

KC WATER

OFFICE OF THE DIRECTOR

4800 E. 63rd Street • Kansas City, MO 64130 P: 816-513-0504 • F: 816-513-0185 • www.KCWater.us

Date: May 8, 2025

To: Mayor, City Council, and City Manager

From: Andy Shively, PE, Deputy Director

Subject: 2024 Annual Floodplain Management Plan Progress Report

Water Services Department is pleased to submit the 2024 Annual Progress Report for the City's implementation of the flood management part in the City's 2020 Multi-Hazard Mitigation Plan and the updated Mid-America Regional Council (MARC)'s 2025 Multi-Hazard Mitigation Plan (attached). The report is prepared by Water Services Department with support and input from multiple other City departments including Office of Emergency Management, Planning & Development, Aviation, Public Works, Fire, Police, Health and Parks & Recreation. The report and its submission to elected officials are required per the Federal Emergency Management Agency's (FEMA) requirements.

The City's latest Multi-Hazard Mitigation Plan was adopted by Resolution No. 200561 in 2020, as part of the Mid-America Regional Council (MARC)'s 2020 Regional Multi-Hazard Plan. MARC also published its updated 2025 Regional Multi-Hazard Plan. Filing of the annual report allows the City to continue to obtain annual recertification and remain within FEMA's National Flood Insurance Program (NFIP) Community Rating System (CRS). The City participates in the CRS to earn a flood insurance premium discount for all insurable properties within the City. For credit under the CRS, the annual progress report must be distributed to the media and be made available to the public. Progress Reports are posted on the Water Services Department's website at www.kewater.us/crs

This report officially accounts for FEMA floodplains adopted by the City on January 20, 2017 and for minor updated ones adopted on November 8, 2023, which leveraged all local, state, and federal mitigation projects for Brush Creek and Blue River completed to date and approximately \$12 million in watershed modeling completed by the City's Stormwater Utility and Public Works department or the U.S. Army Corps of Engineers-Kansas City District (USACE) over time. Some of the mitigation efforts by the City and USACE go back to the 1970s. There are also multiple ongoing mitigation efforts including active construction of a level wall and a planning study for Little Blue River. In 2023, the City repealed Chapter 28, Code of Ordinances, Floodplain Management, and enacted in lieu thereof a new chapter of like number and subject matter following FEMA's model ordinance and elevating the standard. In the same year, the City also completed two research projects in partnership with the University of Missouri – Kansas City: Augmented Reality Pilot Study at 103^{rd} St. and Wornall, and Development of GIS-Based Watershed Need Classification.

During the current reporting period (5/1/20024-4/30/2025), the City made the following progress:

• Completed the project on base level engineering using 2D Hydrology and Hydraulics Modeling for Indian Creek and Dykes Branch. The project was funded by a FEMA grant. The result of this project supports the City's flood risk mitigation efforts for the watershed.

- Conducting an extensive public education and outreach effort to promote public awareness of flooding risks and risk prevention and management strategies.
- Continuing to work with U.S. Army Corps of Engineers and six other local community partners on Little Blue River Study to analyze flood risks and develop mitigation strategies and plans.
- Continuing to work with U.S. Geological Survey on the project for Blue River Flood Inundation Mapping to support flood risk analysis.
- Taking over the operation and maintenance of the Dodson Industrial District Levee System.
- Initiating the Phase IV or the last phase construction for the Swope Industrial Park Levee System
- Initiating the American-Rescue-Plan-Act (ARPA) funded Flood Warning System Expansion project to upgrade the flood alert system.

This progress report includes the following information:

Background	2
Annual Status Update on the Plan's Action Items	5
Why Actions Have Not Been Completed	30
Recommendations	31
Attachment	32

Background

The 2020 Multi-Hazard Report now includes 36 primary objectives for flooding vs. 27 in the 2015 report. These primary objectives have 160 actions vs. 87 actions in the prior Regional Multi-Hazard Plan for Flooding. The following includes 36 plan objectives along with primary and/or secondary and/or supporting parties for the 2020 Multi-Hazard Report:

Primary Objective (36)	No of Actions	Primary Entity/Entities	Secondary, Supporting Party
Decrease the number of fatalities and injuries from flooding	2	Water Services	
Discourage new development in floodplain and flood prone areas	1	Water Services	
Enhance Health Department's ability to mitigate disease related issues caused by floods	4	Health Dept.	
Enhance public awareness and education efforts related to flooding.	3	Water Services	Emergency Management
Enhance public awareness of the hazards associated with dam failures, as well as mitigation and preparedness activities	3	Water Services	
Enhance public awareness, outreach and education efforts related to flooding	7	Emergency Management	Water Services

		I	
Enhance the ability to protect the public during flooding incidents to mitigate loss of life and property	2	Police	Water Services
Enhance the capabilities of city departments with flood response duties to mitigate damage from floods	4	Water Services Emergency Management	Water Services, Public Works, Parks & Rec.
Enhance the EOC capability to monitor and mitigate flood conditions	3	Water Services	
Ensure continued operability of dam to prevent failure and resulting damage to the MCI facilities.	1	Aviation	
Ensure levee requirements and integrity are maintained to prevent damage from flooding due to levee failure	3	Water Services	
Examine repetitive flood loss properties and determine feasible and practical mitigation options	4	Water Services	Planning Dept., floodplain manager
Expand KCPD's ability to assist with life safety operations during flooding	2	Police	
Implement or improve flood warning systems	8	Water Services	Emergency Management
Implement projects and procedures to enhance resiliency of KCMO infrastructure against flood damage	6	Public Works or Water Services	Water Services, Planning Dept., Emergency Management
Improve and enhance the capability to respond to and mitigate damage from flooding incidents	1	Public Works, Parks & Rec., Water Services	Emergency Management
Improve community resiliency to flooding	1	Planning Dept., floodplain manager	Water Services
Improve flood hazard assessments and flood mapping	9	Water Services	Planning Dept., Public Works, Parks & Rec., Water Services
Improve flood hazard assessments and flood mapping to assist in mitigating damage from flooding	9	Water Services	
Improve hazard assessment information for dams within Kansas City, MO	9	Water Services	Emergency Management
Improve KCMO's ability to mitigate damage from hazardous materials released due to flooding	7	Fire Dept.	

Improve the capability of the Aviation Department	Police Dept.	Emergency
Improve the capability of the Aviation Department		Management
Improve the canability of the Aviation Department	Fire Dept.	
to mitigate the damage from flooding	Aviation	
Improve the capability of the Aviation Department to mitigate the damage from flooding due to levee. failure 2	Aviation	
Improve the structural integrity of dams to reduce the threat of dam failures, which cause flooding	Vater Services	Neighborhoods
Improve warning and evacuation systems and procedures in the event of flooding due to dam. failure	Vater Services	
Incorporate strategies into KCMO development plans to mitigate damage from flooding	Planning Dept.	
related issues associated with flood waters	Health Dept.	Emergency Management
Integrate flood mitigation strategies with projects and activities designed to protect, restore, or enhance ecosystems and the environment and/or create recreational opportunities for the community.	Water Services, Planning Dept.	Emergency Management
Mitigate flooding damage to public facilities 3 W	Vater Services	
Participate in and ensure compliance with flood mitigation and floodplain management programs.	Planning Dept., Water Services	
Reduce flood related damage to public and private property in flood prone areas through structural and nonstructural retrofits, prevention of development within, or removal of property	Water Services, floodplain management	Planning Dept.
Reduce flood-related damage to public, residential, and commercial property in flood-prone areas through structural and nonstructural retrofits or removal of property.	Water Services, Planning Dept.	
Reduce the potential for flooding due to dam failures by enhancing inspection efforts N	Water Services, Planning Dept., Veighborhoods	
of dams regulated by the state.	City Council, Vater Services	
Total Actions 160		

Annual Status Update on the Plan's Action Items

The following table updates 160 actions itemized within the objectives listed above for 2024. The number of actions has nearly doubled in the 2020 Regional Multi-Hazard Plan compared to the 2015 Plan and aims to be a more organized, efficient, and direct way to locate items of interest and identify action status.

Included are completed, ongoing and deferred actions. Most actions are ongoing because they are annual actions while other tasks have extensive work and resource needs, which existing staff and resources are limited in capacity to initiate. A primary agency is listed, and co-primary agencies and/or additional entities and parties are listed where applicable. Underlined agencies have the most involvement and/or resources and staffing.

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
3				Decrease the number	of fatalities and i	njuries from	flooding				
4	Explore and implement systems to protect drivers from flash flooding on roadways	2020	Ongoing	KCMO OEM, with other barricade departments, is exploring resources to improve roadway flash flooding protection.	Structure and Infrastructure Projects	Medium	Not Determined	Poor Cost/Benefit on Automated Sites & Sensors, Signs + Depth best, Public use/success is LOW. Not funded in ARPA Grant	Water Services Public Works	Unknown	Unknown
5	Explore systems to improve and enhance flood warnings and flood warning systems	2020	Ongoing	KCMO received an American Rescue Plan Act (ARPA) grant to update its existing Alert 1 Data-loggers to Alert 2 Data-loggers and add water quality sensors at selected sites. The City selected a contractor to work on this project. WSD continues to fund the operation and maintenance of a stream gauge on the Missouri River to explore improved methods and systems about flood warning.	Structure and Infrastructure Projects	Medium	Ongoing, 2026	Adding additional sites and sensors. ARPA grant partially funded.	Water Services Public Works	\$998,307	Partial ARPA grant
6 Discourage new development in floodplain and flood prone areas											
7	**Levy fees on new residential, commercial, and infrastructure development in floodplains or flood prone areas to finance flood mitigation, preparedness, response, and recovery actions	2015	Deferred	No fees currently exist; WSD may consider over the next 5 years.	Local Plans and Regulations	Medium	Deferred	No Activity, ownership, legal structure, tax base, lack of staff, management, lack of business community support	Water Services Planning Dept.	Unknown	Unknown
8				Enhance Health Department's abil	ity to mitigate dise	ease related i	ssues caused by	y floods			
9	Enhance Health Department's ability to distribute mass medication before or after the onset of flood caused diseases through improved methods, training, and funding.	2020	Ongoing	KCHD seeks enhancements to its ability to mass distribution of medication after a disaster. The department has identified the citizen registration process as an operational issue for further investigation and correction.	Education and Awareness Programs	High	Not Determined	COVID-19 related support aided logistics, organization. Response, especially to floods, through methods, training and funding still needed.	Health Dept.	Unknown	Unknown
10	Research methods and funding to enhance Health Department's ability to track diseases from flooding.	2020	Ongoing	KCHD continues to research and refine its disease tracking protocols and looks for further funding to continue enhancing the investigative processes.	Education and Awareness Programs	Medium	Ongoing	No Activity	Health Dept.		
11	Research methods and funding to enhance Health Department's inspection of food potentially contaminated by flood waters.	2020	Ongoing	KCHD continues to research food inspection and contamination protocols but could use additional funding to expand its efforts.	Education and Awareness Programs	High	Not Determined	No Activity	Health Dept.	Unknown	Unknown
12	Research methods and funding to improve Health Department's processes for controlling disease vectors after a flood.	2020	Ongoing	KCHD continues to research disease vector control protocols and is in the process of hiring an Integrated Pest management manager for better facilitation. This could use additional funding to expand the efforts of vector control.	Education and Awareness Programs	Medium	Ongoing	No Activity	Health Dept.		

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
13				Enhance public awarene	ss and education e	fforts relate	d to flooding.				
14	Encourage homeowners and businesses to purchase flood insurance.	2015	Ongoing	KCMO sent out 151 letters to the owners of the properties in need of flood insurance.	Education and Awareness Programs	High	Ongoing	Letters mailed annually to owners in repetitive loss areas with contacts, web- links, FEMA publications & case for obtaining flood insurance with ICC coverage. Billing Insert to Water, Wastewater, & Stormwater Rate Payer's.	Water Services Planning Dept.	City existing re- sources	Water Services, Emergency Manage- ment
15	Obtain brochures and related publications on flood mitigation, preparedness, response, and recovery from federal, state, and other organizations and provide them to homeowners and businesses in flood-prone areas.	2015	Ongoing	KCMO has obtained education materials from FEMA and distributed to all the public libraries within the City limits. KCMO also is working with the libraries to host a webpage dedicated to flood-related topics.	Education and Awareness Programs	High	Ongoing	Letters mailed annually to owners in repetitive loss areas with contacts, web-links, FEMA publications & case for obtaining flood insurance with ICC coverage. Billing Insert to Water, Wastewater, & Stormwater Rate Payer's.	Water Services Emergency Management	City existing re- sources	Water Services, Emergency Manage- ment
16	Research and utilize social media to share weather forecasts and flood safety information	2015	Ongoing	KCMO OEM partners with other agencies to provide the information via social media and messaging systems.	Education and Awareness Programs	Medium	Ongoing	OEM, continues to use social media for information and risk communication to neighborhoods.	Emergency Management		
17			Enhai	nce public awareness of the hazards associate	ed with dam failur	es, as well as	mitigation and	preparedness activities			
18	Collect and disseminate public education materials to property owners near on in inundation pathways of dams that address dam safety, preparedness, and mitigation activities	2015	Ongoing	In development	Education and Awareness Programs	Low	Ongoing	Unknown	Water Services		
19	Conduct a public education campaign to inform dam owners and citizens living near the inundation pathways of dams about the need to properly maintain and upgrade these structures particularly those that are more than 50 years old	2015	Ongoing	In development	Education and Awareness Programs	Low	Ongoing	Unknown	Water Services		
20	Work with partners to conduct public education campaigns to inform citizens living near the inundation pathways of dams of the need to be familiar with the emergency action plans for these dams		Ongoing	In development	Education and Awareness Programs	Low	Ongoing	Unknown	Water Services		
21			1	Enhance public awareness, o	utreach and educa	tion efforts 1	elated to flood	ing			
22	During flood events, use public information officers and their tools along with the media to message risks from flooding.	2020	Ongoing	KCMO Departments continue to examine improved methods to disseminate information regarding flood risks even before the event.	Education and Awareness Programs	High	Not Determined	OEM continues to utilize new and existing methods including iPAWS to provide flood information to the public.	Emergency Management	Unknown	Emergency Management

	1	Floods										
2	2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
2		Encourage owners of structures to purchase flood insurance	2020	Ongoing	Mailed out 151 letters to repetitive loss property owners. Mailed a bill insert with the monthly water service bill to 140,000 customers. Made the information accessible from local public libraries.	Education and Awareness Programs	High	Ongoing	Letters mailed annually to owners in repetitive loss areas with contacts, web- links, FEMA publications & case for obtaining flood insurance with ICC coverage. Billing Insert to Water, Wastewater, & Stormwater Rate Payer's.	Water Service floodplain manager	City existing re- sources	Water Services
2		Identify funding resources for mechanisms to disseminate information to the public on all forms of flood risks for public awareness, outreach and education including health and disease associated with flood waters	2020	Ongoing	KCMO obtained hard copies of some topics directly from FEMA, downloaded online materials from FEMA and made copies to disseminate to local public libraries. It continues to work with local public libraries to house the hard copies and set up web pagse for online posting. A bill insert was distributed to 140,000 customers.	Education and Awareness Programs	High	Ongoing	Created a bill Insert to distribute to Water, Wastewater, & Stormwater Rate Payer's. Working with local public libraries to post hard copies and online.	Water Services Emergency Management	City existing re- sources	Water Services
2		Obtain brochures and related publications on flood mitigation, preparedness, response and recovery from FEMA, SEMA, and other organizations and provide them to homeowners and businesses in flood-prone areas.	2020	Ongoing	KCMO obtained hard copies of some topics directly from FEMA and also downloaded online materials from FEMA source to disseminate information. Developed a relevant bill insert.	Education and Awareness Programs	High	Ongoing	Digital & Hardcopy provided.	Water Services Emergency Management	Unknown	Unknown
2		Provide a web link homepage that serves as a flood identification, response, and mitigation resources center of all the products available.	2020	Ongoing	Revamping the existing website to make it easy for viewers' navigation	Education and Awareness Programs	High	Ongoing	https://www.kcwater.us/ programs/crs/	City Communications, Water Services	Unknown	Unknown
2		Use other public meetings on storm water to educate and provide these tools with information handed out to serve as links that help the public learn and act.	2020	Ongoing	Plans have been made to identify public meetings to disseminate the information	Education and Awareness Programs	High	Ongoing	Considered to tag on scheduled public meetings to spread the messages	Emergency Management, Water Services	Unknown	Unknown
2		Work with Floodplain Management, Emergency Management, SEMA & FEMA to develop a public education program on identifying, planning, and mitigating flood risk that provides the public tools to see their options.	2020	Ongoing	This is done on a regular basis.	Education and Awareness Programs	High	Ongoing	Mainly the City's own resources	Emergency Management, Water Services	Unknown	Unknown
2	29				Enhance the ability to protect the public d	uring flooding inc	idents to mit	tigate loss of lif	e and property			
		Improve KCPD's ability to assist with roadway flash flooding warnings to prevent loss of life and property.	2020	Ongoing	Ensure smooth and timely communication between Police Dept. and Emergency Operations Center. Continue to improve and upgrade the Barricade Response System User interface.	Structure and Infrastructure Projects	High	Ongoing	Flood Depth grids built to identify potential flood risk properties for all flood events. Flood risk intersections identified. Built online Barricade Response System User interface. This interface needs to be modified per software upgrades.	Water Services, Police Dept,	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
31	Provide training for officers to improve response capability during flooding incidents.	2020	Ongoing	Established continuous clarity on role's responsibilities for different divisions (District, Traffic, Special Operations)	Education and Awareness Programs	Medium	Ongoing	Unknown	Police Dept	Unknown	Unknown
				Seeking to provide training on the use of the Barricade Response System User interface.							
32				Enhance the capabilities of city departmen	ts with flood respo	onse duties to	mitigate dam	age from floods			
33	Better leverage flood warning data that identifies flood risks likely to occur and the time left until they occur to help mobilize to mitigate or prevent threats to public safety known and time and resources.	2020	Ongoing	ARPA fund as mentioned in Row 5 will be used to upgrade 54 existing site dataloggers and add additional sensors. KCMO also allocated bond funding to upgrade the remaining existing site, as well as to add addition sites for the alert system.	Education and Awareness Programs	High	Not Determined	Adding additional sites and sensors.	Water Services, Public Works	1 million +	Partial ARPA grant
34	Coordinate the city-wide flood barricade task force and update the SOP annually	2015	Ongoing	Flood Barricade Task Force meets at the beginning of every storm season.	Education and Awareness Programs	High	Ongoing	Completed	Emergency Management, Public Works	Unknown	General Fund
35	Develop an automated barricade tracking system for known community flood risks and where possible add warnings for these locations to aid in gaining time to respond before flooding and flood damages occur.	2020	Deferred	KCMO had explored resources and built a system to improve roadway flash flooding protection. Due to funding challenges, it is not implementing.	Structure and Infrastructure Projects	Not Specified	Not Determined	Water Services built 1-yr to 500-yr flood depth GIS. Identified ~ 700 barricade flood risk locations, citywide. Built ArcGIS Online response system. Inactive due to funding restraint.	Water Services, Public Works	1 million +	Unknown
36	Identify funding sources and replace damaged barriers to prevent traffic through high water areas thus mitigating the loss of life.	2020	Ongoing	This is handled by individual responsible departments.	Structure and Infrastructure Projects	Not Specified	Not Determined	FY24 Budget includes funding for replacement and for supplies, operations, maintenance of barricades in some cases.	Public Works, Parks & Rec. Water Services,	Unknown	Unknown
3′	7			Enhance the EOC capabil	lity to monitor and	l mitigate flo	od conditions				
38	Coordinate with Water Dept., dam stakeholders, and other groups associated with dam operations	2015	Ongoing	WSD regularly meet with USACE and KCMO Levee Committee	Structure and Infrastructure Projects	High	Ongoing	Improved Dam Risk identification is deferred due to funding and staffing limits.	Water Services		
39	Develop a contact list for agencies/individuals involved with dam operations	2015	Deferred	Deferred to other goal as that department works more closely with USACE	Structure and Infrastructure Projects	Medium	Deferred	Deferred	Water Services	Unknown	none
40	Explore and implement systems to improve flood warnings	2015	Ongoing	Specific effort was taken for Swope Park Industrial area. WSD built in a combination of warnings and an SOP and emergency response system for local stakeholders to get alarms and evacuate timely.	Education and Awareness Programs	Medium	Ongoing	Water Services built 1-yr to 500-yr flood depth GIS. Identified ~ 700 barricade flood risk locations, citywide. Built ArcGIS Online response system. No funding or logistics, storage for field use. Adding additional alert sites and sensors.	Water Services		

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
41	Upgrade and enhance the surveillance capability of the EOC to monitor flood conditions	2015	Ongoing	The system has been upgraded over the last 5 years. However, new technology means that this action will be ongoing.	Structure and Infrastructure Projects	Medium	Ongoing	Ongoing Operations, maintenance, and improvements along with System sharing agreements through Emergency Management	Emergency Management	Unknown	General Fund
42				Ensure continued operability of dam to	prevent failure an	d resulting d	amage to the M	ICI facilities.			
43	Enhance environmental control and erosion prevention to maintain the integrity of the KCI dam.	2015	Ongoing	Repairs were made to cracks and spalling on the dam and a new stainless steel access stairway for stormwater sampling was completed.	Structure and Infrastructure Projects	High	Completed	Ongoing	Aviation	278,138	Aviation
44			E	nsure levee requirements and integrity are n	naintained to prev	ent damage	from flooding	lue to levee failure			
45	Coordinate with US Army Corps of Engineers to ensure best practices and operations are utilized to maintain levees against failure and flooding		Ongoing	WSD maintains a continual partnership with the US Army Corps. on all facility needs and improvement efforts.	Local Plans and Regulations	High	Ongoing	Ongoing	Water Services		
46	Identify and conduct training for levee inspectors to ensure levee integrity to prevent flooding	2015	Ongoing	This is done annually or semi-annually with US Army Corps. inspections.	Structure and Infrastructure Projects	High	Ongoing	Ongoing	Water Services		
47	Perform inspections and assessments of levees and levee systems to track deficiencies and prevent levee failure and flooding	2015	Ongoing	This is done annually with the Us Army Corps and with a score from the US Army Corps. that directs improvements in operations and maintenance.	Structure and Infrastructure Projects	High	Ongoing	Ongoing	Water Services		
48				Examine repetitive flood loss propertie	s and determine fe	easible and p	ractical mitiga	tion options			
49	As funding allows, repetitive flood loss properties and structures will be targeted for buyout	2015	Ongoing	Cancellation for funding application has been made for the 20 properties, which had been identified in the Town Fork Creek Buyout Project, due to federal policy changes.	Local Plans and Regulations	High	Ongoing	Stopped	Water Services	Unknown	
50	**Identify potential funding opportunities to implement mitigation options for repetitive flood loss properties	2015	Ongoing	Funding application has been cancelled.	Local Plans and Regulations	Low	Ongoing	A GIS database layer can be created for these properties listed in (item 49) and their progress will be monitored for future losses.	Water Services, Floodplain Manager	Unknown	Unknown
51	**With stakeholders, explore incentive options to encourage property owners to take action to prevent or reduce future flood losses	2015	Ongoing	New development is subject to floodplain development review process. The incentive options have not been explored.	Local Plans and Regulations	Medium	Ongoing		Floodplain Manager	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
52	**Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities; determine property owners' interest in specific mitigation options	2015	Ongoing	Atotal of 151 repetitive loss properties; Letters were sent out to the inform the property owners about the importance of obtaining flood insurance, measures to be taken for preparation of flooding and potential financial support.	Local Plans and Regulations	Medium	Ongoing	Mailers and online website list contacts and e- mails that route queries to CRS Coordinator, who manages all support, Q&A, education, field visits etc. Map products are provided to inform.	Water Services, Floodplain Manager	Unknown	Unknown
53	3			Expand KCPD's ability to as	sist with life safety	operations	during floodin				
54	Acquire additional equipment necessary to participate in and conduct swift water rescues	2020	New	This is pursued as funding becomes available.	Other	High	Not Determined	unknown	Fire	Unknown	Unknown
55	KCPD to enhance partnership with KCFD to participate in swift water training and rescues	2020	New	This action will be examined and implemented as applicable and available.	Education and Awareness Programs	Medium	On going	unknown	Police	Unknown	Unknown
56	Implement or improve flood warning systems										
57	Determine the need for stream gauges in waterways currently lacking flood warning systems or additional stream gauges in waterways with flood warning systems already in place	2015	Ongoing	KCMO currently has 74 stream gauges with an ongoing effort to expand the site number as funding has been allocated.	Structure and Infrastructure Projects	High	2024	Using ARPA grant to upgrade dataloggers and adding additional sensors at selected sites. Using new GO bond fund to increase alert sites.	Water Services	1 million +	Partial ARPA fund
58	Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public	2015	Ongoing	KCMO has access to multiple flood warning systems but is always pursuing to increase its ability to monitor and acquire flooding data.		High	Ongoing	Streamlining 1,000's of warnings in Contrail that are Text/cell and/or email based; public facing website, and public availability of developed warnings is best path.	Water Services, Emergency Management	1 million +	Unknown
59	Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public.	2020	New	This action will be pursued, but there is no schedule at this time.	Education and Awareness Programs	High	Ongoing	Streamlining 1,000's of warnings in Contrail that are Text/cell, e-mail based. Public facing website + public availability of developed warnings is best path.	Water Services, Emergency Management	1 million +	Unknown
60	Develop information from the flood, stage, and risk data into KCMO's flood warning system software.	2020	Ongoing	KCMO is cooperating with US Geological Survey to revise flood-inundation maps for the Blue River and its two major tributaries. The output from this effort will provide updated and refined water depth of these streams.	Education and Awareness Programs	High	Ongoing, 2026	Integrating FEMA/City-USGS developed flood depth risks for roads, buildings, parking lots for 10-yr to 500-yr events.	Water Services, Emergency Management	1 million +	Unknown
61	Develop stage and gauge data to correlate from events with downstream risks and as modeling improved develop stage/flood elevation triggers that lead to downstream flooding of roads, structures, and parking lots.	2020	New	Major work was done through the base level engineering project for Indian Creek and Dykes Branch watersheds using 2D hydraulics and hydrological modeling.	Education and Awareness Programs	High	Ongoing, 2026	Ongoing, integrating FEMA/City developed flood depth risks for roads, buildings, parking lots for 10-yr to 500-yr events.	Water Services, Emergency Management	1 million +	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
62	Use improved flood hazard and flood risk data, develop flow path data, time to crest data, and flood risk data to determine best locations for additional stream gauges and develop better warnings for all gauges to improve response time.	2020	New	This action will be pursued, but there is no schedule at this time.	Education and Awareness Programs	High	Ongoing	Integrating FEMA/City developed flood depth risks for roads, buildings, parking lots for 10-yr to 500-yr events.	Water Services, Emergency Management	1 million +	Unknown
63	Work with local governments and other stakeholders to share data from flood warning systems in multiple jurisdictions	2015	Ongoing	KCMO currently partners with Overland Park, KS, Johnson County, KS, and the Unified Government of Kansas City, KS. KCMO will pursue data sharing with other agencies.	Education and Awareness Programs	High	Ongoing	Ongoing, OPKS, UG, JOCO, KS & KCMO all share telemetry data for all sites and sensors.	Water Services,	Unknown	Unknown
64	Work with local governments and other stakeholders to share data from the flood warning systems and tools in multiple jurisdictions	2020	New	KCMO currently partners with Overland Park, KS, Johnson County, KS, and the Unified Government of Kansas City, KS. KCMO will pursue data sharing with other agencies.	Education and Awareness Programs	High	Ongoing	Ongoing, OPKS, UG, JOCO, KS & KCMO all share telemetry data for all sites and sensors.	Water Services,	Unknown	Unknown
65				Implement projects and procedures to enha	nce resiliency of k	CMO infra	structure agair	st flood damage			
66	Complete a Repetitive Loss Area Analysis to determine Risk and Benefits.	2020	Deferred	This action will be pursued, but there is no schedule at this time.	Education and Awareness Programs	High	Deferred	Deferred no funding, staffing, contracting	Water Services,	Unknown	Unknown
67	Improve roadway structure to mitigate damage from flooding	2020	New	This action will be pursued as funding availability allows.	Structure and Infrastructure Projects	High	Not Determined	As Public Works completes bridges, they meet criteria	Public Works	Unknown	Unknown
68	Provide enhancement to existing and new structures to improve flooding resiliency	2020	New	This action will be pursued as funding availability allows.	Structure and Infrastructure Projects	High	Not Determined		Public Works	Unknown	Unknown
69	Reroute channels to alleviate overflow and mitigate against flooding	2020	New	This action will be pursued as funding availability allows.	Structure and Infrastructure Projects	High	Not Determined	USACE Flood Control Program Implements major corridor.	Public Works Water Services	Unknown	Unknown
70	Research funding to implement flood mitigation procedures and projects	2020	New	This action will be pursued, but there is no schedule at this time.	Structure and Infrastructure Projects	High	Not Determined	Continue working with USACE on mitigation.	Public Works	Unknown	Unknown
71	Research funding to support and educate that flood insurance coverage should be mandatory on all primary structures.		Deferred	This action will be pursued, but there is no schedule at this time.	Not Specified	Not Specified	Deferred	Possible to obtain funding through CTP Program from FEMA R7 by Water Services.	Water Services, Planning Dept	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
72	Support and push for more funding in FEMA Flood Insurance Policies for Increased Cost of Compliance to assist structures substantially damaged by flooding in rebuilding in a manner that will meet NFIP regulatory and/or Local requirements.	2020	New	This action is pursued, but the completion date is based on external agency schedules.	Education and Awareness Programs	High	Ongoing	KCMO, Water Services, as a CTP to FEMA R7, has communicated these items through reports, findings, and related FEMA CTP funded efforts.	Water Services,	Unknown	Unknown
73	Improve and enhance the capability to respond to and mitigate damage from flooding incidents										
74	Identify funding sources and replace damaged barriers to prevent traffic through high water areas thus mitigating the loss of life.	2015	Ongoing	Each department paid out of own budget to obtain new barricades; will carry over into the 2020 plan	Structure and Infrastructure Projects	Medium	Ongoing	Annual maintenance budget replaces damaged barricades.	Public Works, Parks & Rec., Water Services, Emergency Management	Unknown	Unknown
75	5			Improve cor	nmunity resiliency	to flooding					
76	Provide critical services facilities (e.g., nursing homes) with oversight on floodplain management (evacuation plans, discourage building in flood plains, etc.)	2020	New	This action has been pursued, but there is no schedule for a defined SOP at this time.	Education and Awareness Programs	Medium	Not Determined	Critical Facilities are not allowed to be constructed below the 100-yr BFE + 1 foot of freeboard. Historic footprint from past development practices	Planning Dept, Floodplain Management	Unknown	Unknown
7	7		•	Improve flood haz	ard assessments a	nd flood maj	pping				
78	Conduct an in-depth flood risk analysis utilizing HAZUS data and create detailed maps based on GIS technology to identify areas at risk from flooding	2015	Deferred	Action unable to be completed due to limited staffing and funding.	Education and Awareness Programs	High	Deferred	unknown	Water Services	Unknown	Unknown
79	**Coordinate the collection of demographics, economic, watershed, land use, and other data required by the HAZUS-Flood software program and/or GIS systems	2015	Ongoing	Many sources for HAZUS exist. KCMO completed data compilation. The data, however, does change over time, so this project will carry forward to the 2020 plan.	Education and Awareness Programs	High	Ongoing	FEMA CTP funded grant dollars for UMKC GIS Analysis work developed demographic, economic, watershed, land use data. SEMA completed advanced HAZUS analysis for KCMO, but aggregates to census track. Data is needed by structure, road, parking lot etc.	Water Services, Planning Dept	Unknown	Unknown

	Floods										
	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
8	Develop and regularly update a mitigation list for structures, land/parcels, and roads/RoWs with a ranking for these based on depth, severity, and frequency of flooding.	2015	Ongoing	This list is 95% complete for 1) Regulatory FEMA flood Risks, however FEMA's Mitigation Tracker continues to be a one entry system, vs. a database upload by geospatial fields. Due to this KCMO has been unable to move our 11,819 identified community flood risks into FEMA/SMEA systems to improve identification efforts and support for mitigation post disasters. Ultimately KCMO still desires to make this data into an ongoing Notice of Intent in Mass to SEMA/FEMA for risks to have more ability to mitigate flood risks post disaster or through other supporting grant methods.	Education and Awareness Programs	High	Ongoing	FAST based 10-yr, 25-yr, 50-yr, 100-yr, 500-yr Cost vs. benefit for structures, parking and eventually roads being developed. FAST = FEMA software = version 0.1.x FEMA Hazus Team is fixing issues KCMO, and others have reported that prevent mass runs of large tabulated/GIS datasets. The need for this damage/cost vs.Benefit analysis is HIGH, lowering City CIP costs while enlarging the benefits and mitigation a project can achieve. Note, existing data ID's only 20% of community wide flood risks. The rest is unidentified no Cost vs. Benefit.	Water Services, Public Works	Unknown	Unknown
8	**Obtain parcel data for flood boundary areas and enhance vulnerability assessments for these areas	2015	Ongoing	Parcel data, particularly ownership, is constantly changing. Therefore, this is an ongoing action as the data fluctuates.	Structure and Infrastructure Projects	High	Ongoing and completed annually	Repetitive Loss Area's listing is updated annually, reanalyzed and sent to owner's within RLA's.	Water Service, Public Works	Unknown	Unknown
8	2 Update City Stream Buffers based on new regulatory and non-regulatory products' 1% severity or better	2015		Discussions have been occurring between CPD and WSD on these efforts. A second round of Stream Asset Inventory effort is ongoing with the City in partnership with Corps of Engineers. The result will be the base for the buffer regulation update.	Local Plans and Regulations	High	Ongoing	Working on the Stream Asset Inventory.	Water Services	>\$200K	City and Corps of Engineers
8	Use products that classify, identify, and weigh community flood risks and the technological tools developed for them to improve regulation and information sharing to get enhanced mitigation, improvements, and future developments.	2015	Ongoing	Due to limited staff resources, no progress.	Local Plans and Regulations	High	Ongoing	This is on hold now due to staffing and limited resources, requiring additional steps in series to be completed to allow improved regulations and better protect the public.	Water Services	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
84	4 Using city, state, and federal products complete the modernization of city regulatory and non-regulatory floodplains and adopt by the three phases outlined in Action #4 over time	2015	Ongoing	Atlas 14 and PC-SWMM are used for closed systems and HEC-RAS for Little Blue River projects. SEMA has addressed Little Blue River data development comments. Data development is nearly complete. Preliminary mapping tasks have not been funded. SEMA has not worked on Blue River floodplain. The work will not be initiated until the headwaters in Kansas are studied so that SEMA can tie-in the project.	Education and Awareness Programs	High	Ongoing	SEMA MO CTP and FEMA has nearly completed the data development for the Little Blue River floodplains to Atlas 14 with 2D Hec-Ras and PC/EPA-SWMM allowing attenuation & storage. preliminary mapping tasks have not been funded. Work on the Blue River floodplain has not been initiated until a study is done for the headwaters in Kansas.	Water Services	Unknown	Unknown
8:	Using city, state, and federal products develop, analyze, and prioritize flood risk, severity, and frequency for structures, land/parcels, and roads/RoWs. Continuously improve with 3 key phases of development by: 1.) Regulatory floodplain areas, 2.) Non- regulatory flood risk Areas 3.) Upstream Hydrologic Areas without hydraulics using flow accumulation pathways to 0.5-acre drainage.	2015	Ongoing	1) Floodplain Areas has been completed for 95% of FEMA Regulatory Zones in KCMO for 10%, 4%, 2%, 1% and 0.2% annual chance storms. This covers less than 33% of the City's territory though, as Regulatory floodplain stops on tributaries smaller than 1 square mile. 2) Non-Regulatory has tested new 2D methods in 33 square miles of KCMO including Second Cr., First Cr., and the Northeast Industrial District. Additional analysis can be done for East Bottom Levee area.	Education and Awareness Programs	High	Ongoing	This effort is on-going and continues to improve as more mature models and GIS data become available, i.e. SWMM and HECRAS models. With these, flooding predictions can be made and analyzed for future risk planning.	Water Services	Unknown	Unknown
86	Work to develop these map, data, and list products for GIS tools for direct use by public and private needs to fulfill multiple needs for information to aid flood mitigation	2015	Ongoing	This has not begun due to ongoing development of the tools and products as discussed above. Products will remain internal for some time. Disclaimer requirements will exist when these flood risks are made available. Since the data is being developed this is an ongoing effort.	Education and Awareness Programs	High	Ongoing	Many products developed, under development and partially developed. More testing required for accuracy prior to public release.	Water Services	Unknown	Unknown
87	7			Improve flood hazard assessments and f	ood mapping to a	ssist in mitig	ating damage f	rom flooding			
88	Classify, identify, analyze, and weigh community flood risks to improve regulation, analysis, identification, prevention, mitigation, mprovements, and future development in ways that avoid flood risk.	2020	New	This action generally involves an extensive project; no completion date is foreseeable currently. However, KCMO continues to partner with six neighboring cities and a county to work with USACE to conduct a study to analyze flood risks and formulated mitigation strategies for the Little Blue River basin	Education and Awareness Programs	High	Ongoing	A collaborative effort between KCMO departments and external agencies to provide local data and ideas for the study.	Water Services	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
89	Develop 1D/2D flood risk products for: 1.) Regulatory floodplain areas, 2.) Non- regulatory flood risk Areas 3.) Upstream Hydrologic Areas without hydraulics using flow accumulation pathways to 0.5 acre drainage.	2020	New	This action involves an extensive project; no completion date is foreseeable currently. Water Deparatment is collaborating with USGS, using 2D HEC-RAS modeling and GIS to update the flood inundation maps for Blue River and its two tributaries – Brush Creek and Indian Creek.	Local Plans and Regulations	High	Ongoing	SEMA MO CTP has funded and is completing 1D/2D floodplains and flood risk products in Little Blue River and Blue River.	Water Services	Unknown	Unknown
90	Develop 1D/2D modeling paradigms and procedures to fully identify all community flood risk for all the community.	2020	New	This action is based on the previous action.	Local Plans and Regulations	High	Ongoing	Ongoing	Water Services	Unknown	Unknown
91	Research and implement improvements to the language of Chapter 61 and adopt these new 1D/2D models, studies, and identified flood risks in there complete geospatial and modeling forms.	2020	New	This action is based on the previous action.	Local Plans and Regulations	High	Ongoing	unknown	Water Services	Unknown	Unknown
92	Update the City Stream Buffers using the above products with appropriate scientifically grounded methods to protect the community and public.	2020	New	Water Services Department is collaborating with USACE to conduct a 2 nd round of a city-wide stream asset inventory. The 1 st round was conducted in 2002-2005, the result of which formed the scientific base for the Stream Buffer Ordinance. The current effort is anticipated to help to update the stream buffer.	Local Plans and Regulations	High	Deferred	Updating the stream buffer will require the use of ortho imagery to recreate the stream centerline layer in GIS. The task of recreating and verifying the stream centerline will take approximately 18 months to complete, from project conception and SOW to final deliverable.	Water Services	Unknown	Unknown
93	Use 1D/2D modeling methods and further geospatial analysis to identify flood depth, velocity, storage, shear stress risks for all flood risk areas.	2020	New	This action is based on the previous action listed in Row 89.	Local Plans and Regulations	High	Ongoing	Ongoing	Water Services	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
94	Use the modeling products developed to improve FEMA based HAZUS and BCA Analysis of flood risks and costs vs. benefits of mitigation /prevention within the community.	2020	New	This action is based on the previous action listed in Row 89.	Local Plans and Regulations	High	Ongoing	FAST based 10-yr, 25-yr, 50-yr, 100-yr, 500-yr Cost vs. benefit for structures, parking and eventually roads being developed. FAST = FEMA software = version 0.1.x FEMA Hazus Team is fixing issues KCMO, and others have reported that prevent mass runs of large tabulated/GIS datasets. The need for this damage/cost vs. Benefit analysis is HIGH, lowering City CIP costs while enlarging the benefits and mitigation a project can achieve. Note, existing data ID's only 20% of community wide flood risks. The rest is unidentified no Cost vs. Benefited. High Benefits vs. Cost = Grants.	Water Services	Unknown	Unknown
95	Using the 1D/2D modeling methods and further geospatial analysis identify areas of erosive, slope or meander-based risk to add to flood risk knowledge to support development risk identification.	2020	New	This action is based on the previous action listed in Row 89.	Local Plans and Regulations	High	Ongoing	Ongoing	Water Services	Unknown	Unknown
96	Work to develop list products as GIS tools for direct use by public and private parties to fulfill multiple needs for information to aid flood mitigation.	2020	New	This action is based on the previous action listed in Row 89.	Education and Awareness Programs	High	Ongoing	Ongoing, further support from IT, GIS Division needed.	Water Services	Unknown	Unknown
97				Improve hazard assessment	information for da	ıms within K	Cansas City, MO	0			
98	Analyze all dams, their capacity, and failure triggers in or affecting Kansas City, MO to estimate downstream risk to life and property.	2020	Deferred	This action involves an extensive project; no completion date is foreseeable at this time. But the City is starting to compile a dam inventory.	Education and Awareness Programs	Medium	Deferred	Data is being collected.	Water Services	Unknown	Unknown
99	Collaborate with MDNR and US Army Corps methods to develop and determine inundation mapping for dams' failure to reduce loss of life from flooding.	2020	Deferred	This action involves an extensive project and external agencies' schedules; no completion date is foreseeable currently.	Education and Awareness Programs	Medium	Deferred	On hold until data and models above are completed	Water Services	Unknown	Unknown
100	Identify and estimate the height of all dams within the Kansas City metropolitan area	2015	Deferred	Additional components and resources needed to obtain the data; will continue during the 2020 cycle	Structure and Infrastructure Projects	Medium	Deferred	On hold until data and models above are completed	Water Services		

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
101	Include maps and information from inundation studies and dam emergency action plans in local emergency operations and land use plans	2015	Completed	Current released maps are used in LEOP; will continue during the 2020 Hazard Mitigation Plan's cycle (if new information released)	Local Plans and Regulations	High	2018	Completed work via EM and USACE for major dams.	Emergency Management		
102	Obtain assessed valuation data and population figures for areas in the vicinity of dam inundation pathways so that enhanced vulnerability assessments may be conducted describing the number of lives and amount of property at risk from dam failure	2015	Deferred	Additional components and resources are needed to obtain the data; will continue during the 2020 cycle	Local Plans and Regulations	Medium	Deferred	On hold until data and models above are completed	Water Services		
103	Prioritize by GIS the size and volume of the dams within the Kansas City metropolitan area under normal and full volume conditions	2015	Deferred	Additional components and resources needed to obtain the data; will continue during the 2020 cycle	Structure and Infrastructure Projects	Medium	Deferred	On hold until data and models above are completed	Water Services		
104	Using the latest information from many resources, develop GIS layers and maps indicating the locations, inundation pathways, and hazard potential of known dams within the Kansas City metropolitan area.	2020	Deferred	This action is dependent upon previous actions, which makes a completion date difficult to determine currently.	Local Plans and Regulations	High	Deferred	On hold until data and models above are completed	Water Services		
105	Using the latest information from the NID, MDNR's inventory of dams, and other resources, develop GIS layers and maps indicating the locations, inundation pathways, and hazard potential of known dams within the Kansas City metropolitan area.	2015	Completed	2017 - GIS was developed; this will be revisited during the 2020 Hazard Mitigation Plan's Goals and Actions	Local Plans and Regulations	High	2017	Done	Emergency Management		
106	Work with MDNR's Water Resources program and USACE to determine which dams in the Kansas City regional area have had inundation studies, inundation pathway maps, and emergency action plans developed	2015	Ongoing	No progress was made. (Last year: working with USACE to obtain the information)	Structure and Infrastructure Projects	High	Ongoing	Ongoing	Water Services		
107	7			Improve KCMO's ability to mitigate da	mage from hazar	dous materia	als released du	e to flooding			
108	Ensure personnel have proper training (SDS, Hazcom, HAZWOPER, etc.) to respond and mitigate the damage from hazardous material release due to flooding.	2020	New	Training is an ongoing process as permitted by appropriate funding, but is conducted to meet and exceed all components of the current NFPA 470-2022, OSHA 1910.120, and EPA 311 standards and regulations.	Education and Awareness Programs	High	Ongoing	Ongoing	Fire Dept	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
101	Include maps and information from inundation studies and dam emergency action plans in local emergency operations and land use plans	2015	Completed	current released maps are used in LEOP; will continue during the 2020 Hazard Mitigation Plan's cycle (if new information released)	Local Plans and Regulations	High	2018	Completed work via EM and USACE for major dams.	Emergency Management		
102	Obtain assessed valuation data and population figures for areas in the vicinity of dam inundation pathways so that enhanced vulnerability assessments may be conducted describing the number of lives and amount of property at risk from dam failure	2015	Deferred	Additional components and resources are needed to obtain the data; will continue during the 2020 cycle	Local Plans and Regulations	Medium	Deferred	On hold until data and models above are completed	Water Services		
103	Prioritize by GIS the size and volume of the dams within the Kansas City metropolitan area under normal and full volume conditions	2015	Deferred	Additional components and resources needed to obtain the data; will continue during the 2020 cycle	Structure and Infrastructure Projects	Medium	Deferred	On hold until data and models above are completed	Water Services		
104	Using the latest information from many resources, develop GIS layers and maps indicating the locations, inundation pathways, and hazard potential of known dams within the Kansas City metropolitan area.	2020	Deferred	This action is dependent upon previous actions, which makes a completion date difficult to determine currently.	Local Plans and Regulations	High	Deferred	On hold until data and models above are completed	Water Services		
105	Using the latest information from the NID, MDNR's inventory of dams, and other resources, develop GIS layers and maps indicating the locations, inundation pathways, and hazard potential of known dams within the Kansas City metropolitan area.	2015	Completed	2017 - GIS was developed; this will be revisited during the next cycle of the Hazard Mitigation Plan's Goals and Actions	Local Plans and Regulations	High	2017	Done	Emergency Management		
106	Work with MDNR's Water Resources program and USACE to determine which dams in the Kansas City regional area have had inundation studies, inundation pathway maps, and emergency action plans developed	2015	Ongoing	No progress was made (Last year: working with USACE to obtain the information)	Structure and Infrastructure Projects	High	Ongoing	Working on getting the above data and models	Water Services		
107				Improve KCMO's ability to mitigate da	mage from hazar	dous materi	als released du	e to flooding			
108	Ensure personnel have proper training (SDS, Hazcom, HAZWOPER, etc.) to respond and mitigate the damage from hazardous material release due to flooding.	2020	New	This training is provided on a regular basis, but funding sources to provide the training is being researched.	Education and Awareness Programs	High	Ongoing	Ongoing	Fire Dept	Unknown	Unknown

Mitigation Goals and Action Steps										
· · ·	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
Increase resiliency of storage mechanism for hazardous materials against a release due to flooding damage	2020	New	Storage of hazardous materials is a continuous event and performed per the UBC/UFC as well as state and federal guidelines as funding allows. More a function for codes administration, but Fire does work with codes inspection as warranted and needed.	Structure and Infrastructure Projects	High	Not Determined	Requires update to City code and regulations	Fire Dept	Unknown	Unknown
Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding.	2020	New	Hazmat release and containment training ongoing as funding is identified. No funding is identified at this time.	Structure and Infrastructure Projects	High	Not Determined	unknown	Fire Dept	Unknown	Unknown
Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding.	2020	New	Hazmat release best practices research is ongoing as funding is identified and time allows. No funding is identified at this time.	Education and Awareness Programs	High	Ongoing	Ongoing	Fire Dept	Unknown	Unknown
Research and implement equipment and procedures for KCFD to efficiently contain hazardous material incidents resulting from flooding.	2020	New	Hazmat release and containment equipment and training ongoing as funding is identified. No funding is identified at this time.	Structure and Infrastructure Projects	High	Not Determined	unknown	Fire Dept	Unknown	Unknown
Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding.	2020	New	Hazmat release and containment training ongoing as funding is identified. No funding is identified at this time.	Education and Awareness Programs	High	Not Determined	unknown	Fire Dept	Unknown	Unknown
Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding.	2020	New	Hazmat release and containment training ongoing as funding is identified. No funding is identified at this time.	Education and Awareness Programs	High	Not Determined	unknown	Fire Dept	Unknown	Unknown
			Improve reliability and capability of tel	ecommunications	network to	resist the effect	s of flooding			
Add redundancy and multiple pathways for fiber network to ensure continued operation during flooding	2020	New	This is an extensive project, and innovations change regularly. KCMO will continue to research and implement the best practices.	Structure and Infrastructure Projects	High	Ongoing	Ongoing as new facilities are connected and redundant links are established.	Police Dept, Emergency Management	Unknown	Unknown
	Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Research and implement equipment and procedures for KCFD to efficiently contain hazardous material incidents resulting from flooding. Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding. Add redundancy and multiple pathways for fiber network to ensure continued operation during	hazardous materials against a release due to flooding damage Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Research and implement equipment and procedures for KCFD to efficiently contain hazardous material incidents resulting from flooding. Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding. Add redundancy and multiple pathways for fiber network to ensure continued operation during	Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Research and implement equipment and procedures for KCFD to efficiently contain hazardous material incidents resulting from flooding. Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding. Add redundancy and multiple pathways for fiber network to ensure continued operation during	hazardous materials against a release due to flooding damage Continuous event and performed per the UBC/UFC as well as state and federal guidelines as funding allows. More a function for codes administration, but Fire does work with codes inspection as warranted and needed. Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. New Hazmat release and containment training ongoing as funding is identified at this time. Hazmat release best practices research is ongoing as funding is identified at this time. New Hazmat release and containment equipment and procedures for KCFD to efficiently contain hazardous material incidents resulting from flooding. Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials release due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials release and containment training ongoing as funding is identified. No funding is identified at this time. Hazmat release and containment training ongoing as funding is identified. No funding is identified at this time. Improve reliability and capability of tel Add redundancy and multiple pathways for fiber network to ensure continued operation during	hazardous materials against a release due to flooding damage Continuous event and performed per the UBC/UFC as well as state and federal guidelines as funding allows. More a function for codes administration, but Fire does work with codes inspection as warranted and needed. Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Research training and funding for training for methods and best practices to respond and mitigate the damage from hazardous materials released due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding. Research training and funding for training for methods and best practices to secure hazardous materials from release due to flooding. New	hazardous materials against a release due to flooding damage Continuous event and performed per the UBC/UFC as well as state and federal guidelines as funding allows. More a function for codes administration, but Fire does work with codes inspection as warranted and needed. Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding.	hazardous materials against a release due to flooding damage Continuous event and performed per the UBC/UIFC as well as state and feedral guidelines as funding allows. More a function for codes administration, but Fire does work with codes inspection as warranted and needed. Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to secure hazardous materials against release due to flooding. New	hazardous materials against a release due to flooding damage Continuous event and performed per the UBC/UPC as well as state and federal guidelines as finding allows. More a function for codes administration, but I're does work with codes imspection as warranted and needed. Provide KCFD personnel training best on the latest lessons learned and best practices in containing hazardous materials released due to flooding. Provide KCFD personnel training on methods to receure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to receure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to receure hazardous materials against release due to flooding. Provide KCFD personnel training on methods to receure hazardous materials fred and implement equipment and procedures for KCFD to efficiently contain hazardous materials released under the fooding. Provide KCFD to efficiently contain hazardous materials released to the flooding of the fooding of the fooding of the fooding of the fooding of the flooding of the	hourardouing atmarged and performed per the flooding damage Delemined Del	hazardous materials ugainst a release due to flooding damage Continuous event and performed per the Uniformed state and federal guideline as funding allows. More a funding allows. More a funding allows. More a funding is identified. No funding is identified at this time. Provide KCFD personnel truining best on the lastst lessons learned and hear practices in containing hazardous materials released due to flooding. Provide KCFD personnel truining on methods are containing hazardous materials guints release due to flooding. Provide KCFD personnel truining on methods are containing hazardous materials guints released due to flooding. Provide KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining on methods are provided to the flooding. Provided KCFD personnel truining and funding for training for methods and best practices or respond and multiple flooding. Provided KCFD personnel truining for methods and best practices for respond and multiple flooding. Provided KCFD personnel truining for methods and best practices for respond and multiple flooding. Provided KCFD personnel truining for methods and best practices to respond and multiple flooding. Provided KCFD personnel truining for methods and best practices to respond and multiple flooding. Provided KCFD personnel truining for methods and best practices to respond and multiple flooding. Provided KCFD personnel truining for methods and best practices to respond and multiple pathways for the provided KCFD personnel provided k

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
117				Improve the ca	apabilities of wate	r rescue tean	ns				
118	Identify and conduct training courses and exercises for water rescues in flood waters	2015	Ongoing	Training for personnel is continual and refreshed constantly.	Education and Awareness Programs	High	Ongoing	unknown	Fire Dept	Unknown	Unknown
119	Identify funding sources to enhance the operational capabilities of water rescue teams in conducting rescues in flood waters	2015	Ongoing	Capability improvement diminished due to the defunding of USAR teams. FD will continue to pursue possible funding sources.	Structure and Infrastructure Projects	High	Ongoing	unknown	Fire Dept	Unknown	Unknown
120	Improve the capabilities of water rescue teams through providing equipment and other means to conduct flood water rescues	2015	Ongoing	Capability improvement diminished due to the defunding of USAR teams. FD will continue to pursue possible funding sources.	Structure and Infrastructure Projects	High	Ongoing	unknown	Fire Dept	Unknown	Unknown
121				Improve the capability of the Aviati	on Department to	mitigate the	damage from	flooding			
122	As funding becomes available, research elements for development of a Stormwater Master Plan at the MKC.	2020	New	This action is dependent upon funding; no anticipated completion date currently.	Structure and Infrastructure Projects	High	Not Determined	unknown	Aviation	1,136,363	Federal
123	As needed, improve relief well systems at MKC to counter damage from flooding.	2020	Ongoing	Wells are improved/repaired as funding and resources become available.	Structure and Infrastructure Projects	High	Not Determined	Ongoing	Aviation	1,556,880	Federal
124	Continue to research barricade techniques and products to protect against flooding at the Downtown Airport and purchase and/or implement as appropriate.	2020	Ongoing	This action is ongoing as funds and resources become available.	Structure and Infrastructure Projects	High	Not Determined	unknown	Aviation	See above	Federal
125	Enhance and upgrade equipment and protocols to respond to and mitigate the damage from flooding	2015	Ongoing	2019 purchased new sand barrier equipment; added new wells. Will carry this action over to 2020 plan.	Structure and Infrastructure Projects	High	Ongoing	unknown	Aviation	Unknown	Unknown
126	Identify alternate staging and evacuation areas for personnel and equipment in the event of flooding	2015	Completed	Additional areas were located. Due to changing ownership and other factors, we will continue to pursue new areas as needed.	Structure and Infrastructure Projects	High	2019	unknown	Aviation	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
127			I	mprove the capability of the Aviation Depar	tment to mitigate	the damage f	from flooding o	lue to levee failure			
128	Enhance and upgrade equipment and protocols to respond to and mitigate the damage from flooding from levee failure	2015	Ongoing	Wheeler Airport will continue to enhance and improve its capabilities as technology and resources allow.	Structure and Infrastructure Projects	High	Ongoing	Ongoing	Aviation		
129	Identify alternate staging and evacuation areas for personnel and equipment in the event of flooding from levee failure.	2015	Completed	Additional areas were located. Due to changing ownership and other factors, we will continue to pursue new areas as needed.	Local Plans and Regulations	Medium	2018	Completed	Aviation		
130				Improve the structural integrity of dams	to reduce the thre	eat of dam fa	ilures, which c	ause flooding			
131	Develop and implement codes and ordinances requiring minimum site and construction standards for dams	2015	Deferred	funding for research not available; will carry over to the next round of the plan	Local Plans and Regulations	Low	Deferred	Covered by the state of Missouri Dam and Reservoir Safety Program	Water Services		
132	Encourage dam owners to repair or upgrade their dams, particularly those that are more 50 years old, by offering them a reduction in local taxes or similar financial incentive	2015	Deferred	no resources to provide incentives or assistance	Structure and Infrastructure Projects	Medium	Deferred	Deferred	Water Services		
133	Identify and pursue grants to repair or improve dams	2015	Deferred	no grants available	Structure and Infrastructure Projects	Low	Deferred	Deferred	Water Services		
134	Mandate for regular repairs and improvements to dams within the Kansas City metropolitan area owned by the city and privately	2015	Ongoing	Water Dept. inspects stormwater detention/retention basins. If any issue is identified with an associated dam, the issue will be pursued for correction.	Structure and Infrastructure Projects	High	Ongoing	Ongoing, via MS4 group which is supported by Neighborhoods which holds the authority to require these items per Chapter.	Neighborhoods Water Services		
135				Improve warning and evacuation systems	and procedures i	n the event o	f flooding due	to dam failure			
136	Adopt policies, codes, or ordinances to discourage development in the vicinity of dam inundation zones	2015	Deferred	Working with USACE to get the inundation maps. However, adopting policies will take time and resources.	Local Plans and Regulations	Medium	Ongoing	Deferred	Water Services		
137	Where feasible, add and maintain outdoor warning systems to campgrounds and other recreational areas downstream from dams	2015	Deferred	no funding available; will carry over to the next round of plan with broader, more accurate action	Structure and Infrastructure Projects	Medium	Deferred	Deferred	Water Services		
138				Incorporate strategies into KCMO	development plan	s to mitigate	damage from	flooding			
139	Incorporate mitigation strategies into the development of KCMO's Comprehensive Plan	2020		Area plans guides development away from potential hazards including floodplains.	Local Plans and Regulations	Medium	Not Determined	Ongoing	Planning Dept	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
140				Increase public awareness of health	and disease relate	d issues asso	ciated with floo	od waters			
141	Collect and disseminate public education materials that address health and disease issues associated with flood waters	2015	Ongoing	Information is provided by the Health Dept. during flooding incidents.	Education and Awareness Programs	Medium	Ongoing	Ongoing through messaging systems, public outreach efforts, and publications.	Emergency Management, Health Dept.	Unknown	PHP/ CRI/ Levee Funds/ Core PH Funds/ Water Services/ City
142	Identify funding resources for mechanisms to disseminate information to the public regarding protection against health and disease issues associated with flood waters	2015	Ongoing	The Health Department is continuously researching funding sources.	Education and Awareness Programs	Low	Ongoing	unknown	Health Dept.	Unknown	PHP/ CRI/ Levee Funds/ Core PH Funds/ Water Services/
143	Utilize various methods of social media to inform and educate the public regarding health and disease issues associated with flood waters	2015	Ongoing	Information is provided by the Health Dept. during flooding incidents.	Education and Awareness Programs	Low	Ongoing	unknown	Health Dept.	Unknown	City Levee Funds/ Core PH Funds/ Water Services/ City
144	Integrate flood mitigat	ion stra	tegies with pr	ojects and activities designed to protect, rest	ore, or enhance eco	systems and	the environm	ent and/or create recreational opportu	nities for the communit	y.	City
145	Consider alternative uses for floodplains and flood prone areas that have less impact from flooding	2015	Ongoing	Although KCMO has considered many alternate uses, future possibilities may arise. This will be carried over to the 2020 plan. CPD reviews private projects.	Natural Systems Protection	Medium	Ongoing	Ongoing	Planning Dept	Unknown	PIAC, other
146	Consider the construction of detention basins, small lakes, and greenways or riparian corridors in areas of new development to channel and catch storm water, thereby reducing the likelihood of flooding	2015	Ongoing	KCMO is exploring a more holistic approach to this goal. Stormwater BMP construction has been a requirement where applicable.	Natural Systems Protection	High	Ongoing	Ongoing	Water Dept.	Unknown	PIAC, other

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
14	Develop partnerships between emergency management, floodplain management, and environmental groups to provide education regarding the benefits of collaboration	2015	Ongoing	This action covers multiple actions and will thus be reflected in the 2020 plan. Much progress has been made.	Education and Awareness Programs	Medium		Continuously expanding and improving connections with various stakeholders.	Emergency Management, Water Services	Unknown	Unknown
14	Identify funding sources for the acquisition of flood prone land of environmental, recreational, and flood mitigation uses	2015	Ongoing	A funding source was identified to cover 20 properties on a flood prone zone. However, none of the properties was eligible and the relevant federal policy has changed to remove that funding program.	Protection	High	Ongoing	NA	Water Services, Emergency Management	Unknown	NA
14	9 Identify specific programs and activities that can be developed and implement with stakeholders	2015	Ongoing	WSD is working with Corps of Engineers on the City-wide Stream Asset Inventory intending to use the output as the base to update the Stream Buffer Ordinance.	Education and Awareness Programs	Medium	Ongoing	Ongoing	Water Services	\$400K	Stormwater Fee
15	In concert with existing comprehensive and land use plans, develop a strategy for acquiring flood prone property for use as open space or park land	2015	Ongoing	Much land has been acquired; means of less costly acquisition have been explored. This will carry over to the next round of the plan.	Natural Systems Protection	Medium	Ongoing	Ongoing	Planning Dept	Unknown	PIAC, other
15	Research controlling runoff to original native conditions with respect to peak flow and velocity.	2020	New	KCMO is working with MARC and other local municipalities in the region to update the Regional APWA5600 and Stormwater BMP manual. A draft was produced and being reviewed.	Not Specified	Not Specified	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by Mid- America Regional Council (MARC)	Metropolitan Planning Organization/ Water Service	Unknown	Unknown
15	Seek better methods to reduce runoff volume increases caused by development to be more like native conditions through finding a lower flow rate and velocity that can reduce erosive impacts due to larger total volume of runoff.	2020	New	KCMO is working with MARC and other local municipalities in the region to update the Regional APWA5600 and Stormwater BMP manual. A draft was produced and being reviewed.	Natural Systems Protection	Medium	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Metropolitan Planning Organization/ Water Service	Unknown	Unknown
15	Seek storage, infiltration, roughness, and soil amendment methods of slowing, reducing, infiltrating, and storing runoff including reduction of impervious parking.	2020	New	KCMO is working with MARC and other local municipalities in the region to update the Regional APWA5600 and Stormwater BMP manual. A draft was produced and being reviewed.	Natural Systems Protection	Medium	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Metropolitan Planning Organization/ Water Service	Unknown	Unknown
15	Seek to reduce collection by inlets and conveyance by pipes where development or redevelopment creates runoff volumes greater than native or existing runoff totals.	2020	New	KCMO is working with MARC and other local municipalities in the region to update the Regional APWA5600 and Stormwater BMP manual. A draft was produced and being reviewed.	Natural Systems Protection	Medium	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Metropolitan Planning Organization/ Water Service	Unknown	Unknown
15	Work with area environmental groups and other stakeholders to develop and implement flood mitigation strategies that also promote the restoration and/or sustainability of fish and wildlife habitats	2015	Deferred	KCMO is working with MARC and other local municipalities in the region to update the Regional APWA5600 and Stormwater BMP manual. A draft was produced and being reviewed.	Natural Systems Protection	Medium	Deferred	Ongoing, Update to APWA 5600 Storm water underway by MARC	Metropolitan Planning Organization/ Water Service	Unknown	PIAC, other

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
15	Mitigate flooding damage to public facilities										
15	7 Identify funding sources to implement flood damage mitigation mechanisms such as water pumping equipment	2015	Ongoing	Water Department is working on improving the existing pumping capacity.	Structure and Infrastructure Projects	Medium	Ongoing	Ongoing	Water Services	Ongoing	Sewer fund
1:	Implement flood damage mitigation mechanisms such as water pumping equipment	2015	Ongoing	Water Department is working on improving the existing pumping capacity.	Structure and Infrastructure Projects	Medium	Ongoing	Ongoing,	Water Services	Ongoing	Ongoing
1:	Research the feasibility of installing water pumping equipment in public facilities to reduce the damage from minor flooding	2015	Ongoing	Water Department is working on improving the existing pumping capacity.	Structure and Infrastructure Projects	Medium	Ongoing	Ongoing,	Water Services	Ongoing	Ongoing
16	Participate in and ensure compliance with flood	mitigat	ion and flood	olain management programs.							
16	Obtain the latest copies of the flood insurance rate maps (FIRMs), floodplain maps, and similar documents	2015	Completed	KCMO has obtained the most recent maps (2017 and 2023, respectively). Any changes in the floodplain boundary will be realized when generating a new layer of affected structures that are affected by the new floodplain boundary. This process is repeated yearly.	Local Plans and Regulations	High	2016	On going	Planning Dept., Water Services	Unknown	Unknown
16	Participate in the National Flood Insurance Program (NFIP) and Community Rating System (CRS)	2015	Completed	KCMO continues to participate in the NFIP and the Community Rating System. This will be carried over to the 2020 plan.	Local Plans and Regulations	High	2019	On going	Planning Dept., Water Services	Unknown	Stormwater fee
16	**Continue efforts to train staff and specialize to become a Certified Technical Partner with FEMA.	2020	Ongoing	WSD continues to improve its staff such as through Certified Technical Partner training.	Education and Awareness Programs	High	Ongoing	Water Services, Stormwater Engineering Services Division became a Certified Technical Partner through FEMA.	Water Services	Unknown	Stormwate r fee
16	**Coordinate and fund with private partners to obtain the latest copies of the flood insurance rate maps (FIRMs), and other GIS products. Add other supporting information within a Flood Risk component of City's Parcel Viewer Mapper.	2020	New	This is an extensive project with multiple external agencies, and a completion date cannot be determined at this time.	Education and Awareness Programs	High	Ongoing	All of this is digitally available for download online through FEMA's Map Service Center. https://msc.fema.gov/portal/home	Water Services	Unknown	Unknown
16	**Improve Floodplain Administration through providing more tools for the administrators, public, and development that easily, technically inform them of flood risk and requirements.	2020	Ongoing	Improvements are constantly being made.	Education and Awareness Programs	High	Not Determined	Ongoing, via Water Services	Planning Dept., Floodplain Manager, Water Services	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
166	**Improve Information Bulletin information relating to Floodplain Regulatory compliance and processes.	2020	Ongoing	The Information Bulletin is improved as new requirements are adopted.	Local Plans and Regulations	High	Not Determined	Ongoing,	Planning Dept., Floodplain Manager	Unknown	General fund
167	**Participate in the Community Rating System (CRS) and plan its stages of improvement and needs to seek support and funding.	2020	Ongoing	This is an ongoing action as circumstances and requirements change.	Local Plans and Regulations	High	Ongoing	KCMO has been in the CRS program since 2009	Water Services, Planning Dept., Floodplain Manager	Unknown	Unknown
168	**Participate in the National Flood Insurance Program (NFIP)	2020	Ongoing	This is an action performed on an annual basis.	Local Plans and Regulations	High	Ongoing	Ongoing	Planning Dept., floodplain manager, Water Services	Unknown	Unknown
169	Reduce flood relate	ed dam	age to public a	and private property in flood prone areas thr	ough structural an	d nonstruct	ural retrofits, p	revention of development within, or r	emoval of property		
170	**Adopt ordinances prohibiting private development in flood plains or flood- prone areas.	2020	New	Unknown timeframe for this action.	Local Plans and Regulations	High	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Planning Dept., Water Services	Unknown	Unknown
171	**As funding allows, repetitive flood loss properties or structures will, in flood prone areas, be targeted for buyout or other mitigations that meet FEMA and local Minimums of protection for base flood elevations and freeboard.		New	Buyouts occur as funding becomes available and varies by property. Currently, an effort to buy out 20 RLP structures along the Town Fork Creek was cancelled due to both a change in a relevant federal practice and ineligibility of the properties.	Not Specified	Not Specified	Ongoing	Water Services, Facilities Engineering Division is operating the CTP and CRS Programs. With completion of the FAST analysis or with a much slower, but possible FEMA Benefit Cost Analysis effort, project by project, Grant submittals can be made justifying these solutions. 50% to 90% federal funding possible with high benefit to cost rations that can compete for funds.	Water Services, Floodplain Manager	\$350K	PIAC
172	Encourage utility providers to assess their facilities, distribution systems, etc. for vulnerability to flooding and, if necessary, retrofit or modify them to decrease vulnerability.	2020	New	Completion date is based on external agency timelines.	Structure and Infrastructure Projects	Medium	Ongoing	Managed through the permit processes of the City.	Water Services, Emergency Management	Unknown	Unknown
173	For public facilities, seek to modernize to FEMA regulatory compliance, even when not required, if cost benefit justifies.	2020	Ongoing	This action is accomplished as funds and resources become available.	Not Specified	Not Specified	Ongoing	Related efforts continue within Water Services daily. Two or more major facilities are in design for these and working to meet current modernized regulations.	Water Services	Unknown	Unknown

	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
17	Identify funding sources to implement flood 4 damage mitigation mechanisms.	2020	New		Structure and Infrastructure Projects	High		Ongoing, Grants, PIAC, Go-Bonds, USACE	Water Services	Unknown	Unknown
17	Levy fees on non-public use development in floodplains or flood-prone areas to finance flood mitigation, preparedness, response, and recovery actions.	2020	Deferred	This action may be considered when support is generated.	Local Plans and Regulations	High	TBD	Need Legal Determination based on Missouri Law	Planning Dept	Unknown	Unknown
17	Provide funding for water and wastewater districts to elevate vulnerable equipment, or implement other modifications, at water and wastewater facilities to FEMA and other standards.	2020	New	This action is to be accomplished as time and resources allow.	Not Specified	Not Specified	Ongoing	Ongoing	Water Services	Unknown	Unknown
17	Reduce/mitigate the risk of flooding on public facilities in flood-prone areas.	2020	New	This action is to be accomplished as time and resources allow.	Structure and Infrastructure Projects	High	Ongoing	Ongoing	Water Services	Unknown	Unknown
17	Require development identify its frequency and severity of risk and base flood elevations per NFIP and City adopted APWA standards and require appropriate local community freeboard.	2020	New	Per current ordinance and 1 ft free board, this has been accomplished.	Local Plans and Regulations	High	Ongoing	Funding, Review, Inspection, Enforcement, and regulatory improvement needs exist. In house technologies supporting developers and reviewer needs would have the most benefit vs. cost.	Planning Dept., Water Services	Unknown	Unknown
17	Research and implement methods to continually improve Chapters and standards to better identify flood risks to better inform and prevent harm to or from development or redevelopment.	2020	New	Participating in a regional effort to update the APWA 5600 and BMP manual.	Not Specified	Not Specified	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Planning Dept., Water Services	Unknown	Unknown
18	**Use methods to encourage homeowners and businesses to reduce/mitigate the risk of flooding for their structures.	2020	New	This was done through communication with RLP owners through mailed letters and with 140,000 customers through bill inserts.	Not Specified	Not Specified	Ongoing	CRS Program efforts to reach public, repetitive loss areas and provide Q&A, in field support and recommendations to public by mails. Online support and contacts. Utility Inserts also provide information, contacts, and links for help.	Water Services, Planning Dept.	Unknown	Unknown

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & 2024 Annual Review/Update	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
18	A . C 1' 11	T T	ongoing Ongoing	Studies have shown that, due to population density, buyout may not always be the most efficacious means in all cases. This is a Benefit to Cost Analysis Ratio determination, where Benefits = the damages and costs = the proposed mitigation/solution. 1.0 = potential for Federal Grants. Buyout, elevation, dry floodproofing (commercial, industrial) and wet floodproofing options may have better Benefit to Cost analysis ratios. Also see Row 171 for the status.	Structure and Infrastructure Projects	Low	Ongoing	Reduces the cost of repetitive damages through structural and nonstructural retrofits and removal of structures on flood- prone property. Historic Development in KCMO often has extremely high Benefits (Damages) vs. Costs (mitigation proposed). BCAs of 9.x or greater to 1 exist in KCMO. FAST is crucial to analysis of this. analysis requires 10-yr to 500-yr flood depth data for structures. KCMO has developed this, but needs FEMA FAST completed to do mass depth to damage curve analysis.	Water Services, Planning Dept.	Unknown	PIAC, Water Services, Other
18	**Elevate public facilities in flood prone areas and encourage private sector facilities to do likewise.	2015	Ongoing	KCMO continues to locate and elevate public but critical facilities as funding is available. KCMO realizes that flood depth data for roads may be more accurate than flood depth data for structures.	Structure and Infrastructure Projects	High	Ongoing	Reduce flood- related damage to property by elevating structures above floodplains. See Benefit Cost Analysis work and flood depth, frequency work by Water Services	Water Services	Unknown	All departments
18	Encourage homeowners and businesses in flood- prone areas to elevate mechanical systems (i.e., furnaces, hot water heaters, electrical panels, etc.).		Ongoing	This is done through our education efforts.	Education and Awareness Programs	High	2017, Ongoing	Done annually within mailers and collected, supported by e-mail and phone contacts for Q&A and field investigation and support with flood products for any owner that calls, or any repetitive loss area mailed to. open to all, mailers, online, cell and e-mail.	Water Services		
18	Encourage utility providers to assess their facilities, distribution systems, etc. for vulnerability to flooding and, if necessary, retrofit or modify them to decrease vulnerability.		Ongoing	FEMA has taken on the responsibility	Structure and Infrastructure Projects	High	Ongoing	Analysis is internal. No means to provide to other utilities not on City GIS. At this time the data is not for public use by City web mapper, due to uncertainty in results and economic impacts and concerns it could create if not sufficiently accurate.	Water Services		

1	Floods										
2	Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit & <u>2024 Annual Review/Update</u>	Primary Agency Responsible for Implementation & Administration	Cost Estimate (\$)	Funding Source
186	**Encourage water and wastewater districts to elevate vulnerable equipment, electrical controls and other equipment at wastewater treatment plants, potable water treatment plants and pumping stations.	2015	Ongoing	new construction complies with building	Structure and Infrastructure Projects	High	Ongoing	Ongoing,	Planning Dept., Water Services		
187	**Identify incentives to offer homeowners and businesses to remove or retrofit their structures in flood-prone areas.	2010	Ongoing	This action is to be accomplished as time and resources allow.	Not Specified	High	Ongoing	Grants are restrictive. FEMA require flood insurance policies on structures to be eligible. BRIC does not.	Water Services, City Planning	Unknown	Water Service Dept.
188				Reduce the potential for flooding	due to dam failure	es by enhanc	ing inspection	efforts			
189	Adopt codes or ordinances requiring permits, engineering studies, and safety certifications prior to the construction of new dams	2015	Ongoing	All earthen structures must comply with earthen building codes. Participating the regional effort to update the APWA 5600.	Local Plans and Regulations	Medium	Ongoing	Ongoing,	Planning Dept.		
190	Adopt local ordinances and/or state laws requiring all dam owners to develop emergency action plans for their dams and provide local public safety agencies with copies of these plans		Deferred	lack funding; will carry over to the next round of the plan	Local Plans and Regulations	Low	Ongoing	Update to APWA 5600 Storm water underway	Water Services		
191	For dams not regulated by the state, encourage dam owners to inspect their dams at least annually and submit the results to MDNR	2015	Deferred	No progress	Education and Awareness Programs	Low	Deferred	Update to APWA 5600 Storm water underway	Water Services		
192	Use storm water storage facilities covenants, to compile GIS locations and inspect on repeating schedule as funding allows. Where O&M is needed, use the covenants and KCMO chapters to preserve function and maintain dam safety.	2020	New	Mapping the storage facilities is a continuing effort as more facilities are being constructed. Regular inspections are conducted and enforcement action is taken where necessary. Any needs for O&M are shared with the responsible parties timely and pursued as needed.	Structure and Infrastructure Projects	High	Not Determined	Update as new facilities are added.	Neighborhoods, City Planning, Water Services	Unknown	Unknown
193			To decreas	e the threat of flooding, reduce the potential	for dam failures b	y adding to	the number of	dams regulated by the state.			
194	Contact representatives in the state legislature to propose changes in state law lowering the height limit for regulated dams to 25 feet on those holding back 50 acre-feet or more of water.	2020	New	This action requires cooperation of state legislature and is difficult to determine a schedule.	Local Plans and Regulations	Medium	Not Determined	Ongoing	City Council	Unknown	Unknown
195	Revise existing dam safety laws and/or regulations to add all high hazard dams to the list of regulated dams, regardless of dam height and reservoir storage capacity, until the hazard potential of these dams can be downgraded.	2020	New	This is an extensive project with multiple external agencies, and a completion date cannot be determined at this time.	Local Plans and Regulations	Medium	Ongoing	Ongoing, Update to APWA 5600 Storm water underway by MARC	Water Services and or City Council	Unknown	Unknown

Why Actions Have Not Been Completed

Of the 160 action items, eight have been completed while 24 have been deferred due to staffing, funding, and many tasks are sequential. The CRS program does not require the completion of these actions by a deadline since external funding is not provided to the City to complete these items. Therefore, the CRS program only requires work towards the completion of these items that have been developed between departments.

Annually recurring actions are considered continuing and thus never completed. Eighty-six percent of the Floodplain Management Plan is ongoing or complete, while 14 percent is deferred. Some actions are notably more critical and dependent in series. Some actions rely on and require other tasks in series to be completed or improved.

The need to identify all flood, erosion and meander risks is critical to many other goals and needs. The ability to achieve many critical community development, stormwater-related health and safety actions essential to public health and safety steps depends on having geospatial datasets in order to fully develop a plan to mitigate damages for every structure, parking lot and roadway from flooding frequencies of 10 percent, 4 percent, 2 percent, 1 percent, and 0.2 percent events; or more frequent one- to two-year event conditions that identify erosion, meander, and other stream-shaping risks. Having this data is a step-by-step development process that can drastically improve capital projects and get more solutions for less cost. Analyzed and complete data can better identify risks and help identify the best capital improvement projects to solve the most problems for the least costs among multiple community needs.

The Stormwater fee cannot be used for any form of capital improvement. Only PIAC, state, federal, or other City funding sources, can fund improvements. The Stormwater fee survives on leverage dollars from many other sources as shown in the table Stormwater Funding Sources for Fiscal Year 2024- 2025.

Table 1. Stormwater Funding Sources for Fiscal Year 2024-2025

Program Element	Federal Funding	Municipal Stormwater Fee	Municipal General Obligation Bonds	Municipal Sales Tax for Capital Improvements (PIAC)	Municipal Public Safety Tax	Street Maintenance Fund	Water Quality Education
Watershed Studies	Х	Х		Х			
Project Studies	X	X	X	Х			
Capital	Х		X	Х			
Maintenance		X		Х		X	
Flood Response		X			X		
Risk Education							
Regulatory Support		X					Х
Municipal Staff		X					
Y25 Funding Levels	\$29.7M	\$16.4M	\$16.1M	\$2.0M	\$0.5M	\$1.6M	\$0.08M

Recommendations

- 1. Develop additional funding sources, including, but not limited to seeking voter approval for an increase in the Stormwater fee on water bills. The average stormwater fee per residence per month is \$2.50, generating \$13.9 million per year in revenue, below what is needed to maintain more than 690 miles of Kanss City storm sewers. Future progress requires a Stormwater fee increase, which must be approved by voters. The Stormwater fee that appears on water bills was introduced in 1992 and increased in 1999, 2000 and 2003.
- 2. Expand identification of flood risk fully throughout Kansas City, including both rural and urban portions of the City. All flood-risk-based issues use a benefit-to-cost ratio methodology to determine if a mitigation or Prevention project and/or program is cost effective and fundable using Federal dollars. Kansas City should focus on the greatest benefit to cost items that can best support the largest number of activities and goals to competitively win Federal grant dollars.
- 3. Develop a comprehensive flood risk prevention plan designed to promote proper, planned development and discourage improper, poorly planned development to minimize future flood risk to Kansas City homes, businesses, and public assets, including roads, bridges, parks, and public spaces.
- 4. City staff should continue their implementation and improvement of this floodplain management plan on an annual basis per CRS requirements. The effort should focus on identification, allowing damage assessments to create excellent benefit-to-cost ratio comparisons for projects and potential capital improvements that can then seek federal dollars for leverage of 50 to 90 percent.
- 5. Use the best available technology to analyze accurately all flood risks and damage to foster development of the best capital improvements for the least cost and the most community benefit.
- 6. The Smart Sewer group and many other City departments and offices would benefit from existing training within multiple disciplines of engineering, planning, geosciences, emergency management and floodplain management from training organizations such as the Emergency Management Institute.
- 7. Modern modeling, computational and geospatial analysis techniques along with GPU-accelerated and machine-learning tools within currently used Storm and Combined Sewer Modeling suites can drastically reduce regulatory workflows by focusing on already identified development, planning, and design needs and solutions due to better identified flood risk. Staffing is needed for PIAC, levees, flood response, maintenance, improvements, prevention, mitigation, Municipal Separate Storm Sewer System (MS4), grants, and other programs, review and regulatory processes, workflows, and tasks.

Attachment

Mid-America Regional Council 2025 Multi-Hazard Mitigation Plan

Kansas City 2025 Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Compl etion	Cost/Ben	Primary Agency Responsible for Implementati on/ Administratio		Funding Source
Floods										
Decrease the number of fatalities and injuries from flooding	5	I				ı				
Explore and implement systems to protect drivers from flash flooding on roadways	2020	New	KCMO OEM, with other barricade departments, is exploring resources to improve roadway flashflooding protection.		Medium	Undete rmined	Medium	public works	Unknown	Unknown
Explore systems to improve and enhance flood warnings and flood warning systems	2020	Ongoing	WSD continues to explore improved methods and systems with	Structure and Infrastructure Projects	Medium	Undete rmined	Medium	public works	Unknown	Unknown
Discourage new development in floodplain and flood prone		1 00								
**Levy fees on new residential, commercial, and										
infrastructure development in floodplains or flood prone			No fees currently exist; WSD has no interest in pursuing at this time.	Local Plans and		Ongoin				
areas to finance flood mitigation, preparedness, response,	2015	Ongoing	CPD, however, may considered over the next 5 years.	Regulations	Medium	g	Medium	Planning Dept	Unknown	Unknown
Enhance Health Department's ability to mitigate disease rel	ated issi	ues caused b	y floods							
Enhance Health Department's ability to distribute mass medication before or after the onset of flood caused diseases through improved methods, training, and funding.	2020	New	medication after a disaster. Additional funding for resources would	Education and Awareness Programs	High	Undete rmined	Medium	health dept	Unknown	Unknown
Research methods and funding to enhance Health Department's ability to track diseases from flooding. Research methods and funding to enhance Health		Ongoing	KCHD continues to research disease tracking protocols but could use additional funding to expand its efforts.	Education and Awareness	Medium	Ongoin g		health dept		
Department's inspection of food potentially contaminated by flood waters. Research methods and funding to improve Health	2020	Ongoing	KCHD continues to research food inspection and contamination	Awareness	High	Undete rmined	Medium	health dept	Unknown	Unknown
Department's processes for controlling disease vectors after a flood. Enhance public awareness and education efforts related to		Ongoing	·	Awareness Programs	Medium	Ongoin g	Medium	health dept		
Elinance public awareness and education enorts related to	itoouilig	• 				I	tho			Water Carriage
Encourage home owners and businesses to purchase flood insurance.	2015	Ongoing	insurance and owns the other 176 properties. KCMO has applied, also, for 2 NSF grants for education.		High	Ongoin g	costs to	Planning Dept		Water Services Dept., Office of Emergency Management
mitigation, preparedness, response and recovery from			,	Education and Awareness		<u>.</u> .	risk to			Emergency Management,
federal, state, and other organizations and provide them to			house and with the public. Improvement on this action will include			Ongoin		Emergency		

		T	T	Laaoatton ana	1	1		I	Г	T
Research and utilize social media to share weather			KCMO OEM partners with other agencies to provide the information	Awareness		Ongoin		Emergency		
forecasts and flood safety information	2015	Ongoing	via social media and messaging systems	Programs	Medium	g	Medium	Management		
Enhance public awareness of the hazards associated with	dam failu	res, as well a	s mitigation and preparedness activities							
Collect and disseminate public education materials to										
property owners near on in inundation pathways of dams				Education and						
that address dam safety, preparedness, and mitigation				Awareness		Deferre				
activities	2015	Deferred	lacked funding; will carry over to the 2020 plan	Programs	Low	d	Medium			
Conduct a public education campaign to inform dam										
owners and citizens living near the inundation pathways of										
dams about the need to properly maintain and upgrade				Education and						
these structures - particularly those that are more than 50				Awareness		Deferre				
years old	2015	Deferred	lacked funding; will carry over to the 2020 plan	Programs	Low	d	Medium			
- Journal of the state of the s	2010	Bololloa	adica randing, micoarry over to the 2020 plan	1108.41110	2011	1 -	riodiaiii			
Work with partners to conduct public education campaigns										
to inform citizens living near the inundation pathways of				Education and						
dams of the need to be familiar with the emergency action				Awareness		Deferre				
plans for these dams	2015	Doforrod			Low	Delette	Modium			
		Deferred	lacked funding; will carry over to the 2020 plan	Programs	Low	Ju	Medium			
Enhance public awareness, outreach and education efforts	retated	to itooding	T	<u> </u>	T	1	l	1	T	1
During flood events, use public information officers and				Education and						
their tools along with the media to message risks from				Awareness		Undete		Emergency		
flooding.	2020	Ongoing	disseminate information regarding flood risks even before the event.		High				Unknown	Unknown
tooding.	2020	Oligoliig			1 11811	IIIIIIICu	ricalam	ridhagement	Onknown	Onknown
				Education and						
			This is accomplished by WSD on a continual basis as circumstances	Awareness		Undete		floodplain		
Encourage owners of structures to purchase flood insurance	2020	Ongoing	align.	Programs	High	rmined	Medium	manager	Unknown	Unknown
dentify funding recourses for much enjaments discomingto										
dentify funding resources for mechanisms to disseminate			W0140 D							
nformation to the public on all forms of flood risks for public			· ·	Education and		l				
awareness, outreach and education including health and			disseminate information regarding flood risks even before the event.			Undete		Emergency		l
disease associated with flood waters	2020	New	Discovering funding would be beneficial.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Obtain brochures and related publications on flood										
nitigation, preparedness, response and recovery from			Due to limitations and federal fiscal issues, material is not a readily	Education and						
			available. KCMO will continue to use these products as available in			Lindata		Emorgonov		
EMA, SEMA, and other organizations and provide them to	0000	N.	·		11:	Undete		Emergency	11	Links access
rowide a web link homepage that serves as a flood	2020	New		Programs Education and	High	rrnined	Medium	Management	Unknown	Unknown
. •						Undoto		Emorgeney		
dentification, response and mitigation resources center of	0000	0.545		Awareness	مام دا ا	Undete		Emergency	l lados e : : ::	Links
all the products available.	2020	Ongoing	information is available.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Use other public meetings on storm water to educate and				Education and						
provide these tools with information handed out to serve as				Awareness		Undete		Emergency		
inks that help the public learn and act.	2020	New	This will be pursued as personnel and resources are made available.	Programs	High	rmined	Medium	Management	Unknown	Unknown

		1		T		I	I	1		T
Work with Floodplain Management, Emergency										
Management, SEMA & FEMA to develop a public education				Education and						
program on identifying, planning and mitigating flood risk				Awareness		Undete		Emergency		
that provides the public tools to see their options.	2020	Ongoing	This is done on a regular basis.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Enhance the ability to protect the public during flooding inc				1.100.0	10			- I I I I I I I I I I I I I I I I I I I	1	
,										
				Structure and						
Improve KCPD's ability to assist with roadway flash flooding			More specific actions will be researched (such as co-training) and	Infrastructure		Undete				
warnings to prevent loss of life and property.	2020	New	implemented as resources become available.	Projects	High	rmined	Medium	Police Dept	Unknown	Unknown
				Education and						
Provide training for officers to improve response capability			More specific actions will be researched (such as co-training) and	Awareness		Undete				
during flooding incidents.	2020	New	implemented as resources become available.	Programs			Medium	Police Dept	Unknown	Unknown
Enhance the capabilities of city departments with flood res			·	i Tograms	inculum	Immed	riculain	I olice Dept	TOTIKHOWII	Olikilowii
<u> </u>	Polise ut	ides to filling	ato damago nom noodo	Education and		l	l	T	<u> </u>	T
likely to occur and the time left until they occur in order to			When weather do and weapons in the WOD 111	Education and		1100-1-1				
help mobilize to mitigate or prevent threats to public safety	0000	Nierra	When methods and resources improve, WSD will research and	Awareness	1.11.46	Undete	M = =15		L Indian accord	Links access
where known and where time and resources.	2020	New	utilize based on funding availability.	Programs	High	rminea	Medium	public works	Unknown	Unknown
				Education and						
Coordinate the city-wide flood barricade task force and	0045	0	Flood Barricade Task Force meets at the beginning of every storm	Awareness		Ongoin	M = =15		L Indian accord	0
update the SOP annually	2015	Ongoing	season.	Programs	High	g	Medium	public works	Unknown	General Fund
Develop an automated barricade tracking system for known										
community flood risks and where possible add warnings for				Structure and		l				
these locations to aid in gaining time to respond before			KCMO OEM, with other barricade departments, is exploring	Infrastructure	Unspecifie		l	1		l
flooding and flood damages occur.	2020	New	resources to improve roadway flashflooding protection.	Projects	d	rmined	Medium	public works	Unknown	Unknown
Identify funding sources and replace damaged barriers to				Structure and						
prevent traffic through high water areas thus mitigating the				Infrastructure	Unspecifie	Undete				
loss of life.		New	Additional funding will be researched and utilized if possible.	Projects	d	rmined	Medium	public works	Unknown	Unknown
Enhance the EOC capability to monitor and mitigate flood o	ondition	s		ISTRUCTURE and		ı	ı			
Coordinate with Water Dept., dam stakeholders, and other				Infrastructure		Ongoin				
groups associated with dam operations	2015	Ongoing	WSD regularly meet with USACE and KCMO Levee Committee				Medium	water dept		
groups associated with dam operations	2013	Ongoing	W3D regularly meet with 03ACE and KCMO Levee Committee	Projects	High	g	Medium	water dept		
				Structure and		D - f				
Develop a contact list for agencies/individuals involved with	0045	D ()	Deferred to other goal as that department works more closely with	Infrastructure		Deferre				
dam operations	2015	Deferred	USACE	Projects	Medium	d	Medium			
				Education and						
			With WSD, ensure most current product and practices are being	Awareness		Ongoin				
Explore and implement systems to improve flood warnings	2015	Ongoing	used to monitor and warn of flooding	Programs	Medium	g	Medium	water dept		
Harmada and anti-mark 11 11 11 11 11 11 11 11 11 11 11 11 11			The surface has been sent at the state of th	Structure and		0				
Upgrade and enhance the surveillance capability of the EOC	0015	04	The system has been upgraded over the last 5 years. However, new			Ongoin	M = =1*	Emergency	l la las	0
to monitor flood conditions		Ongoing	technology means that this action will be ongoing.	Projects	Medium	g	Medium	Management	Unknown	General Fund
Ensure continued operability of dam to prevent failure and	resulting	gamage to t	ne mui tacilities.							

		T	T	Structure and	T	1	<u> </u>	T	Γ	T
Enhance environmental control and erosion prevention to				Structure and		Ongoin				
·	2015	Ongoing	Regular maintenance checks are made of the KCI owned dam	Infrastructure	∐idh	Ongoin	Medium	Aviation		
maintain the integrity of the KCI dam. Ensure levee requirements and integrity are maintained to		Ongoing		Projects	High	Įβ	Medium	Aviation		
Ensure tevee requirements and integrity are maintained to	preventu	laillage IIOIII	Itooding due to tevee faiture			1	<u> </u>	1		
Coordinate with US Army Corps of Engineers to ensure best										
practices and operations are utilized to maintain levees			WSD maintains a continual partnership with the US Army Corps. on	Local Plans and		Ongoin				
against failure and flooding	2015	Ongoing	all facility needs and improvement efforts.	Regulations	High	g	Medium	public works		
				Structure and						
Identify and conduct training for levee inspectors to ensure			This is done annually or semi-annually with US Army Corps.	Infrastructure		Ongoin				
levee integrity to prevent flooding	2015	Ongoing	Inspections.	Projects	High	g	Medium	public works		
Perform inspections and assessments of levees and levee			This is Annually done with the Us Army Corps and with a score from	Structure and						
systems to track deficiencies and prevent levee failure and			the US Army Corps. that drives operations, maintenance and	Infrastructure		Ongoin				
flooding	2015	Ongoing	improvement items.	Projects	High		Medium	public works		
Examine repetitive flood loss properties and determine fea				i rojects	II IIBII	Įδ	riculain	public works	<u> </u>	ļ
Examine repetitive flood toss properties and determine lea	Sible allu	Practicatiiii	inguion options	<u> </u>	T	I		<u> </u>		T T
As funding allows, repetitive flood loss properties and			Lack of adequate funds to implement on more than an extremely	Local Plans and		Deferre				
structures will be targeted for buyout	2015	Deferred	limited program.	Regulations	High	d	Medium		Unknown	PIAC, other
**Identify potential funding opportunities to implement			The properties have been identified; this will carry over to the 2020	Local Plans and		Ongoin		floodplain		
mitigation options for repetitive flood loss properties	2015	Ongoing	plan for further work	Regulations	Low	g	Medium	manager	Unknown	Unknown
			New development is subject to floodplain development review							
**With stakeholders, explore incentive options to			process. In partnering with OEM; this action is progressing through							
encourage property owners to take action to prevent or			just education. More methods will need to be explored before this	Local Plans and		Ongoin		floodplain		
reduce future flood losses	2015	Ongoing	action can reach closer to completion.	Regulations	Medium	g	Medium	manager	Unknown	Unknown
**Work with owners of repetitive flood loss properties to										
identify feasible mitigation strategies and potential										
opportunities; determine property owners' interest in			The number of repetitive loss properties is 45/164; in 2017 KCMO	Local Plans and		Ongoin		floodplain		
specific mitigation options	2015	Ongoing	vote \$150M in bond funds for mitigation; more work is to be done	Regulations	Medium		Medium		Unknown	Unknown
Expand KCPD's ability to assist with life safety operations of			Vote \$ 1001 Fill Bolla Fallaci for Hilligation, Hiero Work to to be done	riogatationo	riodiam	Įδ	ricalam	Imanager	Ontrovin	OTIKITOWIT
Expand No. 2 5 desire, to desire with the seriet, operations										
Acquire additional equipment necessary to paticipate in and						Undete				
conduct swift water rescues		New	This is pursued as funding becomes available.	Other	Low		Medium	Police Dept	Unknown	Unknown
	2020	11011	-		1000		ricalam	T office Bopt	Ontrovin	OTHEROWIT
KCPD to enhance partnership with KCFD to participate in	0000	Name	This action will be examined and implemented as applicable and	Awareness		Undete	Madium	Dalias Dant	Links avvs	L balen avve
swift water training and rescues	2020	New	available.	Programs	Low	Irminea	Medium	Police Dept	Unknown	Unknown
Implement or improve flood warning systems		1		<u> </u>	1	<u> </u>	<u> </u>	<u> </u>		T
Determine the need for stream gauges in waterways										
currently lacking flood warning systems or additional stream			KCMO currently has 74 stream guages with the intention of	Structure and						
gauges in waterways with flood warning systems already in			obtaining more as funding allows. This action will continue in a new	Infrastructure						
place	2015	Completed	form for 2020 plan.	Projects	High	2019	Medium		Unknown	Unknown
Develop and implement procedures to quickly analyze and				Education and						
disseminate information from flood warning systems to the			KCMO has access to multiple flood warning systems but is always	Awareness		Ongoin		Emergency		
	2015	Ongoing	pursuing to increase its ability to monitor and acquire flooding data.		High		Medium	1 -	Unknown	Unknown
public	2010	Ongoing	pursuing to increase its ability to monitor and acquire itobuilly data.	li ingrama	High	Įδ	Picalalli	Management	OHKHOWII	TOHIVHOWIL

						I		1		1
Develop and implement procedures to quickly analyze and				Education and						
disseminate information from flood warning systems to the				Awareness		Undete		Emergency		
public.	2020	New	This action will be pursued, but there is no schedule at this time.	Programs	High	rmined	Medium	Management	Unknown	Unknown
				Education and						
Develop information from the flood, stage, and risk data into				Awareness		Undete		Emergency		
KCMO's flood warning system software.	2020	New	This action will be pursued, but there is no schedule at this time.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Develop stage and gauge data to correlate from events with										
downstream risks and as modeling improved develop				Education and						
stage/flood elevation triggers that lead to downstream				Awareness		Undete		Emergency		
flooding of roads, structures, and parking lots.	2020	New	This action will be pursued, but there is no schedule at this time.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Use improved flood hazard and flood risk data, develop flow										
path data, time to crest data, snd flood risk data to										
determine best locations for additional stream gauges and				Education and						
develop better warnings for all gauges to improve response				Awareness		Undete		Emergency		
time.	2020	New	This action will be pursued, but there is no schedule at this time.	Programs	High	rmined	Medium	Management	Unknown	Unknown
			Waxaa ah a							
Work with local governments and other stakeholders to			KCMO currently partners with Overland Park, KS, Johnson County,	Education and		<u>.</u>		_		
share data from flood warning systems in multiple	0045		KS, and the Unified Government of Kansas City, KS. KCMO will	Awareness		Ongoin		Emergency		
jurisdictions	2015	Ongoing	pursue data sharing with other agencies.	Programs	High	g	Medium	Management	Unknown	Unknown
Work with local governments and other stakeholders to				Education and						
share data from the flood warning systems and tools in				Awareness		Undete		Emergency		
multiple jurisdictions		New	This action will be pursued, but there is no schedule at this time.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Implement projects and procedures to enhance resiliency	of KCMO	infrastructu	re against flood damage	Education and		Į.	ı	ı	I	T
Complete a Repetitive Loss Area Analysis to determine Risk				Awareness		Undete				
and Benefits.	2020	New	This action will be pursued, but there is no schedule at this time.		High		Medium	public works	Unknown	Unknown
and benefits.	2020	INEW	This action will be pursued, but there is no schedule at this time.	Programs Structure and	High	IIIIIIIeu	Medium	public works	OHKHOWH	Olikilowii
				Infrastructure		Undete				
Improve roadway structure to mitigate damage from flooding	2020	New	This action will be pursued as funding availablility allows.	Projects	High	rmined	Medium	public works	Unknown	Unknown
Provide enhancement to existing and new structures to				Infrastructure		Undete				
improve flooding resiliency	2020	New	This action will be pursued as funding availablility allows.	Projects	High		Medium	public works	Unknown	Unknown
Reroute channels to alleviate overflow and mitigate against	2020	INCW	This detion with se pursued as furially availability allows.	Infrastructure	111811	Undete	ricalani	public Works	OTIKITOWIT	Onknown
	2020	New	This action will be pursued as funding availablility allows.		∐iαh		Medium	public works	Unknown	Unknown
flooding	2020	INCAA	inis action will be pursued as fulfullig availability allows.	Projects Structure and	High	iiiiiieu	i-ieuiuiii	Public Works	OHNHOWH	CHRIIOWII
Research funding to implement flood mitigation procedures				Infrastructure		Undete				
and projects	2020	New	This action will be pursued, but there is no schedule at this time.	Projects	High		Medium	public works	Unknown	Unknown
Research funding to support and educate that flood										
insurance coverage should be mandatory on all primary					Unspecifie	Undete				
structures.	2020	New	This action will be pursued, but there is no schedule at this time.	Unspecified	d		Medium	Planning Dept	Unknown	Unknown
		1	The second make pareasa, sat there is no constant at the time.	1511060011100		1	1. 10414111	I. rammig popt		101111111111111111111111111111111111111

		Г	T	1						
Support and push for more funding in FEMA Flood Insurance	I									
Policies for Increased Cost of Compliance to assist	I									
structures substantially damaged by flooding in rebuilding in	I			Education and						
a manner that will meet NFIP regulatory and/or Local	I		This action is pursued, but the completion date is based on external	Awareness		Undete		Emergency		
requirements.	2020	New	agency schedules.	Programs	High	rmined	Medium	Management	Unknown	Unknown
Improve and enhance the capability to respond to and mitig	gate dam	age from floo	oding incidents	ī	T	•			T	
Identify funding sources and replace damaged barriers to	I			Structure and						
prevent traffic through high water areas thus mitigating the	I		Water Department paid out of own budget to obtain new barricades;							
loss of life.	2015	Completed		Projects	Medium	2016	Medium		Unknown	Unknown
Improve community resiliency to flooding	2010	Comptotou	The daily over the die 2020 plan	110,000	riodiaiii	2010	ricalani		OTHEROWIT	OTHATIOWTT
p						Ι				
Provide critical services facilities (e.g. nursing homes) with	I			Education and						
oversight on flood plain management (evacuation plans,	I			Awareness		Undete				
discourage building in flood plains, etc.)	2020	New	This action will be pursued, but there is no schedule at this time.	Programs	Medium	rmined	Medium	Planning Dept	Hnknown	Unknown
Improve flood hazard assessments and flood mapping	2020	INCW	This action wit be pursued, but there is no senedate at this time.	i logiums	Inculain	Illillica	riculani	i tallillig Dept	OHKHOWH	OTIKITOWIT
Conduct an in-depth flood risk analysis utilizing HAZUS data				Education and						
and create detailed maps based on GIS technology to	İ			Awareness		Deferre				
identify areas at risk from flooding	2015	Deferred	Action unable to be completed due to limited staffing and funding.	Programs	High		Medium		Unknown	Unknown
lacinary arous at not from nooding		Deterred	retion analte to be completed due to united staning and randing.	riogramo	111811	-	ricalani		OTHEROWIT	CHAIOWH
	I									
**Coordinate the collection of demographics, economic,	İ		Many sources for HAZUS exist, but KCMO continues to progress	Education and						
watershed, land use, and other data required by the HAZUS-	İ		toward completion. The data, however, does change over time, so	Awareness		Ongoin				
Flood software program and/or GIS systems	2015	Ongoing	this project will carry forward to the 2020 plan.	Programs	High	g	Medium	Planning Dept	Unknown	Unknown
	1		however FEMA's Mitigation Tracker continues to be a one entry							
	I		system, vs. a database upload by geospatial fields. Due to this							
	I		KCMO has been unable to move our 11,819 identified community							
Develop and regularly update a mitigation list for structures,	İ		flood risks in 1) into FEMA/SMEA systems to improve identification	Education and						
land/parcels, and roads/RoWs with a ranking for these	İ		efforts and support for mitigation post disasters. Ultimately KCMO	Awareness		Ongoin				
based on depth, severity, and frequency of flooding.	2015	Ongoing	still desires to make this data into an ongoing Notice of Intent in	Programs	High	g	Medium	public works	Unknown	Unknown
	1			Structure and						
**Obtain parcel data for flood boundary areas and enhance	İ		Parcel data, particularly ownership, is constantly changing.	Infrastructure		Ongoin				
vulnerability assessments for these areas	2015	Ongoing	Therefore, this is an ongoing action as the data fluctuates.	Projects	High		Medium	public works	Unknown	Unknown
value ability assessments for these areas		Oligoling	Therefore, this is an ongoing action as the data fluctuates.	riojecto	111811	ь	ricalani	public Works	OTIKITOWIT	OTIKITOWIT
	I		Discussions have been occurring between CPD and WSD on these							
	İ		efforts. This remains a funding issue for both groups and while it							
Update City Stream Buffers based on new regulatory and	l		can be listed as ongoing given discussion on how to update and	Local Plans and		Ongoin				
non-regulatory products' 1% severity or better	2015	Ongoing	improve, it is unfunded.	Regulations	High	_	Medium	public works	Unknown	Unknown
Use products that classify, identify, and weigh community	·	-	Geospatial analysis tools and communication tools have been key							
flood risks and the technological tools developed for them to	l		here. Efforts continue in 23 square miles of KCMO to test new							
improve regulation and information sharing to get enhanced	I		methods of combining all of these needs. These methods are	Local Plans and		Ongoin				
mitigation, improvements, and future developments.	2015	Ongoing	ArcGls Online based.	Regulations	High		Medium	public works	Unknown	Unknown
miagadon, improvemento, and ruture developmento.	2010	Oligollig	/ 10010 Ontine basea.	i logululions	ויואויין	Б	i icuiulli	hange Malks	OHKHOWH	OHKHOWH

				T		 	l	1	l	
Using city, state, and federal products complete the			As noted shows this is engaing. Efforts have been completed in 1)	Education and						
modernization of city regulatory and non-regulatory			As noted above this is ongoing. Efforts have been completed in 1)			Ongoin				
floodplains and adopt by the three phases outlined in Action	2015	Ongoing	Regulatory Floodplains, 2)Non-Regulatory Floodplains and 3)	Awareness	Lliah	Ongoin	Madium	nublic works	l laka oura	l Inlenoven
#4 over time	2015	Ongoing	Hydrologic flow accumulation pathways.	Programs	High	g	Medium	public works	Unknown	Unknown
			Flood Risk for 1) Regulatory Floodplain Areas has been completed							
			for 95% of FEMA Regulatory Zones in KCMO for 10%, 4%, 2%, 1%							
			and 0.2% annual chance storms. 1,786 Roads, 865 Structures, and							
			881 Parking Lots are flooded by the 10% annual chance storm in							
			KCMO. 3,821 Roads, 4,715 Structures and 3,283 Parking Lots flood							
			in the 0.2% annual chance storm in KCMO. This covers less than							
			33% of the City's territory though, as Regulatory floodplain stops on							
			tributaries smaller than 1 square mile. 2) Non-Regulatory has							
			tested new 2D methods in 33 square miles of KCMO including							
			Second Cr., First Cr. and the North East Industrial District. These							
			Research Efforts have confirmed that flood depth, velocity and risk							
			products can be developed on old 1D modeling products down to 10							
			acres while modern 2D methods can identify these risks down to 10							
			square feet. Modern modeling methods have incredibly more							
			capability in identifying flood risk, but accurate geospatial data on							
Using city, state, and federal products develop, analyze, and			underground storm, sanitary and combined sewers and all							
prioritize flood risk, severity, and frequency for structures,			collection assets is critical. This is KCMO's weakest area. 3)							
land/parcels, and roads/RoWs. Continuously improve with 3			Upstream Hydrology and stream accumulation products have been	Education and		<u>.</u> .				
key phases of development by: 1) Regulatory Floodplain			developed to 2 acre drainage area sizes in KCMO using our recent	Awareness		Ongoin				
Areas, 2) Non-Reg	2015	Ongoing	2018 LiDAR data with WSD's thanks to GS IT on this GIS effort. The	Programs	High	g	Medium	public works	Unknown	Unknown
			This has not been begun due to ongoing development of the tools							
			and products as discussed above. Products will remain internal for							
Work to develop these map, data, and list products for GIS			some time. Disclaimer requirements will exist when these flood	Education and						
tools for direct use by public and private needs to fulfill			risks are made available. Since the data is being developed this is	Awareness						
multiple needs for information to aid flood mitigation	2015	Ongoing	an ongoing effort.	Programs	High	ongoing	Medium	public works	Unknown	Unknown
Improve flood hazard assessments and flood mapping to a				I TOBICITIS	Imgn	Torrigoring	riculani	public works	Olikilowii	Olikilowii
Classify, identify, analyze and weigh community flood risks				Education						
to improve regulation, analysis, identification, prevention,			This action involves a systematica product as a second still and still	Education and		l Indata				
mitigation, improvements, and future development in ways	2000	Morri	This action involves a extensive project; no completion date is	Awareness	المان ال	Undete	Modition	nublic wester	l ledge acces	l laka sirin
that avoid flood risk.	2020	New	foreseeable at this time.	Programs	High	rmined	Medium	public works	Unknown	Unknown
Develop 4D 0D flood rich mod 1 1 1 1 1 2 1 1 1										
Develop 1D/2D flood risk products for: 1.) Regulatory										
floodplain areas, 2.)Non-regulatory flood risk Areas 3.)						<u>.</u>				
Upstream Hydrologic Areas without hydraulics using flow			This action involves a extensive project; no completion date is	Local Plans and		Undete				
accumulation pathways to 0.5 acre drainage.	2020	New	foreseeable at this time.	Regulations	High	rmined	Medium	public works	Unknown	Unknown

	1		1	1		1	<u> </u>	1	1	
Develop 1D/2D modeling paradigms and procedures to fully				Local Plans and		Undete				
identify all community flood risk for all of the community.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Research and implement improvements to the language of										
Chapter 61 and adopt these new 1D/2D models, studies,										
and identified flood risks in there complete geospatial and				Local Plans and		Undete				
modeling forms.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Update the City Stream Buffers using the above products										
with appropriate scientifically grounded methods to protect				Local Plans and		Undete				
the community and public.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Use 1D/2D modeling methods and further geospatial										
analysis to identify flood depth, velocity, storage, shear				Local Plans and		Undete				
stress risks for all flood risk areas.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Use the modeling products developed to improve FEMA										
based HAZUS and BCA Analysis of flood risks and costs vs.				Local Plans and		Undete				
benefits of mitigation/prevention within the community.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Haing the 1D/OD modeling methods and further goes stick										
Using the 1D/2D modeling methods and further geospatial										
analysis identify areas of erosive, slope or meander based				Lasal Diamas and		11				
risk to add to flood risk knowledge to support development	0000			Local Plans and	LIC 4	Undete				l
risk identification.	2020	New	This action is based on the previous action.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Work to develop list products as GIS tools for direct use by				Education and						
public and private parties to fulfill multiple needs for				Awareness		Undete				
information to aid flood mitigation.		New	This action is based on the previous action.	Programs	High	rmined	Medium	public works	Unknown	Unknown
Improve hazard assessment information for dams within K	ansas Cit	y, MO			<u> </u>	1	_	_		•
Analyze all dams, their capacity, and failure triggers in or				Education and						
affecting Kansas City, MO to estimate downstream risk to			This action involves a extensive project; no completion date is	Awareness		Undete				
life and property.	2020	New	foreseeable at this time.	Programs	Medium	rmined	Medium	public works	Unknown	Unknown
Collaborate with MDNR and US Army Corps methods to				Education and						
develop and determine inundation mapping for dams failure			This action involves a extensive project and external agencies'	Awareness		Undete				
to reduce loss of life from flooding.	2020	New	schedules; no completion date is foreseeable at this time.	Programs	Medium		Medium	public works	Unknown	Unknown
to reduce to 35 of the from flooding.	2020	14044	sometatios, no completion date is foreseeable at this time.		i icaiaiii	IIIIIIIII	i icaiaiii	Pablic Works	CHRIOWII	OTIKITOWIT
				Structure and						
Identify and estimate the height of all dams within the			additional components and resources needed to obtain the data;	Infrastructure		Ongoin				
Kansas City metropolitan area	2015	Ongoing	will continue during the 2020 cycle	Projects	Medium	g	Medium	public works		
Include maps and information from inundation studies and										
dam emergency action plans in local emergency operations			current released maps are used in LEOP; will continue during the	Local Plans and						
and land use plans	2015	Completed	2020 Hazard Mitigation Plan's cycle (if new information released)	Regulations	High	2010	Medium			
מווע נמווע עסכ אנמווס	2010	Completed	2020 Hazaru Piniganon Fian 3 cycle (ii new iinomianon leteaseu)	negulations	ı iiğii	2010	Picalalli			

				1		1	I			1
Obtain assessed valuation data and population figures for										
areas in the vicinity of dam inundation pathways so that										
enhanced vulnerability assessments may be conducted										
describing the number of lives and amount of property at			additional components and resources needed to obtain the data;	Local Plans and		Ongoin				
risk from dam failure	2015	Ongoing	will continue during the 2020 cycle	Regulations	Medium	g	Medium	public works		
Prioritize by GIS the size and volume of the dams within the				Structure and						
Kansas City metropolitan area under normal and full volume			additional components and resources needed to obtain the data;	Infrastructure		Ongoin				
conditions	2015	Ongoing	will continue during the 2020 cycle	Projects	Medium	g	Medium	public works		
Using the latest information from many resources, develop										
GIS layers and maps indicating the locations, inundation										
pathways, and hazard potential of known dams within the			This action is dependent upon previous actions, which makes a	Local Plans and						
Kansas City metropolitan area.	2020	New	completion date difficult to determine at this time.	Regulations	High		Medium	public works		
Using the latest information from the NID, MDNR's inventory										
of dams, and other resources, develop GIS layers and maps										
indicating the locations, inundation pathways, and hazard										
potential of known dams within the Kansas City			2017 - GIS was developed; this will be revisited during the 2020	Local Plans and						
metropolitan area.	2015	Completed	Hazard Mitigation Plan's Goals and Actions	Regulations	High	2017	Medium			
Work with MDNR's Water Resources program and USACE to										
determine which dams in the Kansas City regional area have			UCACE is and extended many information to conduct this	Structure and		Deferre				
had inundation studies, inundation pathway maps, and	0015	Deferred	USACE is reluctant to provide necessary information to conduct this		مان دا ا	Deferre	Madium			
emergency action plans developed Improve KCMO's ability to mitigate damage from hazardous		Deferred	action	Projects	High	<u>J</u> u	Medium		ļ	
improve KCMO's ability to initigate damage from nazardous	Siliatella	ls released d	ue to rooding			1	<u> </u>		<u> </u>	1
Ensure personnel have proper training (SDS, Hazcom,				Education and						
HAZWOPER, etc.) to respond and mitigate the damage from			This training is provided on a regular basis, but funding sources to	Awareness		Undete				
hazardous material release due to flooding.	2020	New	provide the training is researched.	Programs	High	rmined	Medium	Fire Dept	Unknown	Unknown
				Structure and						
Increase resiliency of storage mechanism for hazardous			Further research and funding is needed to make a determination on	Infrastructure		Undete				
materials against a release due to flooding damage	2020	New	means to increase resiliency.	Projects	High		Medium	Fire Dept	Unknown	Unknown
manage against a resource and to moderning definings					0''				2	2
Provide KCFD personnel training best on the latest lessons				Structure and						
learned and best practices in containing hazardous			Further research is needed on best practices and lessons learned.	Infrastructure		Undete				
materials released due to flooding.	2020	New	This information could then be incorporated into KCFD training.	Projects	High	rmined	Medium	Fire Dept	Unknown	Unknown
			Such training is provided on a continuous basis. Further research is	Education and						
Provide KCFD personnel training on methods to secure			needed on best practices and lessons learned. This information	Awareness		Undete				
hazardous materials against release due to flooding.	2020	New	could then be incorporated into KCFD training.	Programs	High		Medium	Fire Dept	Unknown	Unknown
		-	•	• -		-		· · · · · · · · · · · · · · · · · · ·		+

	Ī	1	1	Г	<u> </u>	1	l	 	1	1
Research and implement equipment and procedures for				Structure and						
KCFD to efficiently contain hazardous material incidents			Further research is needed on best practices and lessons learned.	Infrastructure		Undete				
resulting from flooding.	2020	New	This information could then be incorporated into KCFD training.	Projects	High	rmined	Medium	Fire Dept	Unknown	Unknown
Research training and funding for training for methods and				Education and						
best practices to respond and mitigate the damage from			Further research is needed on best practices and lessons learned.	Awareness		Undete				
hazardous materials released due to flooding.	2020	New	This information could then be incorporated into KCFD training.	Programs	High		Medium	Fire Dept	Unknown	Unknown
			S. C. C. C. C. C. C. C. C. C. C. C. C. C.							
Research training and funding for training for methods and			Different departments within KCMO follow white sheets and other	Education and						
best practices to secure hazardous materials from release			information regarding best practices. Funding for expanded	Awareness		Undete				
due to flooding.	2020	New	mitigation measures would be accepted.	Programs	High		Medium	Fire Dept	Unknown	Unknown
Improve reliability and capability of telecommunications n			·	8	19			<u> </u>	1	
				Structure and						
Add redundancy and multiple pathways for fiber network to			This is an extensive project, and innovations change regularly.	Infrastructure		Undete				
ensure continued operation during flooding	2020	New	KCMO will continue to research and implement the best practises.	Projects	High		Medium	Police Dept	Unknown	Unknown
Improve the capabilities of water rescue teams		1		p rejecti	19			<u></u>	1	
				Education and						
Identify and conduct training courses and exercises for				Awareness		Ongoin				
water rescues in flood waters	2015	Ongoing	Training for personnel is continual and refreshed constantly.	Programs	High	g	Medium	Fire Dept	Unknown	Unknown
Identify funding sources to enhance the energtional				Structure and						
Identify funding sources to enhance the operational			Canability improvement dimiched due to defunding of USAR teams	Structure and		Ongoin				
capabilities of water rescue teams in conducting rescues in flood waters	2015	Ongoing	Capability improvement dimished due to defunding of USAR teams. FD will continue to pursue possible funding sources.		⊔idh	_	Medium	Fire Dept	Unknown	Unknown
	2015	Ongoing	PD will continue to pursue possible funding sources.	Projects	High	g	Mediuiii	Гпе Берт	Olikilowii	Ulikilowii
Improve the capabilities of water rescue teams through				Structure and						
providing equipment and other means to conduct flood	0045	0	Capability improvement dimished due to defunding of USAR teams.		LIP A	Ongoin		F: 5 .	ļ., ,	l
water rescues		Ongoing	FD will continue to pursue possible funding sources.	Projects	High	g	Medium	Fire Dept	Unknown	Unknown
Improve the capability of the Aviation Department to mitiga	ite the da	mage from t	looding	Otractare and		1	l	<u> </u>		<u> </u>
As funding becomes available, research elements for			This action is dependent upon funding; no anticipated completion	Infrastructure		Undete				
development of a Stormwater Master Plan at the MKC.	2020	New	date at this time.	Projects	High	rmined	Medium	Aviation	Unknown	Unknown
				Structure and						
As needed, improve relief well systems at MKC to counter			Wells are improved/repaired as funding and resources become	Infrastructure		Undete		1	l	l
damage from flooding.	2020	Ongoing	available.	Projects	High	rmined	Medium	Aviation	Unknown	Unknown
Continue to research barricade techniques and products to				Structure and						
protect against flooding at the Downtown Airport and				Infrastructure		Undete				
purchase and/or implement as appropriate.	2020	Ongoing	This action is ongoing as funds and resources become available.	Projects	High		Medium	Aviation	Unknown	Unknown
		36		Structure and						
Enhance and upgrade equipment and protocols to respond			2019 purchased new sand barrier equipment; added new wells.	Infrastructure		Ongoin		l	l	I
to and mitigate the damage from flooding	2015	Ongoing	Will carry this action over to 2020 plan.	Projects	High	g	Medium	Aviation	Unknown	Unknown
Identify alternate staging and evacuation areas for			Additional areas were located. Due to changing ownership and	Infrastructure						
personnel and equipment in the event of flooding	2015	Completed	other factors, we will continue to pursue new areas as needed.	Projects	High	2019	Medium		Unknown	Unknown
Improve the capability of the Aviation Department to mitiga			•	•		•		•	•	•

Integrate flood mitigation strategies with projects and activ	rities desi	gned to prot	ect, restore, or enhance ecosystems and the environment and/or c	reate recreational o	pportunities	for the c	ommunity	•		
associated with flood waters		Ongoing	incidents.	Programs	Low	g	Medium	health dept	Unknown	Services/ City
educate the public regarding health and disease issues			Information is provided by the Health Dept. during flooding	Awareness		Ongoin				Funds/ Water
Utilize various methods of social media to inform and				Education and						Funds/ Core PH
and disease issues associated with flood waters	2015	Ongoing	sources.	Programs	Low	g	Medium	health dept	Unknown	Communication
information to the public regarding protection against health			The Health Department is continuously researching funding	Awareness		Ongoin				Services/ City
Identify funding resources for mechanisms to disseminate				Education and						Funds/ Water
										Funds/ Core PH
waters	2015	Ongoing	incidents.	Programs	Medium	g	Medium	Management	Unknown	Services/ City
address health and disease issues associated with flood			Information is provided by the Health Dept. during flooding	Awareness		Ongoin		Emergency		Funds/ Water
Collect and disseminate public education materials that				Education and						Funds/ Core PH
Increase public awareness of health and disease related is	sues asso	ciated with	flood waters					1		
KCMO's Comprehensive Plan		New		Regulations	Medium	rmined	Medium	Planning Dept	Unknown	Unknown
Incorporate mitigation strategies into the development of				Local Plans and		Undete				
Incorporate strategies into KCMO development plans to mi	tigate da	mage from fl	ooding T	1		1				
from dams		Deferred	accurate action	Projects	Medium	d	Medium			
to campgrounds and other recreational areas downstream			1			Deferre				
Where feasible, add and maintain outdoor warning systems				Structure and						
development in the vicinity of dam inundation zones	2015	Deferred	need dam failure analysis and current USACE inundation maps	Regulations	Medium	d	Medium			
Adopt policies, codes, or ordinances to discourage				Local Plans and		Deferre	<u>.</u>			
Improve warning and evacuation systems and procedures i	n the eve	nt of flooding	g due to dam failure							
and privately		Ongoing	will carry over to the 2020 plan	Projects	High	g	Medium	public works		
within the Kansas City metropolitan area owned by the city				Infrastructure		Ongoin				
Mandate for regular repairs and improvements to dams				Structure and						
Identify and pursue grants to repair or improve dams	2015	Deferred	no grants available	Infrastructure	Low	d	Medium			
them a reduction in local taxes or similar financial incentive	2015	Deferred	no resources to provide incentives or assistance	Projects	Medium	d	Medium	<u> </u>		1
particularly those that are more 50 years old, by offering	0015	Defen		Infrastructure	NAII	Deferre	 M = =1:			
Encourage dam owners to repair or upgrade their dams,				Structure and		D .				
minimum site and construction standards for dams	2015	Deferred	funding for research not available; will carry over to 2020 plan	Regulations	Low	d	Medium			
Develop and implement codes and ordinances requiring				Local Plans and		Deferre				
improve the structural integrity of dams to reduce the lines	ic of ualil	iaitui es, Will	on cause itouring	I						T
failure Improve the structural integrity of dams to reduce the threa			other factors, we will continue to pursue new areas as needed.	Regulations	Medium	7018	Medium	public works		<u> </u>
personnel and equipment in the event of flooding from levee	2015	Commists	Additional areas were located. Due to changing ownership and	Local Plans and	Modires	0040	Modition	nublio merles		
Identify alternate staging and evacuation areas for										
to and mitigate the damage from flooding from levee failure	2015	Ongoing	capabilities as technology and resources allow.	Projects	High	g	Medium	public works		
Enhance and upgrade equipment and protocols to respond			Wheeler Airport will continue to enhance and improve its	Infrastructure		Ongoin				
				Structure and						

			T	ı		1	ı	1	1	1
			Although KCMO has considered many alternate uses, future							
Consider alternative uses for floodplains and flood prone			possibilities may arise. This will be carried over to the 2020 plan.	Natural Systems		Ongoin				
areas that have less impact from flooding	2015	Ongoing	CPD reviews private projects.	Protection	Medium	g	Medium	Planning Dept	Unknown	PIAC, other
Consider the construction of detention basins, small lakes,										
and greenways or riparian corridors in areas of new			Study has demonstrated that these actions may not be most							
development to channel and catch storm water, thereby			efficacious to achieving flood mitigation. KCMO is exploring a more	Natural Systems		Deferre				
reducing the likelihood of flooding	2015	Deferred	holistic approach to this goal.	Protection	High	d	Medium		Unknown	PIAC, other
Develop partnerships between emergency management,				Education and						
floodplain management, and environmental groups to			·	Awareness		Ongoin		Emergency		
provide education regarding the benefits of collaboration	2015	Ongoing	2020 plan. Much progress has been made.	Programs	Medium	g	Medium	Management	Unknown	Unknown
Identify funding sources for the acquisition of flood prone			KCMO has identified may funding sources. However, the City will							
land of environmental, recreational, and flood mitigation			explore additional sources as they become available; will carry this	Natural Systems		Ongoin		Emergency		
uses	2015	Ongoing		Protection	High	g	Medium	Management	Unknown	PIAC, other
			WSD continues to provide grants for environmental programs and							
				Education and						
Identify specific programs and activities that can be			floodplain management to improve their IB 120 and improve	Awareness		Ongoin		Emergency		
developed and implement with stakeholders	2015	Ongoing	floodplain administration continue. WSD and CPD continue to	Programs	Medium	g	Medium	Management	Unknown	Unknown
In concert with existing comprehensive and land use plans,										
develop a strategy for acquiring flood prone property for use			Much land has been acquired; means of less costly acquisition	Natural Systems		Ongoin				
as open space or park land	2015	Ongoing		Protection	Medium	g	Medium	Planning Dept	Unknown	PIAC, other
and the state of t		88	, and a second s							,
Research controlling runoff to original native conditions with					Unspecifie	Undete				
respect to peak flow and velocity.	2020	New	Completion date is dependent upon findings.	Unspecified	d		Medium	public works	Unknown	Unknown
roop oo to pour norman and room,				- Chiopeenieu	1	1				
Seek better methods to reduce runoff volume increases										
caused by development to be more like native conditions										
through finding a lower flow rate and velocity that can				Natural Systems		Undete				
reduce erosive impacts due to larger total volume of runoff.	2020	New	Completion date is dependent upon findings.	Protection	Medium		Medium	public works	Unknown	Unknown
reades create impacts and to target total votation or failering	2020	11011	Completion date to depondent upon midings.	r rotodion	riodiam		T Todium	pasae werke	Ginarowiii	O mano vi i
Seek storage, infiltration, roughness and soil amendment										
methods of slowing, reducing, infiltrating and storing runoff				Natural Systems		Undete				
including reduction of impervious parking.	2020	New	Completion date is dependent upon findings.	Protection	Medium		Medium	public works	Unknown	Unknown
motading reduction of impervious parking.	2020	11011	Completion date to depondent upon midings.	rotodion	riodidiii	mmea	Tiodiani	public Works	CHRITOWIT	Onknown
Seek to reduce collection by inlets and conveyance by pipes										
where development or redevelopment creates runoff				Natural Systems		Undete				
volumes greater than native or existing runoff totals.	2020	New		Protection	Medium		Medium	public works	Unknown	Unknown
	2020	. 1017			T TOUTUIT	IIIIIICU	, iodidiii	Pastio Works	STIMIOVVII	Jimilowii
Work with area environmental groups and other			This action is covered by the following action "Develop partnerships between emergency management, floodplain management, and							
stakeholders to develop and implement flood mitigation			between emergency management, floodplain management, and	Natural Systems		Deferre				
strategies that also promote the restoration and/or	2015	Doformad	environmental groups to provide education regarding the benefits of	-	Modium	Deferre	Madium		Unknessen	DIAC othor
sustainability of fish and wildlife habitats	2015	Deferred	collaboration"	Protection	Medium	d	Medium	<u> </u>	Unknown	PIAC, other
Mitigate flooding damage to public facilities										

	1	F		0	1	1	<u> </u>	1	<u> </u>	1
Identify founding a consequent invalence and fleed decrees				Structure and		04				
Identify funding sources to implement flood damage	0045		This is done for known existing ground water for new facilities;	Infrastructure		Ongoin			l	l
mitigation mechanisms such as water pumping equipment	2015	Ongoing	retrofitting is sporadic due to funding.	Projects	Medium	g	Medium	public works	Unknown	Unknown
				Structure and						
Implement flood damage mitigation mechanisms such as			This is done for known existing ground water for new facilities;	Infrastructure		Ongoin				
water pumping equipment	2015	Ongoing	retrofitting is sporadic due to funding.	Projects	Medium	g	Medium	public works	Unknown	Unknown
Research the feasibility of installing water pumping				Structure and						
equipment in public facilities to reduce the damage from			This is done for known existing ground water for new facilities;	Infrastructure		Ongoin				
minor flooding	2015	Ongoing	retrofitting is sporadic due to funding.	Projects	Medium	g	Medium	water services	Unknown	Unknown
Participate in and ensure compliance with flood mitigation	and floo	dplain manag	gement programs.							
			KCMO has obtained the most recent maps. However, the data							
Obtain the latest copies of the flood insurance rate maps			changes over time and, therefore, new maps will be obtained as	Local Plans and						
(FIRMs), floodplain maps, and similar documents	2015	Completed	they become available. Continued through 2020 plan.	Regulations	High	2016	Medium		Unknown	Unknown
Participate in the National Flood Insurance Program (NFIP)			KCMO participates in the NFIP and will continue to do so. This will	Local Plans and						
and Community Rating System (CRS)	2015	Completed	be carried over to the 2020 plan.	Regulations	High	2019	Medium		Unknown	Unknown
		·	·		<u> </u>					
			140D 1: 1 1 1 1 1 0 1:0 1	Education and		l				
**Continue efforts to train staff and specialize in order to			WSD continues to improve its staff such as through Certified	Awareness	l	Undete		Emergency	l	l
become a Certified Technical Partner with FEMA.	2020	Ongoing	Technical Partner training.	Programs	High	rmined	Medium	Management	Unknown	Unknown
**Coordinate and fund with private partners to obtain the										
latest copies of the flood insurance rate maps (FIRMs), and				Education and						
other GIS products. Add other supporting information within			This is an extensive project with multiple external agencies, and a	Awareness		Undete				
a Flood Risk component of City's Parcel Viewer Mapper.		New	completion date cannot be determined at this time.	Programs	High		Medium	public works	Unknown	Unknown
	2020	INCW	completion date cumot be determined at this time.	i rograms	1 11811	IIIIIIICU	riculani	public Works	OHKHOWH	Onknown
**Improve Floodplain Administration through providing										
more tools for the administrators, public, and development				Education and						
that easily, technically inform them of flood risk and			Innovations are constantly developed; a completion date cannot be			Undete		floodplain		
requirements.	2020	Ongoing	determined at this time.	Programs	High	rmined	Medium	manager	Unknown	Unknown
##leanura in Informachian Dullatin informachian valoting to			The Information Dullstin is insuranced as a survey of the second	Lacal Diama and		Lindata		fleedulein		
**Improve Information Bulletin information relating to			The Information Bulletin is improved as new requirements are	Local Plans and		Undete		floodplain	l	l
Floodplain Regulatory compliance and processes.	2020	Ongoing	adopted.	Regulations	High	rminea	Medium	manager	Unknown	Unknown
**Participate in the Community Rating System (CRS) and										
plan its stages of improvement and needs in order to seek			This is an ongoing action as circumstances and requrements	Local Plans and		Undete		floodplain		
support and funding.	2020	Ongoing	change.	Regulations	High		Medium	manager	Unknown	Unknown
Support and runding.	2020	Oligollig	onango.	negulations	riigii	IIIIIIeu	Mediuiii	Illialiagei	CHKHOWH	OHMHOWH
**Dortioinate in the National Flood Incurance Programs				Local Dians and		Undota		floodplain		
**Participate in the National Flood Insurance Program	2000	Ongoing	This is an action performed an an annual hasis	Local Plans and	Lliah	Undete	Modium	floodplain	Unknover	l Inknows
(NFIP)			This is an action performed on an annual basis.	Regulations	High		Medium	manager	Unknown	Unknown
Reduce 11000 retated damage to public and private propert	y iii itood I	prone areas	through structural and nonstructural retrofits, prevention of develo	philient within, or rer	lioval of pro	perty	<u> </u>	T	<u> </u>	T
tt/Adopt again an accountabilities against a development in				Local Diagrand		l locksts				
**Adopt ordinances prohibiting private development in	0000	NI	Halman standard for the	Local Plans and	110.4	Undete	 	Diam's 5	<u></u>	
flood plains or flood-prone areas.	2020	INEW	Unknown timeframe for this action.	Regulations	High	rmined	Medium	Planning Dept	Unknown	Unknown

	I	Ι		<u> </u>		1	Reduces	1	I	T
							the cost			
							of			
							ronotitivo			
			Ctudies have shown that due to nonviotion density haven't may not	Ctru oturo ond			repetitive			DIAC Water
			Studies have shown that, due to population density, buyout may not				damages			PIAC,Water
As funding allows, repetitive flood loss properties and			always be the most efficatious means in all cases. This action will	Infrastructure			through			Service Dept.,
structures will be targeted for buyout.	2015	Deferred	be expanded in the 2020 plan.	Projects	Low	d	the		Unknown	Other
							flood-			
				Structure and			related			
**Elevate public facilities in flood prone areas and			KCMO continues to locate and elevate public facilities as funding is	Infrastructure			damage			
encourage private sector facilities to do likewise.	2015	Ongoing	available.	Projects	High	d Guigoini	to	public works	Unknown	All departments
elicourage private sector facilities to do tikewise.	2013	Oligoling	available.	Fiojects	Iligii	ğ	Reduces	public works	OHKHOWH	All departifients
							the cost			
							of			
							property			
Encourage homeowners and businesses in flood-prone				Education and			damage			
areas to elevate mechanical systems (i.e., furnaces, hot				Awareness			to public,			
	2015	Completed	Educational programs have resulted in substantial improvement		⊔iαh		residentia			
water heaters, electrical panels, etc.).	2015	Completed	Educational programs have resulted in substantial improvement	Programs	High	2017	residentia			+
							Reduces			
							the risk to			
							general			
							public by			
							ensuring			
Encourage utility providers to assess their facilities,				Structure and			reliable			
distribution systems, etc. for vulnerability to flooding and, if				Infrastructure		Deferre	utility			
necessary, retrofit or modify them to decrease vulnerability.	2015	Deferred	FEMA has taken on the responsibility	Projects	High		services			
, , , , , , , , , , , , , , , , , , , ,			,	.,						
**Encourage water and wastewater districts to elevate							City			
vulnerable equipment, electrical controls and other				Structure and			Planning			
equipment at wastewater treatment plants, potable water			Retrofitting falls under WSD; CPD ensures new construction	Infrastructure		Ongoin	Developm			
	2015	Ongoing	I -		⊔iαh	_				
treatment plants and pumping stations.	2010	Ongoing	complies with building codes	Projects	High	გ	ent Reduce	city planning		+
							flood			
							damage			
							_			
							to proporty			
							property			
							by			
							encourgin			
**Identify incentives to offer home owners and businesses						Ongoin				Water Service
to remove or retrofit their structures in flood-prone areas.	•	Ongoing	This action to be accomplished as time and resources allow.	Unspecified	High	g	and	city planning	Unknown	Dept.
Reduce the potential for flooding due to dam failures by en	hancing i	nspection ef	forts							

	1	I		1	1		T		1	T
Adopt codes or ordinances requiring permits, engineering										
studies, and safety certifications prior to the construction of				Local Plans and		Ongoin				
new dams	2015	Ongoing	all earthen structures must comply with earthen building codes	Regulations	Medium	g	Medium	city planning		
Adopt local ordinances and/or state laws requiring all dam										
owners to develop emergency action plans for their dams										
and provide local public safety agencies with copies of these				Local Plans and		Deferre				
plans	2015	Deferred	lack funding; will carry over to 2020 plan	Regulations	Low	d	Medium			
For dams not regulated by the state, encourage dam owners				Education and						
to inspect their dams at least annually and submit the				Awareness		Ongoin				
results to MDNR	2015	Ongoing	only 1 person is available to continue this action	Programs	Low	g	Medium	water services		
Use storm water storage facilities covenants, to compile GIS										
locations and inspect on repeating schedule as funding										
allows. Where O&M is needed, use the covenants and				Structure and						
KCMO chapters to preserve function and maintain dam			This is an extensive project with multiple external agencies, and a	Infrastructure		Undete				
safety.	2020	New	completion date cannot be determined at this time.	Projects	High	rmined	Medium	water services	Unknown	Unknown
To decrease the threat of flooding, reduce the potential for	dam failı	ures by addin	g to the number of dams regulated by the state.			_				
Contact representatives in the state legislature to propose										
changes in state law lowering the height limit for regulated										
dams to 25 feet on those holding back 50 acre-feet or more			This action requires cooperation of state legislature and is difficult	Local Plans and		Undete				
of water.	2020	New	to determine a schedule.	Regulations	Medium	Irmined	Medium	city council	Unknown	Unknown
				<u> </u>				1		
Revise existing dam safety laws and/or regulations to add all										
high hazard dams to the list of regulated dams, regardless of										
dam height and reservoir storage capacity, until the hazard			This is an extensive project with multiple external agencies, and a	Local Plans and		Undete				
potential of these dams can be downgraded.	2020	New	completion date cannot be determined at this time.	Regulations	Medium	rmined	Medium	water services	Unknown	Unknown
Develop plans and adopt policies to address sound stormy	vater and	flooding cha	llenges							•
		Participatin								
Adopt new stormwater engineering design and		g in review								
management standards and stream setback		of draft								
development standards to reduce the risk of stream		standards								
and flash flooding		under								
and hadii hoodiiig			 Metro KC APWA Section is working with consultants to complete the	I ocal Plans and			no costs			
	2025	nt	new standards in 2025	Regulations	High			City Council	n/a	n/a
	2025	Int	inew standards in 2025	Inegulations	I ligii	######	nuchuneu	City Council	III/a	III/a

								1		
**As funding allows, repetitive flood loss properties or										
structures will, in flood prone areas, be targeted for buyout										
or other mitigations that meet FEMA and local Minimums of					Unspecifie	Undete		floodplain		
protection for base flood elevations and freeboard.	2020	New	Buyouts occur as funding becomes available and varies by property.	Unspecified	d	rmined	Medium	manager	Unknown	Unknown
Encourage utility providers to assess their facilities,				Structure and						
distribution systems, etc. for vulnerability to flooding and, if				Infrastructure		Undete		Emergency		
necessary, retrofit or modify them to decrease vulnerability.	2020	New	Completion date is based on external agency timelines.	Projects	Medium	rmined	Medium	Management	Unknown	Unknown
For public facilities, seek to modernize to FEMA regulatory			This action is accomplished as funds and resources become		Unspecifie	Undete				
compliance, even when not required, if cost benefit justifies.	2020	Ongoing	available.	Unspecified	d	rmined	Medium	public works	Unknown	Unknown
Identify funding sources to implement flood damage				Structure and		Undete				
	2020	New	This action to be accomplished as time and resources allow.	Infrastructure	⊔iαh		Medium	public works	Unknown	Unknown
mitigation mechanisms.	2020	INEW	This action to be accomplished as time and resources attow.	Projects	High	mineu	Medium	public works	Ulikilowii	OHKHOWH
Levy fees on non-public use development in floodplains or										
flood-prone areas to finance flood mitigation, preparedness,				Local Plans and		Undete				
response and recovery actions.	2020	Ongoing	This action is based on the frequency of land development.	Regulations	High		Medium	Planning Dept	Unknown	Unknown
Provide funding for water and wastewater districts to elevate										
vulnerable equipment, or implement other modifications, at										
water and wastewater facilities to FEMA and other					Unspecifie	Undete				
standards.	2020	New	This action to be accomplished as time and resources allow.	Unspecified	d	rmined	Medium	public works	Unknown	Unknown
				Structure and						
Reduce/mitigate the risk of flooding on public facilities in				Infrastructure		Undete				
flood-prone areas.	2020	New	This action to be accomplished as time and resources allow.	Projects	High	rmined	Medium	public works	Unknown	Unknown
Require development identify its frequency and severity of										
risk and base flood elevations per NFIP and City adopted										
APWA standards and require appropriate local community				Local Plans and		Undete				
freeboard.	2020	Ongoing	This action is taken as needed when new development arises.	Regulations	High	rmined	Medium	public works	Unknown	Unknown
Research and implement methods to continually improve										
Chapters and standards to better identify flood risks to										
better inform and prevent harm to or from development or					Unspecifie	Undete				
redevelopment.	2020	New	This action to be accomplished as time and resources allow.	Unspecified	d	rmined	Medium	public works	Unknown	Unknown
**Use methods to encourage home owners and businesses					Unspecifie	Undete				
to reduce/mitigate the risk of flooding for their structures.	2020	New	This action to be accomplished as time and resources allow.	Unspecified	d		Medium	public works	Unknown	Unknown
	mmercial	property in	flood-prone areas through structural and nonstructural retrofits or	removal of property.	·			•		