
City of Tulsa
Repetitive Loss Area Analysis
Lower Mingo Creek Basins

August 18, 2026



Contents

Contents.....	2
Introduction	3
Background.....	3
Location and Drainage	5
Lower Mingo Creek.....	7
RLA 50	9
Area Specific Flooding.....	9
Improvements	9
Claims Data	11
Research And Analysis.....	11
RLA 67	15
Area Specific Flooding.....	15
Improvements	15
Claims Data	17
Research And Analysis.....	17
Notifications.....	20
Mitigation Measures.....	21
Overview	21
Individual Mitigation Measures: What You Can Do.....	21
Repetitive Loss Area Mitigation Measures: What the City Can Do.....	24
Funding	24
Recommendations.....	25

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.

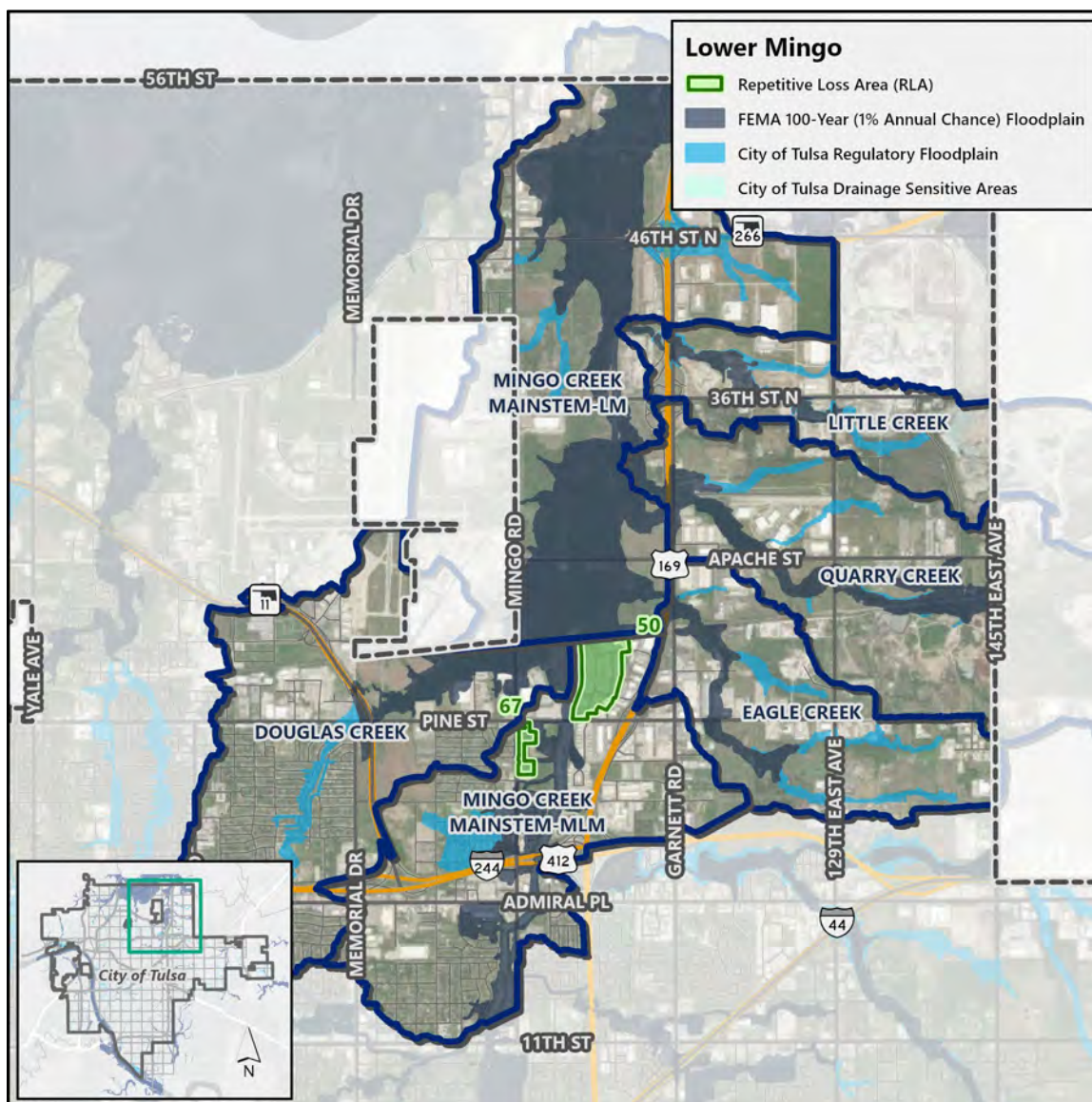
⁴ National Weather Service. *Tulsa Memorial Day Flood of May 26-27, 1984*.
https://www.weather.gov/tsa/1984may26_tulsamemorialdayflood

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

Location and Drainage

The Lower Mingo Creek basin group is located along the tributaries of the Mingo Creek between E. 56th St. N. (City Limits) and E. 11th St. S. Most of this area is covered with residential and commercial or industrial land use. Specifically, Douglas Creek and the upstream portion of the Mingo Creek Middle Lower Mainstem contain the highest concentration of residential development. The eastern subbasins contain the majority of the industrial and commercial development, and large swaths along the Mingo Creek Mainstem, itself, are designated as open space. This basin group is covered by council districts 3 and 5.

Figure 1: Lower Mingo Creek

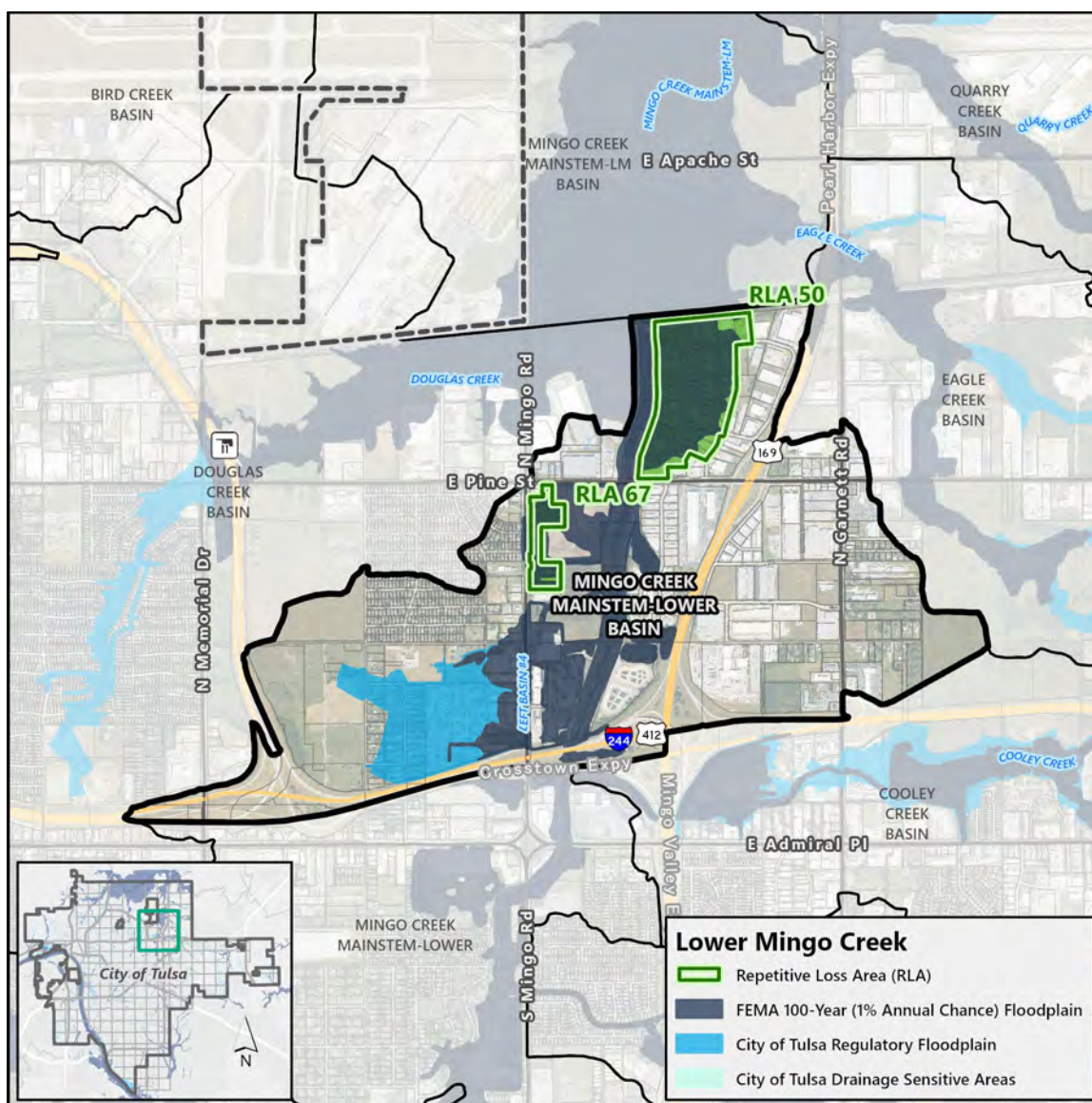


The Lower Mingo Creek Basin Group contains five subbasins: Douglas Creek, Eagle Creek, Little Creek, Mingo Creek Lower Mainstem, and Mingo Creek Middle Lower Mainstem, and two repetitive loss areas. The creeks within the Lower Mingo Creek Basins' floodplains are located within Special Flood Hazard Area and the City Regulatory floodplain. This area historically was subject to a mix of overbank flooding and overland flooding. There is one basin containing two unmitigated repetitive loss properties. The unmitigated repetitive loss properties are spread over two areas.

Lower Mingo Creek

Mingo Creek is located in East Tulsa. This creek is a tributary of Bird Creek; it extends approximately 16 miles and has a contributing drainage area of 61 square miles. The watershed is a mix of residential, commercial, industrial land use, and open space along the lower reaches of the creek. The creek originates in southeast Tulsa near Woodland Hills Mall at E. 66th St. and S. 81st E. Ave. and generally flows north until its confluence with Bird Creek near the intersection of E. 56th St N. and US Highway 169 (Broken Arrow Expressway).

Figure 2: Lower Mingo Creek Overview



Lower Mingo Creek includes the downstream reaches of Mingo Creek, from E. 56th St. N. (City Limits) and E. 11th St. S. This portion of the creek is nearly fully developed with residential and commercial land cover toward the southwest. Intensity of development decreases as you move

further north. A quarry is located in the eastern portion of the watershed, and designated open space covers a large portion of the most downstream Mingo Creek subbasin.

Much of Mingo Creek's mainstem and tributaries are designated as 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 Mingo 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 Mingo Creek to ensure improved public safety. The Mingo Creek Project, completed in coordination with USACE, included channelization of 9 miles of Mingo Creek, increased capacity of roadway crossings and storm sewer systems, 23 detention facilities, and sediment removal. The Lower Mingo Creek basin contains two unmitigated RLAs.

RLA 50

Area Specific Flooding

Repetitive Loss Area 50, located in the Lower Mingo Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of forty buildings on forty-seven properties near the intersection of E. Pine St. and N. 106th E. Ave. The properties were mostly developed between 1973 and 1985, two properties were developed in the early 2000s, one in 2005 and one in 2007. All but two of the structures are located in the FEMA SFHA and the City regulatory floodplain.

The Wolf Point Industrial Park was developed in the stream bed of the Mingo Creek after it was realigned with the addition of a levee along the east side of the Creek, protecting the industrial park from overbank flooding. Storm sewer systems were installed and intended to have the capacity to drain the area behind the levee.

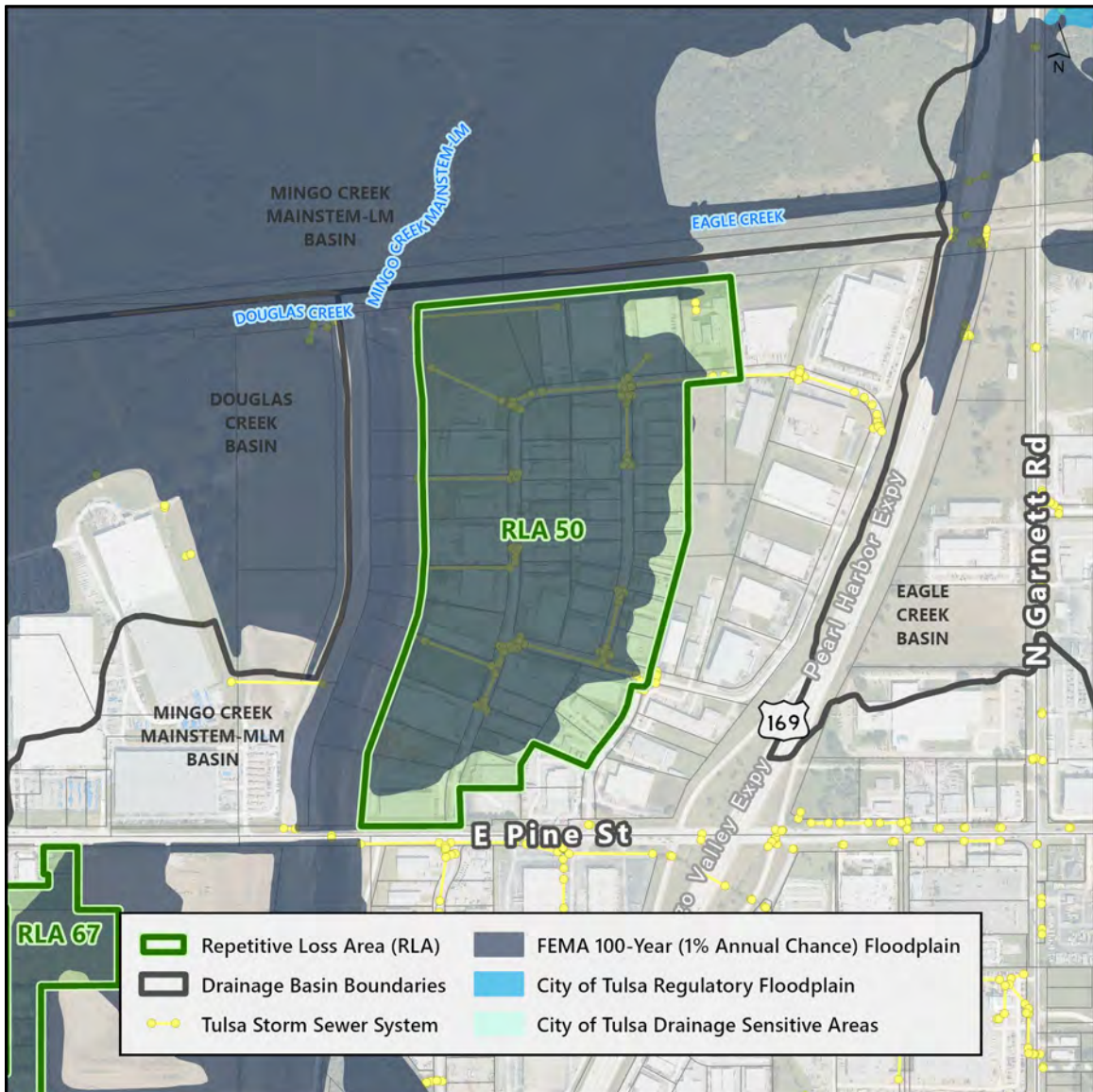
Drainage conditions in this RLA indicate that flooding is due to overland flow and storm sewer backup, and high impervious area leading to excess runoff. Because this area is located in a sump behind the levee, when the storm sewer system is overwhelmed, runoff can pond and inundate these slab-on-grade structures, especially those that have loading docks below surrounding terrain. Though the area is protected from overbank flooding by the levee, it does not meet the freeboard criteria for certification and therefore this area remains mapped in the FEMA SFHA. This area is not evaluated in the Lower Mingo Creek Master Drainage Plan.

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

Major flood control measures were taken to improve public safety in the Mingo Creek watershed following the 1986 storm event. The Mingo Creek Project, completed in coordination with USACE, included channelization of 9 miles of Mingo Creek, increased capacity of roadway crossings and storm sewer systems, 23 detention facilities, and sediment removal. Additionally, the fill was added to the Wolf Point levee to add additional protection against the 100-year event in 1998. Despite this effort, the levee does not meet certification requirements and the RLA remains mapped in the SFHA.

Figure 3: RLA 50



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Eight properties in the RLA have carried flood insurance and made thirteen damage claims to the NFIP, twelve of which were paid, totaling \$1,434,525. 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 Lower Mingo 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: 40143C0261L, October 16, 2012
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, November 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
- "The Effects of Urbanization on the Mingo Creek Watershed," Tim Mars, 1984
- Lower Mingo Creek Master Drainage Plan, DeShazo, Starek, & Tang 1991
- Repetitive Loss Area #50, 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 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	Commercial	Slab	1978	Avg
Property 2	Commercial	Slab	1971	Avg
Property 3	Commercial	Slab	1971	Avg
Property 4	Commercial	Slab	1979	Avg
Property 5	Commercial	Slab	1979	Avg +
Property 6	Parking Lot			
Property 7	Parking Lot			
Property 8	Commercial	Slab	1973	Avg
Property 9	Commercial	Slab	1974	Avg
Property 10	Commercial	Slab	1974	Avg +
Property 11	Commercial	Slab	1979	Good
Property 12	Commercial	Slab	2005	Avg
Property 13	Commercial	Slab	1978	Good
Property 14	Commercial	Slab	1973	Avg
Property 15	Commercial	Slab	1977	Avg
Property 16	Commercial	Slab	1973	Good
Property 17	Commercial	Slab	1980	Good
Property 18	Commercial	Slab	1975	Avg
Property 19	Commercial	Slab	1973	Avg

Property 20	Commercial	Slab	1979	Good
Property 21	Commercial	Slab	1974	Avg
Property 22	Commercial	Slab	1980	Avg
Property 23	Commercial	Slab	1979	Avg
Property 24	Commercial	Slab	1975	Avg +
Property 25	Commercial	Slab	2007	Fair
Property 26	Commercial	Slab	1982	Fair
Property 27	Commercial	Slab	1977	Avg
Property 28	Commercial	Slab	1973	Avg
Property 29	Parking Lot			
Property 30	Commercial	Slab	1971	Avg
Property 31	Commercial	Slab	1974	Avg
Property 32	Commercial	Slab	1978	Avg +
Property 33	Commercial	Slab	1981	Avg
Property 34	Commercial	Slab	1979	Avg
Property 35	Commercial	Slab	1985	Avg
Property 36	Parking Lot			
Property 37	Commercial	Slab	1974	Avg
Property 38	Commercial	Slab	1973	Avg
Property 39	Commercial	Slab	1974	Avg +
Property 40	Commercial	Slab	1984	Avg
Property 41	Commercial	Slab	1975	Avg
Property 42	Parking Lot			
Property 43	Parking Lot			
Property 44	Parking Lot			
Property 45	Commercial	Slab	1980	Avg
Property 46	Commercial	Slab	1973	Avg +
Property 47	Commercial	Slab	1973	Avg

CONCLUSIONS Based on flood data, the Mingo Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overbank flooding, overland flooding and storm sewer backup. All properties in the RLA are within the SFHA and City regulatory floodplain. The historic flooding potential along Mingo Creek has been reduced due to the Mingo Creek flood control project. There have also been improvements made to the Wolf Point levee to increase its protection against the 100-year event- this levee does not have the freeboard requirements to be certified therefore these structures remain in the SFHA, at risk to the 100-year event. The continuous cause of overland flooding is due to the relatively flat terrain and inadequate flow paths that increase the potential for ponding from storm sewer backup as well. This area is not included in the MDP. Flooding claims have been made as recently as 2009. The Wolf Point Industrial Park group has proposed detention and a pump

system to reduce exposure to overland flow and ponding. These actions have not been implemented as of this writing.

RLA 50



Google Earth

© 2026 Google

7.21 ft



RLA 67

Area Specific Flooding

Repetitive Loss Area 67, located in the Lower Mingo Creek watershed, was established in 2023. This Repetitive Loss Area is comprised of seven structures on eleven properties at the intersection of E. Pine St. and N. Mingo Rd. The properties in this RLA were developed between 1940 and 1960, one property was developed in 1995. The structures are located in the FEMA SFHA and City of Tulsa regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flow due to runoff from the street along N. Mingo Rd. and overbank flooding from Mingo Creek and its tributary that run along the east side of this RLA. The properties along N. Mingo Rd. are at an elevation that is lower than the roadway grade. The terrain on which these properties are located typically slopes toward the creek on the east side of the RLA. There are no roadway ditches on the east side of the roadway or storm sewer inlets to capture this runoff before it flows through these properties to the Mingo Creek Tributary. The slope and elevation gradient of the terrain also lends to the increased potential for overbank flooding of the slab-on-grade structures in the RLA.

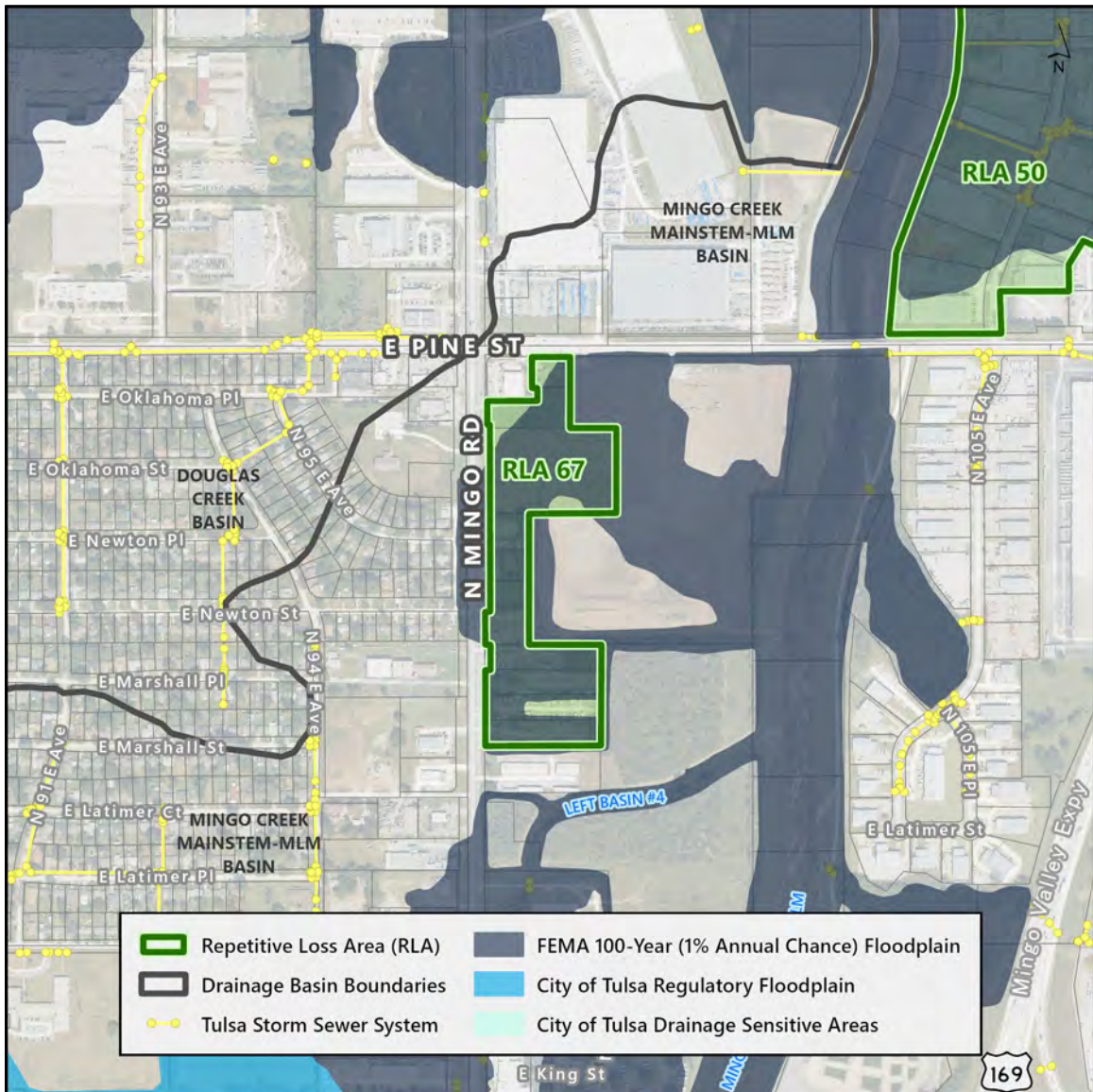
The Lower Mingo Creek Master Drainage Plan covers this RLA in its problem area analysis which recommended acquiring the damaged properties and improving downstream storm sewer. There have been complaints of overland flow across the properties as recently as 2020.

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

Major flood control measures were taken to improve public safety in the Mingo Creek watershed following the 1986 storm event. The Mingo Creek Project, completed in coordination with USACE, included channelization of 9 miles of Mingo Creek, increased capacity of roadway crossings and storm sewer systems, 23 detention facilities, and sediment removal. All structures in this RLA remain in the FEMA SFHA.

Figure 4: RLA 67



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Four properties have carried flood insurance and made six damage claims to the NFIP, five of which were paid, totaling \$153,102. The last claim for this RLA was filed in 1989. 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 2023 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Lower Mingo 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 2023 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: 40143C0261L, October 16, 2012
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, November 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
- "The Effects of Urbanization on the Mingo Creek Watershed," Tim Mars, 1984
- Lower Mingo Creek Master Drainage Plan, DeShazo, Starek, & Tang 1991
- Repetitive Loss Area #67, Meshek & Associates, July 2023

CAPITAL IMPROVEMENTS PLANS The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the floodproofing measures recommended in the 1991 Master Drainage Plan.

FIELD SURVEYS AND SITE VISITS In 2023, 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	Commercial	Crawl Space	1995	Fair
Property 2	Commercial	Slab	1940	Fair
Property 3	Vacant			
Property 4	Commercial	Slab	1960	Avg
Property 5	Commercial	Slab	1960	Avg +
Property 6	Residential	Slab	1950	Fair
Property 7	Parking Lot			
Property 8	Commercial	Slab	1960	Fair
Property 9	Residential	Crawl Space	1950	Avg
Property 10	Vacant			
Property 11	Vacant			

CONCLUSIONS Based on flood data, the Lower Mingo Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding and overbank flooding from Mingo Creek. There have been no additional improvements made to benefit this RLA since the Mingo Creek project. All eleven properties in the RLA are within the FEMA SFHA and City regulatory floodplain. The MDP recommends acquisition of one structure and flood proofing of seven other structures. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the

floodproofing measures recommended in the 1991 Master Drainage Plan. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 67



Google Earth

© 2026 Google

6.39 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

- Mingo Creek: During the 2017 analysis, there were eleven comments received from properties owners in RLA 50. Several property owners stated that their properties flooded in 1990, 2003, 2004, 2007, and 2012. There are additional reports of structural flooding in 1984, with one property having 5 feet of water accumulation and another experience 18 inches. The developer of the Wolf Point Industrial Park stated that the reinforced levee and updates along Mingo Creek have eliminated the threat of overbank flooding. They also confirm that the overland flooding concerns remain and suggest the installation of sump pumps to eliminate ponding or install a detention facility. No responses were received following the 2023 outreach in RLA 67. In 2020 a property owner complained of overland flow from surrounding properties.

Mitigation Measures

Overview

The 1991 Lower Mingo Creek Master Drainage Plan identifies the most cost-effective structural solutions for this portion of Mingo Creek. RLA 50 is not included in this report. The Wolf Point Industrial Park group has identified mitigation alternatives that could reduce their risk of flooding. There are presently no funded Capital Improvement Projects for future flood control projects in this area. RLA 67 is included in the MDP. The plan identifies acquisition and flood proofing as the recommended action to mitigate flooding of the structures in this RLA. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the floodproofing measures recommended in the 1991 Master Drainage Plan.

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



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

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.

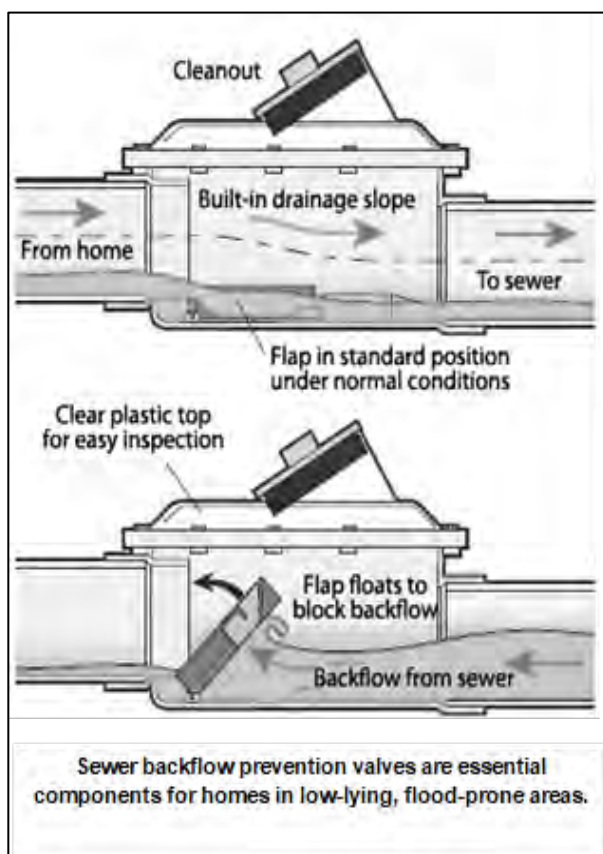
ELEVATE DAMAGE-PRONE COMPONENTS Critical items such as furnace or air conditioning units should be elevated to avoid flood damage. This should be done for components that are in the wet floodproofed area of the building as well as for units that are outside of the structure but subject to shallow flooding.

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

LOWER MINGO CREEK

Overbank and overland flooding have continued to threaten the properties in RLA 50. This area is not included in the MDP, but the industrial park's property group has identified solutions to mitigate the threat of overland flooding and storm sewer backup. The overbank flooding risk has been decreased due to the Mingo Creek flood control project in the 1990s and additional fill added to the levee. The levee overtopping elevation is greater than the 100-year water surface elevations through this reach but due to the levee not meeting certification requirements, the area is still mapped within the SFHA, and the properties are still threatened by larger storms overtopping this levee.

Overbank and overland flooding continue to threaten the properties in RLA 67. The MDP recommends flood proofing and acquisition of one structure to mitigate the flooding risk. As of 2020 complaints of overland flooding have been made to the City. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the floodproofing measures recommended in the 1991 Master Drainage Plan. Individual mitigation actions can be taken to reduce overland flooding risk for the slab-on-grade structures. Local solutions would include elevating utilities and creating overland flow paths to better allow drainage of ponding water.

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.