial	Slab	1972	Good
Property 11	Residential	Slab	1971	Avg
Property 12	Residential	Slab	1965	Good
Property 13	Residential	Slab	1966	Good
Property 14	Residential	Slab	1967	Good
Property 15	Residential	Slab	1965	Good
Property 16	Residential	Slab	1971	Avg
Property 17	Residential	Slab	1965	Good
Property 18	Commercial	Slab	1978	Good
Property 19	Residential	Slab	1971	Avg

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historic cause of flooding in many of the claims in this area was overbank flooding along Little Joe Creek, storm sewer backup and overland flow in the storm sewered portion of Little Joe Creek between S. Sheridan Rd. and S. 67th E. Pl. Much of the overbank flooding concerns were mitigated through the channelization of Little Joe Creek completed in the 1980s, but some threat remains in this area where several properties are located in the SFHA. Throughout the area between S. 67th E. Pl. and S. Sheridan Rd., damage caused by overland flow and storm sewer backup is prominent as the storm sewer does not have the capacity to contain the 100-year flow. This is threatening to those properties with slab-on-grade foundations, but even more so to those properties with basements and finished floor elevation below the surrounding terrain. The MDP recommended acquisition and relocation for open floodplain storage and upstream detention at Memorial High School to mitigate the flooding in this area. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 39



Google Earth

© 2026 Google

7.93 ft



RLA 42

Area Specific Flooding

Repetitive Loss Area 42, located in the Little Joe Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of fourteen structures on nine properties near the intersection of E. 51st St. and S. Darlington Ave., just north of LaFortune Park. The properties were mostly developed between 1968 and 1984, two properties were redeveloped in recent years, completed in 2022. One property is within the FEMA SFHA. Four structures within this RLA are located within the City regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flooding and storm sewer backup. Several of the structures are at risk of overbank flooding from the portion of Little Joe Creek that daylights between S. Fulton Ave. and E. 77th Pl.

The terrain on which these properties are located is generally sloped from the north and south toward the channel. Additionally, historic drainage patterns indicate that there are inadequate overland flow paths across several of the properties in the area directing runoff toward the buildings. Three structures have been demolished, and two properties have been redeveloped. The redevelopment includes storm sewer improvements as well as grading improvements.

Several improvements to the storm sewer system and channel have been made, reducing flooding potential and containing the 100-year floodplain within the channel, though not mitigating it entirely. Over half of the claims within the RLA were during the 1979 and 1984 storms, the 1984 storm remains Tulsa's flood of record. Additionally, the repetitive loss property accounts for six of the claims in this RLA.

This area is evaluated in the Joe Creek Master Drainage Plan, specifically problem area LJC-13. The plan notes that repetitive flooding concerns have largely been resolved, with minimal remaining flood concerns. The recommended improvement is increased floodplain storage to reduce flood risk in nearby problem areas LJC-14 and LJC-16; however, this recommendation is partially outdated because previously vacant land has since been redeveloped.

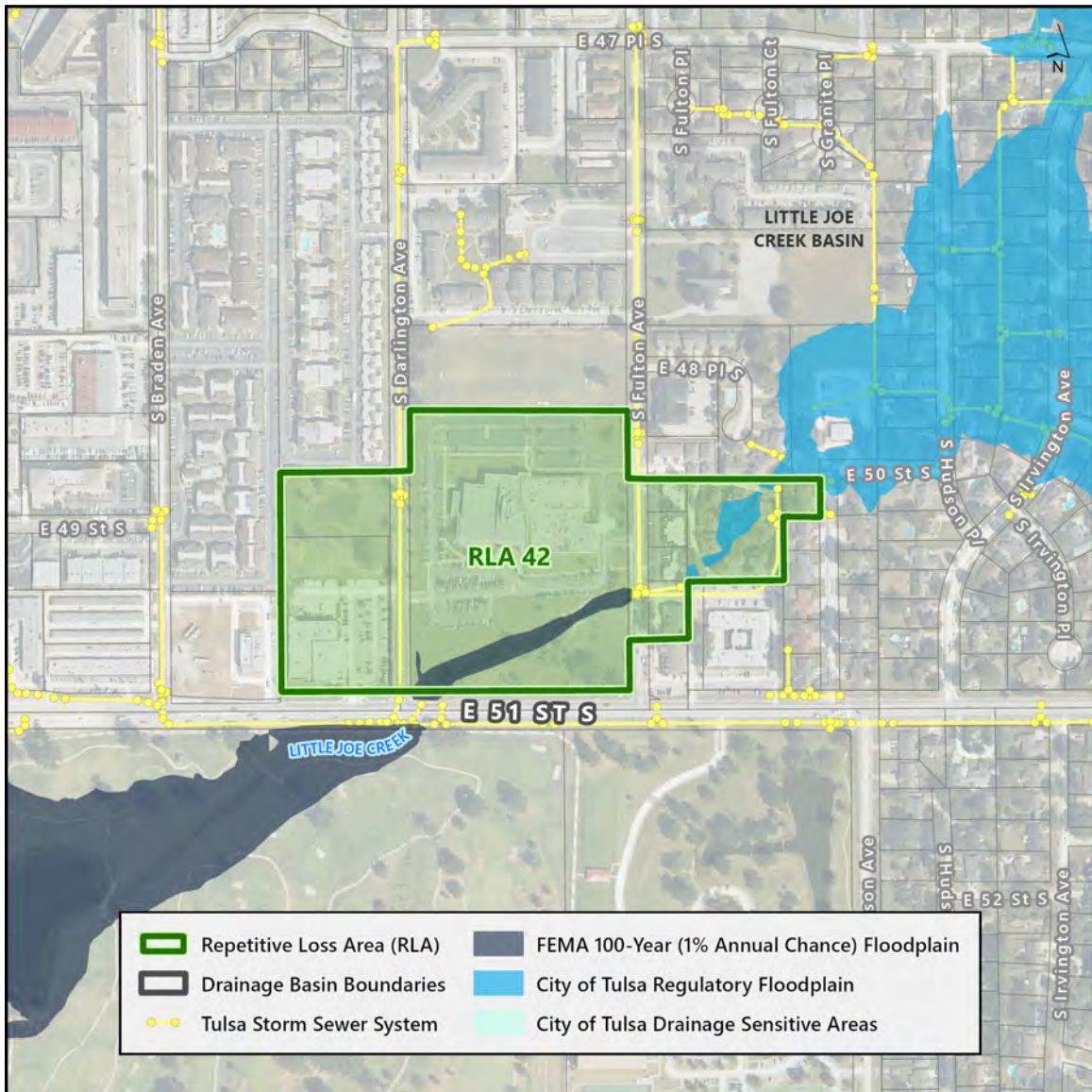
The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City enlarged the storm sewer system within the Joe Creek drainage area in the 1990s to address chronic storm sewer backup problems throughout the basin. In the 1980s, the City of Tulsa and USACE completed a major channel improvement project in the Joe Creek basin, channelizing many reaches of Joe Creek and its tributaries, including Little Joe Creek. Since the 2017 analysis, three structures have been demolished, and several properties have been redeveloped, reducing their susceptibility to overland flooding. Although several homes remain in the Little Joe Creek floodplain, the repetitive loss issues have been addressed. The

City submitted paperwork in 2023 to change the status of the repetitive loss property in this area and will follow up to confirm the status change.

Figure 16: RLA 42



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Seven properties have carried flood insurance and made thirteen damage claims to the NFIP, eleven of which were paid, totaling \$39,304. The last claim for this RLA was filed in 2000. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Joe Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0358M, May 1, 2019
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, September 2024
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Joe Creek Master Drainage Plan, Meshek & Associates, 2024
- Repetitive Loss Area #42, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all residential buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Commercial	Slab	2016	Avg
Property 2	Duplex	Slab	1968	Good
Property 3	Commercial	Slab	1984	Good
Property 4	Commercial	Slab	1977	Avg
Property 5	Commercial	Slab	1977	Avg
Property 6	Commercial	Slab	1975	Avg
Property 7	Vacant			
Property 8	Commercial	Slab	2022	Good +
Property 9	Condo	Slab	1974	Very Good

CONCLUSIONS Based on flood data, the Joe Creek Master Drainage Plan, site surveys and discussions with City officials, the historic cause of flooding in many of the claims in this area was primarily due to overland flow and storm sewer backup. Much of the overbank flooding concerns on Little Joe Creek were mitigated through the channelization of the creek and increased storm sewer capacity completed in the 1990s, but some threat remains in this area where several properties are located in the City regulatory floodplain. Various improvements have been made to address the repetitive flooding issues including the demolition of several structures and the redevelopment of two properties. The MDP cited minimal flooding concerns persisting in this area and recommended floodplain storage to mitigate flooding in nearby problem areas LJC-14 and 16. The City submitted paperwork in 2023 to change the status of the repetitive loss property in this area and will follow up to confirm the status change.

RLA 42



Google Earth

© 2026 Google

6.73 ft

Notifications

ANNUAL FLOODPLAIN NOTIFICATION Each year the City notifies all homeowners and residents living in a 100-year floodplain that their properties are subject to flooding and informs them of what steps they can take to protect their residences and families, including the purchase of flood insurance.

ANNUAL REPETITIVE LOSS AREA NOTIFICATION Residents in Repetitive Loss Areas are notified annually that their homes are located in a Repetitive Loss Area and are potentially subject to flood damage from overland flow and storm sewer back-up.

PROPERTY OWNERS/RESIDENTS NOTIFICATION In 2017, property owners and residents/occupants were advised of the Repetitive Loss Area study and analysis by letter, were sent a questionnaire soliciting information and input, and asked to contact the City for more information or a copy of the completed RLA Plan.

PUBLIC PARTICIPATION AND INVOLVEMENT City Staff/Consultants interviewed homeowners to brief them on the Repetitive Loss Area Analysis Study/Plan, receive their input, and discuss possible mitigation measures.

PROPERTY OWNER RESPONSE TO NOTIFICATIONS

- Joe Creek Mainstem: In 2017, there were several responses to the property owner notification in RLA 1. Many complained of roadway flooding, yard flooding, and undersized storm sewer systems causing backup. Several property owners complained of structural flooding as well. Complaints of ponding and undersized storm sewer systems have persisted, with complaints made as recently as 2023. In 2017, there were no comments concerning flooding from property owners in response to notification from RLA 59. There have been no additional complaints as of this 2026 update.
- Joe Creek East Branch: In 2017, there were no comments concerning flooding from property owners in response to notification from RLA 33 and 2. There have been no additional complaints as of this 2026 update.
- Joe Creek West Branch: In 2017, there have been five responses from property owners in RLA 45. Several were made regarding improved conditions after the upgrade of the culvert under E. 31st St. Some property owners complained of several instances of flooding in their homes including 1984, 2009, and 2011. In 2017, there were no comments concerning flooding from property owners in response to notification from RLA 26. There have been no additional complaints as of this 2026 update.
- Little Joe Creek: In 2017, there was one comment concerning flooding from property owners in response to notification from RLA 13. The property owner stated that their home hadn't flooded since 1997. There have been no additional complaints as of this 2026 update. In 2017, there were no comments concerning flooding from property owners in response to notifications from RLA 39 and RLA 16. There have been no additional complaints as of this 2026 update. In 2017,

there were no comments concerning flooding from property owners in response to notifications from RLA 22. In 2020 there were complaints of flooding from the creek inundating yards. There have been no additional complaints as of this 2026 update. In 2017, there were four responses from property owners in RLA 42. All citing that there has been no flooding in their structures since the purchase. A fifth response cited that there was no structural flooding but some drainage issues. A sixth cited the last flooding event occurring in the 1980s. There have been no additional complaints as of this 2026 update.

Mitigation Measures

Overview

The Joe Creek Master Drainage Plan identifies the most cost-effective structural solutions for the Joe Creek watershed. The 2024 MDP includes all active RLAs in the problem area analysis with recommendations for mitigation actions for each.

The plan recommends storm sewer improvements and extensions, improved overland flow paths, creating berms/swales to direct runoff, away from residences, and acquisition and relocation to mitigate flooding in RLA 1. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The plan recommended storm sewer improvements and extension, acquisition and relocation, and upstream detention to mitigate the flooding in RLA 59. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The plan recommends acquisition and relocation to mitigate the flooding in RLA 33 and RLA 45. There are presently no funded Capital Improvement Projects for future flood control projects in these areas.

The plan recommends storm sewer improvements and detention to mitigate the flooding in in RLA 34 and RLA 22. There are presently no funded Capital Improvement Projects for future flood control projects in these areas.

The plan recommends acquisition and relocation, storm sewer improvements, and downstream detention to mitigate the flooding in in RLA 26. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The plan recommends acquisition and relocation and storm sewer improvements to mitigate the flooding in in RLA 13. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The plan recommends acquisition and relocation for open floodplain storage and upstream detention to mitigate the flooding in RLA 39 and RLA 16. There are presently no funded Capital Improvement Projects for future flood control projects in these areas.

Although the primary cause of flooding in RLA 42 has been addressed, the plan recommends open floodplain storage to mitigate the flooding upstream of this RLA. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

Individual Mitigation Measures: What You Can Do

Individual property protection actions are usually undertaken by property owners on a lot-by-lot, building-by-building basis, and include private floodproofing, moving mechanical equipment above flood levels, installing French drains and minor site grading to move local drainage to the street, sanitary sewer backup protection, and flood insurance.

The City of Tulsa is willing to have a stormwater engineer do a site visit to assist you in analyzing your specific drainage problems and discuss potential solutions. Contact the Customer Care Center at 311 or (918) 596-7777.

KNOW AND UNDERSTAND YOUR FLOOD RISK As stated above, being located in a Repetitive Loss Area does *not* mean a property will flood. Nevertheless, it is important that residents and property owners in flood hazard areas know and understand their flood risk and take what steps they can to protect their homes, families and possessions. City staff are available to explain the local flood risk, interpret floodplain maps, and determine if an area or property has drainage problems or a history of prior flooding. Staff can also discuss the ways a specific property can be protected from flooding. An Elevation Certificate can help define a property's flood risk under various rainfall scenarios (e.g., in a 10-year, 50-year, 100-year, or 300-year storm). You can receive a free flood zone determination by contacting the City with the correct legal description and street address, or the Tax Assessor/Parcel Number of the property.

The City maintains their Regulatory Floodplain map atlas on their website:

<https://cityoftulsa.org/government/departments/water-and-sewer/flood-control>

MAKE A DISASTER PREPAREDNESS PLAN It is always a good idea for residents and property owners in flood hazard zones to prepare a disaster preparedness and response plan that addresses all the steps and details that will demand attention once a flood watch or warning is issued. A Building Permit is required to install a safe room in a flood-prone area.

CREATE BERMS, SWALES OR REDIRECTED DRAINAGE Flood waters can be diverted away from properties using berms, brick planter boxes and swales, but these may not be done in ways that cause damage to other properties. Owners and residents can request a meeting with a City Engineer to discuss the best ways to solve existing drainage problems, and whether a Building Permit will be required. Contact the Customer Care Center at 311 or (918) 596-7777.

INSTALL LOCAL, PROPERTY-SPECIFIC PAVING, PLANTINGS AND CATCHMENT BASINS City Engineering staff can explain the natural functions of floodplains and how they act to slow and purify urban runoff and reduce flooding. Staff can also suggest low-impact development projects which imitate natural floodplain functions by slowing runoff and filtering out impurities. These include such things as rain gardens, catchment basins and pervious paving materials.

ACQUISITION The City of Tulsa has a repetitive loss acquisition program to purchase repeatedly flooded properties. This voluntary program offers owners who are in this situation a way out. The City applies to FEMA for funds using the Hazard Mitigation Grant Program. Once the grant is awarded, the property is appraised as if it were not a flooded property and the offer for the property is based on this appraisal. In addition to getting the best possible price, the owner receives moving expenses, a \$1,000 stipend for purchasing a home outside the floodplain, and a 30-day rent free period after closing in which to move. All closing costs and other fees are paid by the City. Once the owner has moved out, the home is demolished and restored as open space to protect the natural and beneficial function of the floodplain. If you would like more information about this program, contact the Customer Care Center at 311 or [\(918\) 596-7777](tel:9185967777). Acquisition is usually not feasible or cost

effective for areas of shallow flooding. If a property is located in a FEMA Floodway or Special Flood Hazard Area, demolition, acquisition and relocation may be feasible and cost-effective.

ELEVATE DAMAGE-PRONE COMPONENTS Critical items such as furnace or air



This platform and wall protect the home and air conditioning equipment from shallow flooding.

conditioning units should be elevated to avoid flood damage. This should be done for components that are in the wet floodproofed area of the building as well as for units that are outside of the structure but subject to shallow flooding.

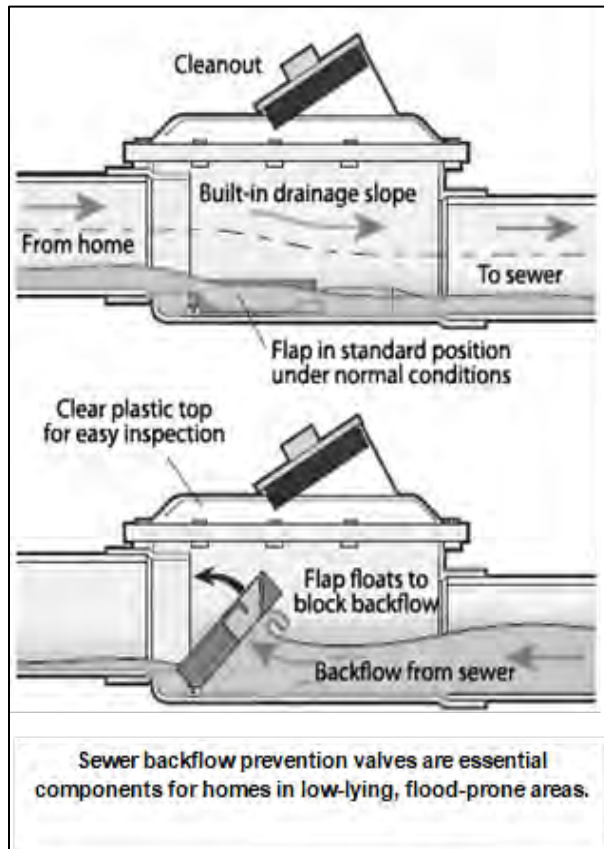
ELEVATE YOUR STRUCTURE

Elevating the structure is only suitable for areas of shallow flooding and is usually not feasible or cost-effective for masonry homes built on concrete slabs. It can sometimes be cost-effective for wood frame buildings on crawlspaces. None of the buildings in these RLAs are a candidate for elevation.

DRY FLOODPROOF YOUR STRUCTURE This can include actions that seal a structure and prevent floodwater from entering. This method is best in areas where flood depths are no more than two or three feet. Buildings can be made watertight by sealing the walls with waterproof coatings, impermeable membranes, or additional layers of masonry or concrete. Doors, windows, and other openings below the base flood elevation must also be equipped with permanent or removable shields, and backflow valves must be installed in sewer lines and drains. Dry floodproofing needs to be designed by an engineer to ensure the structure can resist the force of the water.

WET FLOODPROOF YOUR BUILDING Wet floodproofing allows water to enter a structure, while removing, protecting or elevating items that can be damaged, such as air conditioning equipment. This is often used on structures with crawl spaces and shallow flood depths. The City does not allow basements in flood-prone areas, or the wet floodproofing of basements.

WET FLOODPROOF YOUR GARAGE The garage, with its slab-on-grade construction, is one of the most vulnerable areas of your home to overland flow flooding. Remove, relocate, protect or elevate items that can be damaged from flooding.



CORRECT SANITARY SEWER BACKUP

PROBLEMS. Sanitary Sewer backup can be a problem in low-lying, flood-prone areas. The installation of backflow prevention valves on your sanitary sewer lines is highly recommended.

PURCHASE AND MAINTAIN FLOOD

INSURANCE Flood Insurance is available and recommended for the structure and contents for all properties in Tulsa. A large percentage of all flood claims are for properties that are outside the FEMA floodplain. Because of the City of Tulsa's sustained efforts to reduce flooding, you are entitled to a discount on your flood insurance. A property does not have to be in a floodplain to qualify for flood insurance.

MAINTAIN NEARBY STREAMS, DITCHES, AND

STORM DRAINS Local flooding can often be caused by brush and other debris blocking drainage ways and culverts. Residents and property owners should do their part in

keeping inlets and drainage ways clear of brush and debris. Do not attempt to clear debris during a flood event.

Repetitive Loss Area Mitigation Measures: What the City Can Do

The City of Tulsa is actively committed to the following floodplain management activities:

- Preventative activities to keep flood problems from getting worse.
- Natural resource protection activities to preserve or restore natural areas or the natural functions of floodplain and watershed areas.
- Emergency services measures taken during an emergency to minimize its impact.
- Structural projects to keep flood waters away from properties.
- Public information activities to advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains.

As funding becomes available for this Repetitive Loss Area, the City will undertake a more detailed mini-master drainage plan to identify alternative solutions to the flooding problems and recommend a public works project. The actual construction of any public works project may require the acquisition of properties and/or drainage easements. The City will continue to fulfill its maintenance responsibility for channels, drainageways, and storm sewer inlets and pipes. At this time, the City has identified the following actions which may be appropriate for these RLAs.

- Extend and/or improve the storm sewer system to better collect storm water runoff.
- Create overland flow paths to allow better drainage of ponded water to the Creek. This solution is recommended in areas where ponded water could be relieved with a swale or channel.
- Create berms or swales to direct runoff away from residential properties. This solution is used to divert flowing waters away from structures and can only be used within the City's property or right of way.
- Construct upstream detention.
- Acquire flood-prone properties on a voluntary basis. This solution is only recommended for residential properties.

Funding

The City will investigate the availability of funding for the public works actions listed above. Funding for ongoing City maintenance responsibilities is provided by the Stormwater Utility Fee. Funding for a public works project is dependent on several factors, including the prioritized ranking of the project with other Capital Improvement projects, inclusion in future street maintenance projects, being part of a project in a Bond Issue, etc. In the case that the nature of the flooding problems is localized, and minor damage is involved, the funding for needed improvements will have to be borne by the individual homeowner. Another potential funding source is FEMA's Hazard Mitigation Grant Program (HMGP), which can be implemented after a Presidential Major Disaster Declaration in the State.

Recommendations

JOE CREEK MAINSTEM

The historic cause of flooding in RLA 1 was overbank flooding from the mainstem of Joe Creek which runs through the center of this area. Eighteen properties in the RLA submitted flood claims during the 1984 flood. Subsequently, a large channel improvement project was completed through a partnership between USACE and the City. This channelization of the mainstem largely reduced if not eliminated overbank flooding during the 100-year event. Since these improvements, flood threat remains, but it is due to overland flow paths through properties and inadequate storm sewer coverage leading to ponding and flooding especially for the slab-on-grade structures. The MDP recommended storm sewer improvements and extensions, improved overland flow paths, creating berms/swales to direct runoff, away from residences, and acquisition and relocation.

Overland flooding from inadequate ditch sizes and storm sewer backup have historically threatened the properties in RLA 59. Several structures are not elevated above the roadway grade, increasing their susceptibility to runoff. The MDP recommended storm sewer improvements and extension, acquisition and relocation, and upstream detention. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

JOE CREEK EAST BRANCH

Overland flooding and storm sewer backup along the historic creek bed have threatened the properties in RLA 33. Several structures have basements, increasing their susceptibility to runoff. The MDP recommended acquisition and relocation to mitigate the flooding in this area. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overland flooding and storm sewer backup along the swale of the historic creek bed have threatened the properties in RLA 34. The MDP recommended storm sewer improvements and downstream detention to mitigate the flooding in this area. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

JOE CREEK WEST BRANCH

Overland flooding and storm sewer backup along the swale of the historic creek bed have threatened the properties in RLA 26. The structures along S. Florence Ave. are not elevated above the roadway grade, increasing their susceptibility to runoff as water flows across the property to the next point of collection. The MDP recommended acquisition and relocation, storm sewer improvements and detention to mitigate the flooding in this area. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overland flooding and storm sewer backup along the historic creek bed have threatened the properties in RLA 45. The structures along S. Florence Ave. are not elevated above the roadway grade, increasing their susceptibility to runoff as water flows across the property to the next point of collection. The MDP recommended acquisition and relocation to mitigate the flooding in this area. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

LITTLE JOE CREEK

Overbank, overland flooding and storm sewer backup have historically threatened the properties in RLA 13. Though much of the overbank flooding threat was mitigated through the channelization project along Little Joe Creek in the 1980s, several properties remain in the floodplain. Overland flow and storm sewer backup are the primary cause of potential flooding since the project. This area is included in the MDP. The study cites the storm sewer capacity as 28% of the 100-year flow. The plan recommended storm sewer improvements, and acquisition and relocation of flooded properties to mitigate flooding in this area. Should localized flooding from overland flow remain a threat to these slab-on-grade properties, individual mitigation actions can be taken to reduce flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overbank, overland flooding and storm sewer backup have historically threatened the properties in RLA 16. Though much of the overbank flooding threat was mitigated through the channelization project along Little Joe Creek in the 1980s, several properties remain in the floodplain. Overland flow and storm sewer backup are the primary cause of potential flooding since the project. This is threatening to those properties with slab-on-grade foundations, but even more so to those properties with finished floor elevation below the surrounding terrain. This area is included in the MDP. The MDP recommended acquisition and relocation of several structures and additional upstream detention along S. 54th Pl. to mitigate the flooding in this area. Should localized flooding from overland flow remain a threat to these properties, individual mitigation actions can be taken to reduce flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overbank, overland flooding and storm sewer backup have historically threatened the properties in RLA 22. Though much of the overbank flooding threat was mitigated through the channelization project along Little Joe Creek in the 1980s, several properties remain in the floodplain and subject to overbank flooding. Reports as recently as 2020 describe the channel causing yard flooding to the surrounding properties. Additionally, several structures in this area are located on low-lying terrain along the creek with inadequate overland flow paths that allow for runoff and ponded water to threaten the slab-on-grade structures. This area is included in the MDP. The MDP recommended storm sewer improvements and upstream detention to mitigate the flooding in this area. Should localized flooding from overland flow remain a threat to these properties, individual mitigation actions can be taken to reduce flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overbank, overland flooding and storm sewer backup have historically threatened the properties in RLA 42. Though much of the overbank flooding threat was mitigated through the channelization project along Little Joe Creek in the 1980s, several properties remain in the floodplain and subject to overbank flooding. Three structures have been demolished since the 2017 report and two properties that were subject to flooding from overland flow have been redeveloped and drainage conditions have improved. This area is included in the MDP. The report cited minimal flooding concerns persisting in this area and recommended floodplain storage to mitigate flooding in nearby problem areas LJC-14 and 16. The City submitted paperwork in 2023 to change the status of the repetitive loss property in this area and will follow up to confirm the status change. Should localized flooding from overland flow remain a threat to these properties, individual mitigation actions can be taken to reduce flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overbank, overland flooding and storm sewer backup have historically threatened the properties in RLA 39. Though much of the overbank flooding threat was mitigated through the channelization project along Little Joe Creek in the 1980s, several properties remain in the floodplain. Overland flow and storm sewer backup are the primary cause of potential flooding since the project, especially between S. 67th E. Pl. and S. Sheridan Rd. This is threatening to

those properties with slab-on-grade foundations, but even more so to those properties with basements and finished floor elevation below the surrounding terrain. This area is included in the MDP. The MDP recommended acquisition and relocation for open floodplain storage and upstream detention at Memorial High School to mitigate the flooding in this area. Should localized flooding from overland flow remain a threat to these properties, individual mitigation actions can be taken to reduce flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Property owners are encouraged to maintain flood insurance. The City of Tulsa is a Community Rating System (CRS) Class I Community, and all homeowners qualify for up to a 45% discount on their flood insurance premiums. Homeowners are also encouraged to undertake individual mitigation measures to reduce their risk of overland flooding. The City of Tulsa is ready to assist in this effort with professional advice.