Chapter 3 Capability Assessment

Communities can do a number of things to prevent or mitigate the impacts of natural disasters. Such actions range from instituting regulatory measures (e.g., building and zoning codes) and establishing Emergency Operations Plans (EOP) and Emergency Operations Centers (EOC), to purchasing fire trucks and ambulances and constructing large and small infrastructure projects like levees and safe rooms. The City of Tulsa has already made considerable investments in these critical areas. The sections that follow in this Chapter survey the regulations, plans and infrastructure that the City of Tulsa has in place for avoiding or mitigating the impacts of natural hazards. This survey is based on Task 4 of FEMA's *Local Mitigation Planning Handbook* and assesses Tulsa's existing authorities, policies, programs, and resources available to accomplish mitigation.

Element C1

The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.

44 CFR §201.6(c)(3)

Mitigation Capabilities

Tulsa has a unique set of capabilities, including authorities, policies, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability. The planning team reviewed existing capabilities in Tulsa and identified capabilities that currently reduce disaster losses or could be used to reduce losses in the future, as well as capabilities that inadvertently increase risks in the community. The planning team used Worksheet 4.1 from the *Local Mitigation Planning Handbook* to review Tulsa's existing capabilities and gain a better understanding of relevant programs, regulations, resources, and practices across different departments within the City of Tulsa.

Element A4

The planning process shall include the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

44 CFR §201.6(b)(3)

For this update, the Planning Team reviewed the information provided in *Chapter 2: Existing Mitigation Strategies* of the 2014 Plan and updated data as appropriate. Chapter 2 is renamed *from Existing Mitigation Strategies*, to Chapter 3 *Capability Assessment* herein.The Planning Team reviewed relevant community studies, plans, reports, and technical documents in the inventory, evaluation and planning phases of the Multi-Hazard Mitigation Plan development. The Comprehensive Plan and Small Area Plans were used to determine community growth patterns and identify areas of future development. The Capital Improvements Plan was used to determine priorities of public infrastructure improvements and timing of potential future development. These plans were used to identify areas of future growth and development so that hazardous areas could be identified, evaluated, planned for, and appropriate mitigation measures taken.

The Planning Team involved numerous stakeholders from neighboring communities, tribes, counties, agencies and non-profit organizations to determine if they had studies, plans or information pertinent to floodplain management that would affect and/or support Tulsa's HMP. See Chapter 2 for list of these stakeholders. In addition to local capabilities, there are several national hazard mitigation programs developed by FEMA and other agencies that are designed to help communities organize their mitigation activities. This section looks at Tulsa's participation and progress in these programs.

TYPES OF CAPABILITIES

The primary types of capabilities for reducing long-term vulnerability through mitigation planning are the following:

- Planning and Regulatory
- Administrative and Technical
- Financial
- Education and outreach

Planning and Regulatory: Planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and State statutes, and plans and programs that relate to guiding and managing growth and development. Examples of planning capabilities that can either enable or inhibit mitigation include comprehensive land use plans, capital improvements programs, transportation plans, small area development plans, disaster recovery and reconstruction plans, and emergency preparedness and response plans.

Financial: Financial capabilities are the resources that a jurisdiction has access to or is eligible to use to fund mitigation actions. The costs associated with implementing mitigation activities vary. Some mitigation actions such as building assessment or outreach efforts require little to no costs other than staff time and existing operating budgets. Other actions, such as the acquisition of flood-prone properties, could require a substantial monetary commitment from local, State, and Federal funding sources.

Some local governments may have access to a recurring source of revenue beyond property, sales, and income taxes, such as stormwater utility or development impact fees. These communities may be able to use the funds to support local mitigation efforts independently or as the local match or cost-share often required for grant funding.

Administrative and Technical: Administrative and technical capability refers to the community's staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It also refers to the ability to access and coordinate these resources effectively.

Education and Outreach: This type of capability refers to education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

City of Tulsa Capabilities

This section documents what existing plans, studies, reports, and technical information were reviewed and how relevant information was incorporated into the mitigation plan. The City of Tulsa used the Capability Assessment Worksheet, below, to meet this requirement. Excerpts from applicable plans, rules, and regulations follow, which provide more detail on the existing policies related to hazard mitigation and highlight where the city has made efforts above and beyond the standard policies. Additionally, citations and footnotes throughout the document demonstrate incorporation of other plans.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

Tulsa joined the National Flood Insurance Program in 1971. All residents of Tulsa are eligible to purchase federal flood insurance. Tulsa's advances have earned its flood program one of the top ratings in the nation through the Community Rating System, which has allowed Tulsans to enjoy some of the lowest flood insurance rates in the nation.

The City of Tulsa will continue to meet minimum NFIP requirements and exceed those requirements by enforcing local Regulatory Floodplain Ordinances and by participating in the Community Rating System (CRS) program.

Qualified City staff is available at the Permit Center to discuss options and to help citizens plan and build a safe project while complying with City floodplain development policies. The City of Tulsa's permitting process is

designed to ensure that all construction in Tulsa is safe. A permit is required for all new construction and, most of the time, a permit must be obtained for repairing or replacing existing features.

In addition to regular building permits, special regulations apply to construction in floodways and the Regulatory Floodplain. No construction, including filling, is allowed in the mapped floodway without an engineering analysis that shows the project will not increase flood damage elsewhere. Any activity outside the floodplain but within a natural or man-made watercourse also requires a permit.

A floodplain watershed development permit must be obtained from the City of Tulsa before commencing construction, landfill, or excavation in the floodplain. New buildings in the floodplain must be protected from flood damage so our building code requires that new buildings be elevated at least one foot above the elevation of the City of Tulsa Regulatory Floodplain.

Elevation or floodproofing may be required prior to constructing a substantial improvement (the cost of the improvement or add-on is 50 percent of the value of the existing building). Permits also are required for a repair if it's more than just cleanup after a storm.

Element C2

The hazard mitigation strategy shall address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate.

44 CFR §201.6(c)(3)(ii)

Experience has shown that the National Flood Insurance Program's minimum standard is insufficient for Tulsa. Therefore, the city's regulations exceed NFIP's standard in several important ways, as listed in the City of Tulsa Stormwater Management Plan and highlighted below:

Ultimate watershed urbanization. Runoff generally becomes deeper and faster, and floods become more frequent, as watersheds develop. Water that once lingered in hollows, meandered around oxbows, and soaked into the ground now speeds downhill, shoots through pipes, and sheets off rooftops and paving.

Insurance purposes require the NFIP floodplain maps to be based on existing watershed development. But unless plans and regulations are based on future watershed urbanization, development permitted today may well flood tomorrow as uphill urbanization increases runoff. Tulsa enforces the NFIP minimum regulations and maps, to retain eligibility for federal flood insurance. In addition, the City enforces its own more extensive maps and regulations, which are based on ultimate watershed urbanization as forecast in the comprehensive plan.

Watershed-wide regulation. Floodplains are only part of flood-management considerations. Water gathers and drains throughout entire watersheds, from uplands to lowlands. Each watershed is an interactive element of the whole. A change at one place can cause changes elsewhere, whether planned or inadvertent.

Stormwater detention. One way to avoid increased flooding downstream from new development is to provide stormwater detention basins throughout watersheds. New or substantially improved developments must detain the excess stormwater on site - unless they are exempted in master plans or allowed to pay a fee in lieu of on-site detention. Water from detention basins is released slowly downstream. In-lieu fees are allocated for regional detention facilities. In most instances, the City has found regional detention basins to function more satisfactorily than smaller, scattered on-site facilities.

Valley storage. Flood water cannot be compressed. It requires space. Encroachments into a channel or floodplain can dam, divert, or displace flood waters. Tulsa requires compensatory excavation if a development - including a flood control project - would reduce valley storage. Preserving or recreating floodplain valley storage is a keystone of the City's program. Freeboard. NFIP regulations require finished floors of new development to be at or above

the base flood elevation, based on existing watershed conditions. Tulsa includes freeboard as another margin of safety, requiring finished floors to be at least 1 foot above the regulatory flood elevation, based on ultimate watershed urbanization.

Erosion and sedimentation. Erosion and sedimentation rob hillsides of valuable topsoil, dam lowlands, clog streams, and pollute rivers. Builders must control site erosion from new development. Permits and performance standards. Tulsa requires a watershed development permit to be issued before developing, redeveloping, building, excavating, grading, regrading, paving, landfilling, berming, or diking of any property within the city.

There are five types of watershed development permits: floodway, floodplain, stormwater drainage, stormwater connection, and earth change permits. Individual residential lots outside the floodplain are exempted. Tulsa's regulations are based on adopted floodplain maps (both Tulsa and NFIP), watershed-wide master drainage plans, and development permits based on specific performance standards.

City of Tulsa CRS Activities

- Public Information Activities
- Mapping and Regulatory Activities
- Flood Damage Reduction Activities
- Flood Preparedness Activities

Community Rating System (CRS)

The CRS is a part of the National Flood Insurance Program that helps coordinate all flood-related activities of the City. Tulsa has participated in the National Flood Insurance Program (NFIP) since 1971 and in the CRS since 1991. The CRS is a voluntary program that seeks to reduce flood losses, facilitate accurate insurance rating, and promote awareness of flood insurance by creating incentives for a community to go beyond minimum floodplain management requirements.

Tulsa advanced from a Class 5 to a Class 3 community on October 1, 2000. Tulsa advanced to a Class 2 community on October 1, 2003. The Class 2 rating allows Tulsa's SFHA residents a forty percent reduction in their flood insurance premium rates. All rates are based on where the structure is located in FEMA's Flood Insurance Rate Maps (FIRMs). New Digital Maps (DFIRMs) became effective in October 2012. A summary of City of Tulsa flood insurance policies, according to NFIP, as of May 31, 2018, is included in Table 2-1. Tulsa has 84 Repetitive Loss properties. Information about Repetitive Loss properties is included in Chapter 4.

City of Tulsa Flood Insurance Policies

Flood Insurance	Amounts
Flood Insurance Policies in Force	1,432
Values of Insurance in Force	$363,945,900
Premiums in Force	$1,053,362
Total Losses	2,590
Flood Losses Paid	**$39,037,630**

Source: NFIP Claims Data

Flood and Stormwater Management

Tulsa has grown up with flooding. Unlike many communities, the City of Tulsa regulates to a higher standard in three categories of so-called "100-year" floodplain areas in order to reduce future flood losses. As a minimum standard, the FEMA Special Flood-Hazard Area (SFHA), or "100-year" floodplain, is an area that has a 1% chance of flooding in any given year. FEMA SFHA floodplains are designated on FEMA's Flood Insurance Rate Maps (FIRM). The SFHA identifies the National Flood Insurance Program's (NFIP) minimum national standard, which

reflects only existing development conditions at the time of the study typically stopping where the contributing drainage area is one square mile.

City of Tulsa regulatory floodplain areas are calculated by a different standard. They take into account "100-year" flooding that would occur when contributing watersheds are fully developed and extend upstream to a contributing drainage area of 40 acres rather than FEMA's standard of 1 square mile. Therefore, Tulsa regulatory floodplain areas may be wider than the FEMA floodplains and may extend farther up creeks and waterways. Floodways, generally the most dangerous center strip along a water course, is where water is apt to run faster and deeper. Tulsa applies more stringent regulations in floodways because of their higher risk. Throughout this report, "floodplain" will mean specifically the City of Tulsa regulatory floodplain, unless otherwise noted.

The SFHA deals with existing conditions and does not take the impacts of future urbanization into account in its modeling or floodplain map delineations. Therefore, buildings that have been permitted and built in accordance with the National Flood Insurance Program's (NFIP) minimum standards may flood in the future as the basins develop. This is why the City of Tulsa regulates to a higher standard, requiring that no insurable structure will be built that has its first finished floor less than 1 foot above the Base Flood Elevation (BFE).

Piping and paving for future urbanization and development can cause an increase in urban stormwater runoff and flood depths. In some instances, it could cause discharges to double and can widen the floodplain and cause increases in the Base Flood Elevation (BFE). Tulsa requires upstream detention of excess flows and compensatory storage to mitigate this problem.

Between 1980 and 2000, the City of Tulsa created master drainage plans for each of its major waterways. These serve as the framework for floodplain management planning and programs.

The first citywide master drainage plan was the *Flood and Stormwater Management Plan 1990–2005*. This plan prioritizes and coordinates the flood protection projects that are detailed in the city's 29 master drainage plans. The last revision of the plan was September 7, 2001. The plan summarizes the following:

- Capital Improvement Program (see next section)
- Non-Structural Mitigation/Acquisition Priority List

The City later developed the *Flood and Stormwater Management Plan 1999-2014*, published on September 10, 1998. It was developed in accordance with planning criteria from the Community Rating System (CRS), Flood Mitigation Assistance (FMA), and Hazard Mitigation Grant Program (HMGP). Although the 1999-2014 plan primarily dealt with flooding, it also addressed other natural hazards. The *Flood and Stormwater Management Plan* recommended stormwater capital improvement projects. Tulsa has established a stormwater utility fee dedicated to fund stormwater maintenance and mitigation projects.

PLANNING AND REGULATORY CAPABILITIES

The following matrix lists the plans and ordinances and the department or agency that maintains them. A more detailed description of each plan or ordinance follows.

Summary of Plans by Agency

Plan & Regulatory	Agency or Department									
	COT Planning	COT Development Services	COT Engineering Service	COT Water & Sewer	COT Streets & Stormwater	TAEMA	Levee District 12	USACE Tulsa District	INCOG	
Comprehensive	X								X	
Capital Improvement			X							
Economic Development	X	X							X	
Emergency Operations			X		X	X	X	X		
Continunity of Operations	X	X	X	X	X	X	X	X		
Transportation	X				X				X	
Stormwater Management			X					X		
Brownsfields			X							
Dam Failure EAP			X	X		X		X		
Levee Failure EAP						X	X	X		
Debris Removal			X		X	X				
RL/Open Space			X							
2015 ICC Building Code		X	X							
Zoning Ordinance	X	X							X	
Subdivision Ordinance		X							X	
Floodplain Ordinance		X	X					X	X	
Flood Insurance Rate Maps		X	X					X	X	

Comprehensive Master Plan:

Tulsa's comprehensive and neighborhood plans only focus on flooding as a hazard. Floodplains are used when doing mapping exercises to indicate areas inappropriate for growth. Sometimes development pressure is great enough to start pushing back against this work and the current regulations. Plans will support Capital Improvement Projects (CIPs) that address flooding when it is a threat to the planning area. All plans address the need for street trees to encourage pedestrian activity. This would make streets a little more resilient to heat hazards but wouldn't eliminate risk to them. Streetscape recommendations usually include burying overhead powerlines, which would reduce vulnerability to several hazards. However, there is no funding, incentives or the regulatory mechanisms to require burying powerlines throughout the city. Dam/Levee failure is discussed when appropriate, though planning efforts are not backed up by regulatory mechanisms like flooding. (Philip Berry, COT Planning). As the Comprehensive and Neighborhood Plans are updated they should include a discussion of natural hazards and potential mitigation activities.

Capital Improvements Plan (CIP):

The City's Engineering Services Department maintains an extensive CIP program for Streets, Stormwater, Water and Sanitary Sewer projects. The CIP database is updated annually as projects are completed and new projects added. The projects are prioritized based on a point system scoring various items appropriate to each discipline. For flood control projects the items scored include: number of flooded structures, depth of flooding, critical

facilities, inundation of streets, Benefit vs Cost Analysis (BCA) and coordination with other projects such as street improvements. *(Gary McCormick, Engineering Services)* CIPs should be developed for other hazards such as tornadoes, high wind events, winter storms, etc. and a viable source of funding identified.

Economic Development Plan:

Tulsa receives $3-4 million annually in *Community Development Block Grant* and *HOME* Funds by being recognized as an entitlement community. The application process takes place each year in May.

The *Fire Suppression Grant* rewards up to $8,000 for sprinkler connections and appurtenances located in the public right-of-way.

The *Small Business Capital Formation Tax Credit Act* authorizes an income tax credit of 20 percent of equity or near-equity investment for investors in qualified businesses, either by a qualified business capital company or by an investor. There are limitations on the amounts of investment to which credits apply. Earned credit may be taken in the year of investment or carried over for three additional years.

Tax Incentive Districts provide a five- to six-year abatement on local property taxes for specific development projects. Developers may apply to the City of Tulsa for tax abatement on projects constructed or rehabilitated within a designated Tax Incentive District. At this time, the City has one Tax Incentive District, covering real estate within the Inner Dispersal Loop (the interstate highways surrounding downtown). Additionally, projects in enterprise zones are eligible to receive the state enterprise zone investment/new jobs tax credit.

Tax Increment Financing, Oklahoma Local Development Act (1992) allows local governments to establish Tax Increment Financing (TIF) districts. Before a district can be established, a review committee consisting of representatives from each affected taxing entity and at-large public members must make a recommendation of the TIF plan. Once the committee reviews the plan, it's passed on to the City Council for a vote. The City may collect increment from ad valorem taxes, sales taxes and other local taxes. Tulsa currently has five TIF districts: Brady Village, North Peoria Avenue, Tulsa Hills, Santa Fe, and Tulsa Airport.

Economic Development Public Infrastructure Fund

Included in the Improve Our Tulsa package (2013) this fund was developed to assist, in a timely manner, with valid public infrastructure needs related to business retention, expansion and attraction. The voters approved $6.0 million over the term of the program towards these efforts based on an annual allocation approved by the Tulsa City Council as part of the City budgeting process. The criteria/objectives to be under consideration for this fund include:

- It is the objective of this fund to provide assistance with public infrastructure needs in those unique instances when this is the most appropriate program or resource.
- This fund is designed to assist in with the retention and expansion of jobs in manufacturing and office business sectors.
- If approved, the City of Tulsa will be responsible for constructing all improvements.
- It is not the intent of the policy to fund land acquisition.
- Where applicable cost sharing and potentially claw-back provisions will be negotiated.

The City of Tulsa recognizes that the most effective incentive for economic development is being a livable and vibrant community. It is recognized that Tulsa, like all cities in Oklahoma, is heavily reliant on sales tax revenues to support the City's General Fund. In order to provide the levels of programs and services necessary to remain a vibrant and livable community, the sales tax base must continue to grow. The goal of this policy is to ensure Tulsa

continues to be a great place to live and that continuing to be a regional retail center is supportive of that effort. This policy is intended to support commercial retail businesses. Minimum requirements for applicants:

- Stand-alone retail: Retailer must have projected annual gross retail sales of $20 Million by the third year of operation.
- At time of application, Retailer has no existing presence in MSA, or new development that is part of a regional retail project of at least 100,000 square feet.
- Multi business development: If the application is for a development with multiple businesses the project must contain at least 100,000 square feet.
- Underserved or distressed area: Location is within an enterprise zone, designated USDA food desert, adopted City of Tulsa Sector Plan or adopted City of Tulsa Small Area Plan.

The United States Army Corps of Engineers, Tulsa District has economists on staff at the district office that can assist with economic impact analysis in Tulsa. (Bill Smiley, USACE)

The Resilient Tulsa Strategy includes a strategy related to disaster resilience for small businesses. (Kian Kamas, COT Chief of Economic Development)

Local Partners in Economic Development

Tulsa Industrial Authority (TIA)
The Tulsa Industrial Authority (TIA) serves as a conduit in the issuance of 501 (c)(3) bonds and Industrial Development Revenue Bonds, which provide tax-exempt financing for qualified projects. TIA supplies comprehensive analysis of new issues and/or refunding opportunities and assists the borrower in finalizing a transaction strategy and structure. When a loan is passed through TIA, the IRS treats the loan as a local governmental agency special obligation. Eligible projects include those for non-profit entities (including health care), public or private colleges and universities, private high schools and grade schools, the Indian health care resource center, hospitals/nursing homes and various charities. TIA has financed or refunded over $1 billion in tax-exempt bonds.

Tulsa Development Authority (TDA)
The mission of the TDA is to improve Tulsa through programs and projects designed to utilize private and public resources that advance the physical, social and economic wellbeing of citizens and neighborhoods throughout the city. The primary objectives of the Tulsa Development Authority are to revitalize declining and underdeveloped areas, to encourage private investment and economic development, and improve the tax base through removal of slum and blight by redevelopment and rehabilitation.

Tulsa Economic Development Corporation (TEDC)
This non-profit Community Development Financial Institution was formed in 1979 as a catalyst for economic development. TEDC drives small business success through non-traditional lending programs and development services that help entrepreneurs start to expand a company. Branded as Creative Capital. TEDC uses public and private funds to make direct loans and participates with other institutions on projects that lack sufficient equity. Special considerations given to companies that create and retain jobs.

Tulsa Preservation Commission (TPC)
The City of Tulsa's Planning Department maintains a database of properties eligible for historic preservation incentives. Preservation Staff is happy to assist property owners with questions about historic status and

National Register listing, historic preservation tax credits, and the International Existing Building Code's provisions for historic properties.

Downtown Coordinating Council (DCC)
The DCC provides support and advices making recommendations to the city regarding the coordination, planning and management of improvement efforts in Downtown Tulsa.

Local Emergency Operations Plan (EOP):

The City and other agencies maintain the following EOPs (Gary McCormick, Engineering Services):

- 2015 Flood Recognition and Response Plan – COT Engineering Services
- 2019 TAEMA Emergency Operations Plan – TAEMA
- 2011 Emergency Flood Plan – Levee District 12
- 2015 Keystone Lake EAP – USACE
- 2010 Lynn Lane Reservoir Dam Breach EAP – COT Engineering Services
- 2010 Yahola Lake Dam Breach EAP – COT Engineering Services
- 2013 Warrenton Lake Dam Breach EAP – Warren Professional Building Corporation

The USACE helps develop and update these plans through the Silver Jackets Program. (Bill Smiley, USACE)

These plans should all be consolidated into one plan and revised to include missing information:

- Key triggers
- Responsible parties
- Assets needed for response
- Time required for response
- Methods to disseminate warning messages to those in affected areas

Continuity of Operations Plan (COOP):

Each city owned facility/department maintains and updates their own COP. These plans identify hazards and describe appropriate actions for each hazard. Plans were last updated and reviewed in 2017. (Joe Kralicek, TAEMA, Director)

The USACE is available to help develop and update these plans through the Silver Jackets Program. (Bill Smiley, USACE)

Transportation Plan:

Major Street and Highway Plan identifies present and future transportation corridors but does not identify HAZMAT Routes. A National HAZMAT Route registry is maintained by ODOT. (Viplava Putta, INCOG)

A Transportation Plan should be developed to include evacuation routes for known flooding areas. Additionally, the 911 system needs a way to identify flooded emergency vehicle access routes in real time.

Stormwater Management Plan:

The Hazard Mitigation Plan identifies hazards and lists mitigation activities for each hazard. This plan is updated every 5 years as required by FEMA and is credited as the CRS Stormwater Management Plan. Each year an annual report is prepared on the status of the mitigation measures identified in the current plan. The report is presented to the mayor and city council and released to the local news media. The 2010 Citywide Master Drainage Plan consolidates the 29 Basin Master Drainage Plans to identify flooding problems and evaluate alternative actions/projects to eliminate the flooding problems. Projects identified, funded and/or completed are

maintained in GIS format on a web viewer maintained by a consultant. (Gary McCormick, Engineering Services) The Citywide Master Drainage Plan should be updated to reflect the changes as shown on the GIS web viewer.

Repetitive Loss Area Plans (RLAP)

A repetitive loss property is a property that has received payments on 2 or more NFIP claims of $1,000 or more in a 10-year period. A repetitive loss area includes the surrounding properties with similar drainage characteristics. The owners of these properties either did not have flood insurance or chose not to file a claim. Many of these repetitive loss areas are not in the SHFA but suffer from local drainage issues like sheet flow or undersized storm sewers.

On October 21, 2017, the city of Tulsa adopted 60 Repetitive Loss Area Plans covering the 84 repetitive loss properties remaining in the city. A repetitive loss area questionnaire and letter were sent to all 667 property owners within the repetitive loss areas. Information received from these property owners along with information obtained from site visits and various Master Drainage Plans were used to determine the source of the flooding and possible solutions. The city is systematically updating each of the RLAP to evaluate and determine the best alternative for each, do a benefit/cost analysis to determine HMA grant eligibility, prepare conceptual plans as needed and develop capital improvement project requests. An annual report is presented to the mayor and city council on the status of the RLAP.

Other Special Plans:

The North Tulsa Brownfields Plan considers floodplains, water features, topography, etc. to evaluate physical constraints on redevelopment. (Michelle Barnett, COT Engineering Services)

TAEMA participates with COT Streets and Stormwater Department in the debris removal planning process. The Debris Removal Plan is included in TAEMAs EOP. The plan is under review by FEMA for approval. (Joe Kralicek, TAEMA Director)

TAEMA maintains a long-term Recovery Plan which is included as an emergency support function in the TAEMA's EOP. (Joe Kralicek, TAEMA Director)

USACE is available to assist with Disaster recovery planning. (Bill Smiley, USACE)

BUILDING CODE PERMITTING AND INSPECTIONS

Building Code: Tulsa is presently using the 2015 ICC Codes. Tulsa should consider adopting stricter codes to mitigate hazards such as flooding, high winds/tornadoes, hail, fire, etc.

BCEGS Score: 3/3

Fire Department ISO Rating: 2/9

Site Plan Review Requirements: Site plans are reviewed for drainage but lack adequate inspection. Better inspections on single family residential sites are needed to ensure grading conforms with the approved site plans.

LAND USE PLANNING AND ORDINANCES

Zoning Ordinance: Zoning Code does not address flooding or other hazards. (Susan Miller, INCOG)

Subdivision Ordinance: Subdivision regulations require floodplains be placed in a reserve area or ODE and are strictly enforced. They also encourage LID.

Floodplain Ordinance: The Floodplain Ordinance, Title 11-A, requires 1-foot freeboard on all new or substantially improved structures, no increase in rate or velocity of runoff and drainage systems be designed to convey the 1% flood event. This ordinance is in the process of being updated.

Flood Insurance Rate Maps: Tulsa is a FEMA Cooperating Technical Partner (CTP) that makes available federal funds to systematically update FIRMS for each basin in the city.

Acquisition of Land for Open Space and Public Recreation Uses: Significant portions of the floodplain are dedicated open space and the city has an active RL acquisition program. A significant portion of dedicated open space is reserved for natural and beneficial floodplain function.

HOW CAN THESE CAPABILITIES BE EXPANDED AND IMPROVED TO REDUCE RISK

- Plans should identify shortcomings
- Small area plans should describe needed improvements for drainage and other infrastructure.

ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The City of Tulsa has the following capabilities. These include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Summary of Administrative, Staff & Technical by Agency

	Agency or Department									
	COT Planning	COT Development Services	COT Engineering Service	COT IT	COT Streets & Stormwater	TAEMA	Levee District 12	USACE Tulsa District	INCOG	SDHMAB
Planning Commission	X								X	
Mitigation Planning Committee			X			X				X
Maint. Programs to Reduce Risk					X		X			
Mutual Aid Agreements						X	X	X		
Chief Building Official		X								
Floodplain Administrator		X								
Emergency Manager						X		X		
Community Planner	X								X	
Civil Engineers		X	X					X	X	
GIS Coordinator	X			X				X	X	
Warning Systems/Services						X		X		
Hazard Data & Information	X	X	X	X		X		X	X	
Grant Writers	X		X			X				
HAZUS Analysis			X					X		

ADMINISTRATION

Planning Commission: The Tulsa Metropolitan Area Planning Commission (TMAPC) is part of INCOG which oversees zoning changes and assists with updating comprehensive planning for Tulsa and surrounding communities. TMAPC coordinates well with the communities and agencies it serves.

Mitigation Planning Committee: Mitigation planning is overseen by SDHMAB through the PPI Subcommittee. The HMP Update is being coordinated with numerous stakeholders in the community and surrounding jurisdictions.

Maintenance Programs to Reduce Risk: The Streets and Stormwater Department maintains creeks and other drainage systems and checks known problem areas after every significant rainfall event.

Mutual Aid Agreements: There is a statewide mutual aid compact in effect within Oklahoma that automatically allows the city of Tulsa to provide or request mutual aid to or from other jurisdictions. The City of Tulsa Police and Fire Departments have more formalized mutual aid agreements with surrounding communities' departments. Additionally, through the state of Oklahoma is an emergency mutual aid compact (EMAC) with other states that allows Tulsa to provide mutual aid if requested. (Joe Kralicek, TAEMA)

Chief Building Official: The City of Tulsa employs a full time Director of Development Services. The Development Services Department promotes safety, livability and economic growth through efficient and collaborative application of building and development codes.

City of Tulsa Engineering Services: The Engineering Services Department plans, designs and field-inspects public improvement and capital projects for the benefit of our city. Engineering Services provides and/or administers planning, engineering/architectural design and construction quality assurance services for projects involving water systems, wastewater systems, transportation, stormwater, parks and all City departments.

Grants: Grants Administration coordinates and oversees all aspects of the grant submissions and provides oversight to ensure ethical compliance. In addition, Grants Administration provides support to City departments to ensure the implementation of policies and practices are in compliance with applicable Federal, State, and local laws, regulations, and contract stipulations. Grants also provides expertise in budgeting, reporting and contract and compliance monitoring.

STAFF

****Note: All staff listed are full time employees. ****

Chief Building Official: The CBO is a CFM and receives CECs annually. All infrastructure development permits are reviewed by Development Services and inspected by Field Engineering.

Floodplain Administrator: The FPA is a CFM and receives CECs annually. The FPA reviews all private and public development plans within the floodplain.

Emergency Manager: TAEMA is trained in emergency response. TAEMA is understaffed per FEMA IS-775 suggested staffing levels for a community the size of the Tulsa Metro area. TAEMA is tasked with providing coordination for partners in all phases of a disaster. TAEMA also operates and maintains the Tulsa City/County Emergency Operations Center. (Joe Kralicek, TAEMA Director)

Community Planner: COT has a Planning Department with a staff of community planners including one CFM. Staff training covers the basics of flooding and other hazards. The CFM receives CECs annually. This department coordinates well with Engineering Services and Development Services.

Civil Engineer: COT Engineering Services and Development Services have numerous civil engineers. All who are responsible for stormwater review and planning are CFMs and receive CECs annually.

GIS Coordinator: The COT IT Department and Engineering Services have numerous GIS technicians whose primary role in hazard mitigation is mapping known hazard areas.

These capabilities can be expanded and improved by:

- Giving Building Inspectors responsibility and training for site grading and drainage inspections
- Continued coordination is needed between city departments
    - COT Planning Department, COT Office of Resilience and Equity and COT Engineering Services
    - COT Engineering Services, TAEMA and Levee District 12

TECHNICAL

Warning Systems/Services: TAEMA maintains an extensive siren network which is tested weekly and covers greater than 90% of the population of Tulsa County. COT IT Department maintains the siren hardware. COT Streets and Stormwater Department barricades streets when flooded. The Tulsa Police Department uses PA systems in vehicles for area specific warnings.

Hazard Data and Information: The HMP has extensive data and information on all hazards affecting the community. Hazard data is maintained in GIS format. Most mitigation measures in the plan are being implemented. (See Chapter TBD)

Grant Writing: The city has a Grants Department and has received numerous Hazard Mitigation Assistance grants. TAEMA has a finance and grant coordinator on staff who writes HMA grants.

HAZUS Analysis: The city utilizes HAZUS and BCA software to review projects for best alternatives and grant eligibility.

HOW CAN THESE CAPABILITIES BE EXPANDED AND IMPROVED TO REDUCE RISK

- The City should consider re-implementing a mass notification system such as Reverse 911.
- Grant applications should be prepared in advance for eligible projects for quick submittal when funding opportunities occur.

FINANCIAL

The following is a list of funding resources for hazard mitigation the City of Tulsa has access to or is eligible for in the future.

FUNDING	USES
Capital Improvement Project	CIP funding is used for stormwater mitigation activities.
Fees for water, sewer, gas or electrical service	Utility fees are used to maintain and expand utility services.
Impact fees for new development	In some cases, developers can pay a fee in lieu of onsite detention. These fees are used for drainage improvements in the basin where the development is located.
Stormwater Utility fee	Utility fee is used to maintain and expand the stormwater drainage system.
Incur debt through General Obligation or special tax bonds	Bonds are used to fund specifically identified projects.
Community Development Block Grant	CDBG are typically used to enhance functional needs populations.
Hazard Mitigation Assistance Grant	HMA grants are used for mitigation projects whenever possible.
Federal Highway Administration Funding	FHWA funding is used for eligible transportation projects.
Oklahoma Water Resource Board Loans	OWRB loans are used for water and sewer projects through the Tulsa Metropolitan Utility Authority.

HOW CAN THESE CAPABILITIES BE EXPANDED AND IMPROVED TO REDUCE RISK

- The city needs a secure and ongoing source of funding for hazard mitigation projects besides stormwater projects
- CDBG could be used for mitigation activities serving functional needs populations

EDUCATION AND OUTREACH

The following education and outreach programs and methods are already in place and could be used to implement mitigation activities and communicate hazard-related information

PROGRAM/ORGANIZATION

Local Citizen Groups of Non-Profit Organizations Focused on Environmental Protection, Emergency Preparedness, Access and Functional Needs Population etc.

Disaster Resilience Network

The Disaster Resilience Network (DRN) (formerly Tulsa Partners, Inc.) empowers people, businesses and communities to reduce the impact of disasters. The DRN is a 501(c)3 nonprofit, overseen by a 15-member board. Representatives are from the Tulsa and OKC metros, Stillwater and Tahlequah. They do their work through three core programs, each led by a multi-sector council which uses collaboration as a guiding principle for community outreach.

The **Disaster Resilient Business Council** assists small businesses and nonprofit organizations in business continuity and emergency planning. This includes providing symposia, workshops and presentations using volunteer subject-matter experts, including the signature “A Day Without Business Symposium” last held in September 2017. Other activities include providing small business Lunch and Learn seminars in conjunction with chambers of commerce and nonprofits in northeastern Oklahoma in the Spring 2018, with a planned "Test Your Plan" event for Fall 2018. In addition, members of the council regularly do speaker presentations on these topics.

The **Disaster Resilient Cross-Cultural Council** focuses on stakeholder led disaster preparedness outreach to diverse language and cultural communities, including development of the "Emergency Preparedness - Real Stories" video series in seven languages with the Tulsa Community College Center for Creativity. Recent activities include community meeting presentations in Tulsa of the “Real Stories” videos where people share their experience with disaster in their own language, with more presentations planned that includes a presentation in Oklahoma City in conjunction with the Guatemalan Consular Office. There is also a new Tornado Preparedness Card in Spanish and English for distribution at multi-cultural events developed by volunteers and printed by Public Service Company of Oklahoma in both card and 11x17 single sided posters. These were developed because Spanish language communities widely believe they should leave their homes during tornado warnings and go to big box stores or malls or their church. This council also participates in sharing information at multi-cultural festivals and community events.

The **Disaster Resilient Housing Council** promotes low impact development and disaster resilient residential construction, including the Insurance Institute for Business and Home Safety's (IBHS) FORTIFIED Home™ program. This last council provides a “resilience for all” approach, making sure that everyone, regardless of resources, has access to resilient housing strategies. Recent activities involve the promotion of the FORTIFIED Home High Wind/High Wind and Hail Programs across Oklahoma through presentations, lunch and learns, and exhibitor booths, as well as marketing upcoming IBHS FORTIFIED Wise workshops using IBHS trainers. They worked with local Habitat for Humanities in 2017 and the City of Tulsa HUD/CDBG Emergency Repair program in 2018 on developing pilot projects to bring the value of this program to all income levels.

DRN also has other ad hoc collaborative activities. They offer an annual statewide Disaster Management for Long Term Care Facilities Workshop which was held in September/October 2017 in Tulsa and Oklahoma City with presentations from state and local experts. They helped Tulsa apply for the Rockefeller Foundation 100 Resilient Cities/Resilient Tulsa initiative and participated in the Oklahoma City Community Foundation Central Oklahoma Resiliency Project, offering on-going feedback on ways to promote community preparedness and resiliency. The Executive Director has served on the Tulsa Area Long Term Recovery Committees for the March 2015 and March 2016 tornadoes, and on the OK VOAD Community Preparedness Committee, in each case representing our organization. And they oversee a contract for the City of Tulsa Program for Public Information Committee tied to the National Flood Insurance Program Community Rating System. (Tim Lovell, Director, DRN)

Tulsa Ministerial Alliance
provides outreach and support to functional needs populations. Annual activities include the annual Back-to-School Bash, an effort to provide school supplies, school uniforms and food baskets to some 60 area schools the alliance has adopted. Other annual activities and programs include Thanksgiving and Christmas food basket giveaways, and college scholarships. The alliance is also involved with development of a youth center in north Tulsa, in collaboration with a number of partners. (Rev. Steve Whitaker, John 3:16 Mission)

Catholic Charities of Eastern Oklahoma
Catholic Charities Disaster Relief Services provides a range of services for families and individuals affected by disasters such as tornadoes, floods and wildfires. Catholic Charities offers individualized short-term response and long-term disaster case management services after a disaster has struck. Short-term response services may consist of providing food, clothing and emergency financial assistance, in addition to meeting the immediate emotional and spiritual needs of those impacted. Long-term disaster case management services guide an individual or family through the financial and emotional difficulties after a disaster, which may last a long period of time.

Catholic Charities also has a preparedness program called *Plan, Prepare, Protect* comprised of a four-level program below. (MaryLynn Lufkin, Catholic Charities Director)

1. Prepare the people
2. Ready the resources
3. Prepare the plan
4. Ready the resilience

Community Service Council
The mission of the Community Service Council is to confront challenges to health, social, education and economic opportunities, and strategically advance effective community-based solutions. Their Child Care Resource Center focusses on emergency preparedness and provides the city up to date location information about child care programs in case of an emergency or disaster. Tulsa Weather Coalition helps citizens with no air conditioner, medical need and low income by providing free air conditioners and information on how to stay cool and what signs to watch for with heat related illness. 211 helpline is also under the umbrella of the Community Service Council and provides community resources and information to 37 counties in Oklahoma, including Tulsa County. During an emergency or a disaster, they are viewed as first responders to help with information sharing.

Ongoing Public Education or Information Program

- Program for Public Information promulgates extensive information on flooding and other hazards. (Tim Lovell, DRN Director)
- Stormwater Quality Assurance uses billboards, radio and TV advertisements that promote environmental stormwater quality. (Scott VanLoo, Stormwater Quality Assurance Manager)
- Tulsa Fire Department has outreach programs on fire safety, smoke detectors and the need for an emergency action plan. (Stan May, TFD PR)
- TAEMA has a Preparedness Application for Apple and Android devices called Tulsa Ready. The Tulsa Ready application helps people prepare for disasters by providing information on how to prepare go-bags and other important safety tips. (Joe Kralicek, TAEMA Director)
- Tulsa City/County Health Department has a robust emergency preparedness and response program which provides education and outreach related to preparedness and recovery for all hazards.
- Tulsa City/County Health Department conducts community assessments for public health response (CASPER) periodically. (Alicia Etgen, Tulsa City/County Health Department)

Natural Disaster or Safety Related School and Child Care Programs

- Child Care Resource Center provides training and technical assistance for emergency preparedness for child care programs.
- The **American Red Cross Pillowcase Project** is a free, interactive preparedness program designed for youth ages 8 to 11. The program aims to increase awareness and understanding of natural hazards and teaches safety, emotional coping skills, and personal preparedness.
- Tulsa Fire Department does fire safety shows at elementary schools.
- Tulsa Area Safe Kids teaches injury prevention training and pedestrian and bicycle safety in Tulsa public schools. (Melinda Belcher, Child Care Resource Center Manager)
- News on 6 Wild Weather Camp: News On 6 Chief Meteorologist Travis Meyer and the News On 6 WARN Team show students how to stay safe during lightning, tornadoes, and flash flooding. Students get to participate in interactive experiments that show just how powerful mother nature can be. **Trav's Wild Weather Camp** has made more than a dozen stops at elementary schools across Green Country.

StormReady Certification: Yes

Firewise Community Certification: There are some communities within the city of Tulsa that are Firewise Community certified, but not the city of Tulsa.

Public-private Partnership Initiatives Addressing Disaster-related Issues: USACE Silver Jackets Program has helped Tulsa develop outreach to levee protected areas, areas inundated by the 1986 floods and assistance with levee certification through the System Wide Improvement Framework (SWIF) program.

SAFE GROWTH AUDIT

The purpose of a safe growth audit is to analyze the impacts of current policies, ordinances, and plans on community safety from hazard risks due to growth. This section assesses the impact of planning and regulator capabilities in the City of Tulsa. The following is intended to inform citizens and decision makers about important safety issues.

COMPREHENSIVE PLAN

Land Use

- The overall Comprehensive Plan primarily maps land use by type of development; i.e. single family, multi-family, commercial, etc. The future land use map uses floodplains when being created but does not identify other natural hazard areas.
- The Small Area Plans go into more detail and map areas in floodplain, environmental concerns/brownfields, etc.
- The land use policies within the Comprehensive Plan do not address natural hazards. This is covered in the Subdivision and Development Regulations.
- The Comprehensive Plan provides space for future growth outside natural hazard areas.
- The Park/Open Space Land Use was added to identify areas that are inappropriate for development due to hazards. (Philip Berry, COT Planning)

Transportation

- Capacity projects identified in the Regional Transportation Plan (RTP) consider all environmental issues including HAZMAT, industrial or other areas that are environmentally sensitive. Projects involving federal funds also document these issues using the NEPA process.
- RTP takes into consideration land uses planned, using forecasts that identify developable parcels to avoid flood zones, industrial areas or other areas that are environmentally sensitive.
- The RTP does not address evacuation routes but emergency vehicle access is evaluated and considered. (Viplav Putta, INCOG)
- TAEMA has identified various evacuation routes along the Arkansas River. (Joe Kralicek, TAEMA)

Environmental Management

- Some environmental systems, such as flood related or water supply systems, are identified and mapped.
    - Watersheds are protected and enhanced.
- Tulsa's natural and sensitive areas are protected and conserved. Policies to support this goal are:
    - Ecological sensitive areas are identified and prioritized.
    - Natural and sensitive areas are protected and preserved.
    - Sensitive areas are protected by regulating development on affected sites.
- Planning and development of parks and trails are coordinated with the Comprehensive Plan and Parks Plan.
- Stormwater is captured and cleaned through landscape design, downspout disconnection and other environmentally friendly techniques.
- Non-point source pollution is reduced through Low Impact Development (LID) principles, creative building practices and smart site design that can retain and treat stormwater generated on-site. (Philip Berry, COT Planning)

- Several goals of the Comprehensive Plan overlap with mitigation topics.
- There are development policies related to flood and fire safety. (Philip Berry, COT Planning)

ZONING ORDINANCE

- The zoning ordinance conform to the comprehensive plan in terms of discouraging development and redevelopment within natural hazard areas. Floodplains are taken into account when rezoning cases are considered. (Philip Berry, COT Planning)

SUBDIVISION REGULATIONS

- The Subdivision Regulations require that all floodplains be placed in a reserve area or overland drainage easement prohibiting construction of insurable structure or anything that will block the flow of water. (Susan Miller, INCOG)

CAPITAL IMPROVEMENT PROGRAM AND INFRASTRUCTURE POLICIES

- The Capital Improvement Program and Infrastructure Policies do not limit expenditures on projects that would encourage development in areas vulnerable to natural hazards.
- The Capital Improvement Program provides funding for Hazard Mitigation projects identified in the Hazard Mitigation Plan; i.e., flood control, acquisition, water and sewer systems and fire protection. (Gary McCormick, COT Engineering Services)

OTHER

- Small Area Plans identify natural hazard areas, review existing infrastructure, and avoid or mitigate these areas. (Philip Berry, COT Planning)
- Current building code requires all structures be designed to withstand 115mph winds and all critical facilities be protected from the 0.2% (500 year) flood event. (Michael Ling, COT Development Services)
- The Evacuation Plans are included in the Tulsa City/County EOP. TAEMA maintains and reviews the EOP annually.
- The Mass Care Plan is overseen by TAEMA, with the American Red Cross taking the lead role and supported by other agencies. (Joe Kralicek, TAEMA)