



John Cooper, Mayor

OFFICE OF EMERGENCY MANAGEMENT

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Metropolitan Nashville and Davidson County Multi-Hazard Mitigation Plan Annual Progress Report December 2022

The purpose of this document is to continue to provide an annual progress report of activities associated with the Multi-Hazard Mitigation Plan of Metropolitan Nashville and Davidson County, and its satellite cities. We will also cover the background information of the hazard mitigation plan and the planning process.

Annual Progress Report

Every year, the Nashville Office of Emergency Management (OEM) will create and submit an annual report (excluding full revision years), in coordination with the Community Planning Team, for progress of the Multi-Hazard Mitigation Plan review and revisions.

This report is for informational purposes only and does not require action by the Metropolitan Nashville City Council or Mayor. Therefore, this report will be sent electronically to the Metropolitan Mayor, City Council and State National Flood Insurance Program (NFIP) Coordinator, and will be available to the public on the OEM website (www.oem.nashville.gov), and released to the media via a media release by the OEM Public Information Officer.

Background

As part of the overall community planning effort for hazard mitigation, the Metropolitan Government of Nashville and Davidson County, Tennessee, (Metro) has prepared a Multi-Hazard Mitigation Plan pursuant to the requirements of the Disaster Mitigation Act of 2000 (DMA) (Public Law 106-390).

Hazard Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Hazard Mitigation Planning is the process through which the hazards that threaten communities are identified, the likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are identified, prioritized, and implemented.

Hazard Mitigation Planning is a requirement for state and local governments to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs, such as the Federal Emergency Management Agencies (FEMA) Community Rating System (CRS) and Flood Mitigation Assistance (FMA) programs. The Nashville Office of Emergency Management has formulated a single planning process that melds these two sets of planning requirements together and meets the requirements of a total of six major programs: CRS, FMA, DMA, Hazard Mitigation Grant Program (HMGP), FEMA's Pre-Disaster Mitigation Program (PDM), and flood control projects authorized by the U.S. Army Corps of Engineers (USACE). Metro is both a community at risk and a community that has benefited from federal mitigation funding programs.

FEMA planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning process. This means that all satellite cities within Davidson County that want to take advantage of these programs must either participate with Metro in this

plan or create their own stand-alone mitigation plan and submit it to FEMA.

The current Multi-Hazard Mitigation Plan was last fully revised and adopted by the Metro Nashville and Davidson County Mayor on May 8th, 2020, and subsequently by all five satellite cities of Belle Meade, Berry Hill, Forest Hills, Goodlettsville and Oak Hill. FEMA officially approved this plan on May 12th, 2020, and the approval is good for a period of five years, to May 11th, 2025. This plan and associated action items will go through quarterly reviews by the Community Planning Team, and any revisions that need to be made will be done upon team consensus.

Planning Steps

The Hazard Mitigation Plan planning process involves ten main steps:

1. Organize. *The lead agency is the Nashville OEM and the Community Planning Team (CPT).*
2. Involve the Public. *The public is afforded the opportunity to provide input and comment throughout the planning process.*
3. Coordinate with other Departments/Agencies. *Coordination with other community planning efforts is paramount to the success of the plan. This plan and the process integrates many other plans, studies, reports etc., along with the CPT reaching out to other key agencies such as the U.S. Army Corp. of Engineers, U.S. Geological Survey and State of TN agencies to name a few.*
4. Assess the Hazard. *The Nashville CPT conducts Hazard Identification Risk Assessments (HIRA) which identifies hazards for the planning area. This process also researches previous occurrences, those that might occur in the future, and the likelihood of their occurrence or reoccurrence.*
5. Assess the Problem. *This is where the team conducts vulnerability and capability assessments to understand the impact that each hazard would have, and to determine the current ability of the planning area to mitigate the hazards through existing policies, regulations, programs, and procedures.*
6. Set Planning Goals. *Planning goals are established to incorporate improvement areas identified in Step 5 into the mitigation plan. The current goals and objectives set by the CPT are:*
 - *Goal 1: Reduce exposure to hazard related losses for existing and future development.*
 - *Objective 1.1: Strengthen the existing flood hazard mitigation program.*
 - *Objective 1.2: Protect critical facilities, utilities, and infrastructure.*
 - *Objective 1.3: Improve the coordination of severe weather mitigation actions.*
 - *Objective 1.4: Develop a coordinated set of mitigation actions that address geological hazards (earthquakes, sinkholes, and landslides).*
 - *Goal 2: Promote awareness of hazards and vulnerability among citizens, business, industry, and government.*
 - *Objective 2.1: Develop a seasonal multi-hazard public education campaign to be implemented annually.*
 - *Goal 3: Maximize use of available funding.*
 - *Objective 3.1: Identify multiple objective opportunities that can be used to support mitigation activities.*
 - *Objective 3.2: Identify and analyze project cost share options.*
 - *Objective 3.3: Submit mitigation project applications annually at a minimum.*

7. Review Possible Mitigation Activities. *The CPT reviews previous activities and goals along with any new activities and/or goals presented to the team. The team continues to focus on the following categories of mitigation measures:*
 - *Prevention;*
 - *Property Protection;*
 - *Structural Projects;*
 - *Natural Resource Protection;*
 - *Emergency Services; and*
 - *Public Information*
8. Action Plan. *The action plan presents the prioritized recommendations for Metro to pursue to lessen the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. This also includes a cost estimate, community benefit and any potential funding sources.*
9. Adopt the Plan. *Upon completion, the Metropolitan Mayor adopts the plan by letter of promulgation, and the satellite cities are given the opportunity to adopt this plan as their city plan through letters of resolution at their respective public meetings.*
10. Implement the Plan, Evaluate its Worth, Revise as needed. *Upon adoption, the mitigation plan faces the truest test of its worth, implementation. Many worthwhile and high priority mitigation actions have been recommended and the CPT must decide which action to undertake based upon priority and available funding. In addition, the plan requires regular maintenance. Annual reviews and updates must be completed and will help in evaluating the implementation of the plan.*

Real Events - Lessons Learned

Fortunately, 2022 did not experience as many major emergency situations in Nashville-Davidson County as the past previous years. In January and December 2022, we did experience winter weather events that negatively affected the populous, in particular the severe cold of Winter Storm Elliott around Christmas 2022. During Winter Storm Elliott, major power grid problems swept across much of the United States, including Nashville-Davidson County, where many went without power for several hours and even days. Lessons Learned will be evaluated and worked on in 2023. We will however continue to work on lessons learned from previous years events.

Not all lessons learned can be part of hazard mitigation, but the Community Planning Team looks at the lessons learned, and addresses what they can within the mitigation plan during the next plan review/revision. This process works hand in hand with Metro's Comprehensive Emergency Management Plan. Continuing from last year, here are a few topics that the Community Planning Team noted that they feel needs to be addressed more within the mitigation plan in the future:

- Community Preparedness/Mitigation
- Community Communication
- Clean-up (debris) Safety
- Data Sharing
- Pre-made mapping/programs

During future hazard mitigation plan reviews, the Community Planning Team will continue to work towards addressing these lessons learned, along with any others brought up, and possibly adding mitigating actions within the hazard mitigation plan.

Community Planning Team (CPT)

The DMA planning regulations and guidance stress that each local government seeking the required FEMA approval of its mitigation plan, must participate in the planning process. The Community Planning Team (CPT) is led by the Nashville Office of Emergency Management, and composed of Metro employees from various departments, satellite city representatives, public utility agencies, State and Federal agencies, and non-profit organizations. The CPT is responsible for the quarterly and annual reviews, revisions, and updates to the plan, along with taking the lead with action items and following up as appropriate.

Additional agencies and stakeholders have been and will continue to be contacted to serve as subject matter experts, to coordinate programs and to help support the community’s efforts. These agencies have previously included the U.S. Army Corps of Engineers and the National Flood Insurance Program (NFIP) State Coordinator to name a few. This past year, the Mayor’s Office Resiliency Office was coordinated with to expand on Community Resiliency, and will continue to move forward as an important aspect of mitigation.

The following table lists members of the Community Planning Team during 2022:

CPT Member	Agency / Title	Email	Phone
Heidi Mariscal (Lead)	Nashville OEM/ Planning, Training, Exercise Coordinator	Heidi.Mariscal@nashville.gov	615-862-8530
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Becknal, Mark	Goodlettsville Fire/ Deputy Chief	mbecknal@cityofgoodlettsville.org	615-851-2245
Bragg, Damond	MWS/ Field Supervisor/Stormwater Maintenance	Damond.bragg@nashville.gov	615-862-4520
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Coleman, Tim	Berry Hill/ Police Chief	tcoleman@berryhilltn.net	615-297-4701
Young, Reginald	Metro Nashville Schools/ Safety Director	reginald.young@mnp.s.org	615-259-8747
Dawson, Greg	Trevecca University/ Director of Security	GDawson@trevecca.edu	615-248-1507
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Whatley, Brittney	Vanderbilt University/ Continuity Mgr	brittney.m.whatley@Vanderbilt.edu	615-927-2360
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Wortham, Tyler	MWS/ Engineer in Training-Stormwater Maintenance	Tyler.Wortham@nashville.gov	615-862-4724
Young, Tim	Metro Public Works/ Technical Specialist 1	Tim.young@nashville.gov	615-862-8752
Zurawski, Ron	TGS/ State Geologist	Ronald.zurawski@tn.gov	615-532-1502

Mitigation Action Plan

The Community Planning Team has established an Action Plan that lists mitigation initiatives called action items. The Action Plan presents the prioritized recommendations for Metro to pursue to lessen the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The recommendations are listed under their corresponding goal and each item includes a cost estimate and community benefit.

New projects/action items are recommended by CPT members at the review meetings. If the CPT agrees to the action item, it is added to the list. Unfortunately, some project deadlines are not met due to lack of funding, staff availability or similar. The CPT will continue to keep these items in the Action Plan until it is either complete or the CPT determines it is no longer feasible.

Attached is a *summarized* list of the recommended actions and their most recent updates for this 2022 Annual Report. The full Multi-Hazard Mitigation Plan includes all detailed information for each action item (and associated goals/objectives), and updates since the creation of the action item, and can be found on Nashville OEM’s website www.oem.nashville.gov.

Summary

After all the events we encountered over the past few years, Metropolitan Nashville and Davidson County, through the CPT, is committed more than ever to continuing to enhance mitigation efforts as much as possible to reduce or eliminate risk to human life and property from hazards in our community. We are proud to have maintained a Class 8 certification with the Community Rating System, and to bring associated flood insurance discounts to our community. In addition to the community discount, this plan and associated actions will allow us to continue to take advantage of future funding available for hazard mitigation activities. The continued collaboration, coordination, and support from partners inside and outside of Metro Nashville government, including our satellite cities and the community at large, plays a critical part in the success of hazard mitigation all around.

Heidi J. Mariscal
 Nashville Office of Emergency Management
 Planning, Training, Exercise Coordinator

Action #	NASHVILLE/DAVIDSON COUNTY HAZARD MITIGATION ACTION PLANS SUMMARY & 2021 UPDATES	Lead Agency																								
1-1	Based upon the priority list, the action plan recommends that Metro initiate design and construction of high priority capital improvement projects.	MWS																								
2020 update	<i>MWS continues to dedicate capital funds to high priority stormwater projects. The proposed capital budget for FY22 is \$27M.</i>																									
2021 update	<p><i>Data from FY19 thru FY21:</i></p> <table border="1" data-bbox="423 533 1425 747"> <tr> <td>Total Capital Projects</td> <td>\$11,702,489.93</td> <td>\$11,575,373.62</td> <td>\$10,945,372.68</td> </tr> <tr> <td>Total Small Capital Projects</td> <td>\$3,475,682.67</td> <td>\$3,737,860.21</td> <td>\$3,576,702.51</td> </tr> <tr> <td>Bike Grate Replacement</td> <td>\$496,987.57</td> <td>\$499,942.70</td> <td>\$498,842.80</td> </tr> <tr> <td>Metro Center Levee Grass Maint.</td> <td>\$75,773.67</td> <td>\$44,388.14</td> <td>\$68,691.04</td> </tr> <tr> <td>Street Sweeping</td> <td>\$609,161.62</td> <td>\$691,944.24</td> <td>\$876,214.20</td> </tr> <tr> <td>Sum =</td> <td>\$16,360,095.46</td> <td>\$16,549,508.91</td> <td>\$15,965,823.23</td> </tr> </table>		Total Capital Projects	\$11,702,489.93	\$11,575,373.62	\$10,945,372.68	Total Small Capital Projects	\$3,475,682.67	\$3,737,860.21	\$3,576,702.51	Bike Grate Replacement	\$496,987.57	\$499,942.70	\$498,842.80	Metro Center Levee Grass Maint.	\$75,773.67	\$44,388.14	\$68,691.04	Street Sweeping	\$609,161.62	\$691,944.24	\$876,214.20	Sum =	\$16,360,095.46	\$16,549,508.91	\$15,965,823.23
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1-2	The CPT recommends that ordinance language to provide added protection for critical facilities and prohibit hazardous materials and public health hazards from the floodplain is drafted, circulated for review, and adopted.	MWS, Planning, Codes																								
2020 update	<p><i>The process to update the Stormwater Management Manual is ongoing. Also, Metro Water Services is currently considering "Flood Design Class" provisions outlined in the FEMA ASCE 24-14 Flood Resistant Design and Construction standard, which relates to "critical facility" minimum elevation and/or floodproofing measures for potential inclusion in Metro Stormwater requirements.</i></p> <p><i>The Department of Codes and Building Safety, through the Cityworks permitting system, are now tracking all new construction permits to Metro Water Services for review of Stormwater Grading, and Floodplain issues prior to issuance. Upon review by MWS, they have the option to add any additional reviews felt necessary including a final approval prior to final use and occupancy being approved.</i></p>																									
2021 update	<p><i>MWS Development Services continues to review development plans to ensure all new development meets Metro Nashville floodplain regulations to include first floor elevation requirements (related to 1% floodplain elevation).</i></p> <p><i>MWS also in the latest Stormwater Management Manual revision (that went into effect on 11/18/21), added language outlining certain "non-conversion" requirements relating to enclosures (i.e. basements) developed within the floodway/floodplain. This prevents future conversion to allow habitation of such spaces. Also, MWS has recently setup a process where development sites that utilize floodproofing measures as a condition of their permitted development are inspected routinely (i.e. annually, etc.) by Metro Water staff to ensure ongoing functionality/benefit of their floodproofing measures.</i></p>																									

2022 update	<i>MWS conducted inspections of the 13 “permitted” floodproofing sites in Metro. Metro Water Services currently designs/builds elevations for electrical/mechanical facilities to the “500 year plus 2 ft” on MWS projects. All other public and private projects are elevated per provisions of the Metro Stormwater Management manual (1 to 4 feet above the 1% base flood elevation). Regarding floodproofing site inspections this year, 7 of 13 sites were inspected by Metro staff in 2022.</i>	
1-3	The Nashville Office of Emergency Management (OEM) should review the costs and benefits of preparing a detailed flood response plan that identifies specific actions to take at different flood level predictions.	OEM
2020 update	<i>Nashville’s SAFE program already serves the purpose of identifying action levels and identifying locations that may be in harm’s way when flooding conditions may be imminent. MWS’s Watershed Advisors are trained in SAFE on a regular basis and are present in the EOC when flooding is the situation at hand. OEM and MWS agree that due to the current SAFE programs’ capabilities, a separate flood response plan is not necessitated. Instead, OEM and MWS will create a multi-agency Flood Response Standard Operating Procedure which will outline who, what and when with flood responses before or during EOC activations.</i>	
2021 update	<i>Nothing new to report aside from continued multi-agency coordination throughout 2021.</i>	
2022 update	<i>Nothing new to report.</i>	
1-4	The studies underway in the approximate A Zones should be completed and adopted into Metro’s floodplain regulations. The studies should then be submitted to FEMA with a request to revise the FIRM.	MWS
2020 update	<i>FEMA had suspended the approval process for the new FIRMs due to COVID-19, but are now prepared to start the 90-day appeal period in early 2021. After the appeal period is completed, Metro Council will adopt the new maps. We anticipate adoption to occur in the fall of 2021.</i>	
2021 update	<i>FEMA has given an adoption date of February 25th, 2022, and Metro Council will also adopt the maps by this date.</i>	
2022 update	<i>FEMA has finalized adoption of 2 sets of revised FIRM Panels. 60 panels dated 03/27/2020, which were adopted in February 2022. 18 panels dated 4/28/2021 are pending approval. Risk map tools are included as part of these revisions.</i>	
1-5	Develop a property acquisition plan and associated policies to acquire properties in the repetitive loss areas.	MWS
2020 update	<i>MWS continues to focus on the purchase and demolition of homes on FEMA's Repetitive Loss List. To date 70 homes have been purchased and the properties have been converted to perpetual open space. 13 additional RL homes are included in grant applications awaiting approval and funding through FEMA. MWS has purchased 12 homes on Mill Creek and 3 homes on Sevenmile Creek through projects with the USACE. The total number of homes on those two projects is 100. MWS is working on additional applications to be submitted to FEMA in early 2021.</i>	
2021 update	<i>Have purchased 420 homes in total. As of December, 90 properties on the Repetitive Loss List have been mitigated by either the homeowner, or through the MWS Home Buyout Program. We continue to focus on the purchase of Repetitive Loss homes.</i>	

2022 update	<i>MWS has purchased 439 homes in total through 2022. We continue to pursue the purchase of additional Repetitive Loss homes.</i>	
1-6	Fund, acquire, and install appropriate hardware and software.	OEM
2020 update	<p><i>OEM and ESC's are still utilizing the free LEEP program within the FBI. Tornado sirens were recently upgraded and completed in 2020. During 2020 tornado response and COVID-19 response, miscellaneous IT related items were installed within the EOC, including but not limited to WebEx video conference system to be utilized from within the EOC.</i></p> <p><i>OEM recommended keeping this action item open to continue to improve technology for information sharing and continue to look for programs etc. to improve on the EOC's effectiveness and efficiency.</i></p>	
2021 update	<i>OEM is investigating possible overarching solutions.</i>	
2022 update	<i>OEM has been working towards different possible funding options for the WebEOC program, and has ultimately decided that Metro's 4% fund, and OEM's Metro budget is the route they will have to take. We have worked with the Metro Finance office to line up all necessary items for possible acquisition in January 2023 if the 4% request is approved.</i>	
1-7	The MWS Stormwater Division should review the costs and benefits of formalizing Metro's inspection and maintenance program to include detention facilities as well as streams and ditches.	MWS
2020 update	<p><i>Metro Water Services Stormwater has now fully implemented a Stormwater Control Measures (SCMs) inspection and monitoring program to ensure SCMs – to include detention ponds – are being inspected and maintained by parcel owners. Nearly 6,000 SCMs are currently in place within Metro Nashville with that number currently growing by approximately 400 SCMs per year. Metro Stormwater staff inspected over 3,045 SCMs in fiscal year 2020 and over 11,600 SCMs since fiscal year 2014, which includes many re-inspections after maintenance was performed by the owners. This inspection program has led to numerous SCMs in need of maintenance being maintained/made functional again. Additionally, Metro Stormwater Maintenance Staff continue to investigate stormwater drainage concerns (over 1,050 in fiscal year 2020). Maintenance crews also proactively maintenance between 30 to 40 chronically problematic drainage locations prior to rain events as these locations are prone to flooding during certain rain events. Stormwater crews also routinely inspect and, if needed, maintenance and clear the Dry Creek Weir flood protection structure to allow it to fully function during significant rain events.</i></p>	
2021 update	<p><i>As of 11/23/2021, there are 6,233 permanent stormwater control measures (SCMs) located within Metro Nashville that were required to be installed by the development, during the grading permit process. In September 2021, NPDES completed the first cycle of the expanded SCM inspection and maintenance oversight program. This SCM oversight expansion program began in late 2017 and resulted in many non-functioning SCMS being maintained, such as old dry detention ponds holding water and underground stormwater treatment vaults completely full of sediment. These maintenance accomplishments should have a direct benefit in reducing downstream flooding and water quality pollution. During the first cycle of the expanded SCM inspection program, NPDES performed an estimated 8,000 inspections and/or re-inspections of structures located on approximately 4,000 separate properties. As a result, NPDES issued 1,673 follow-up letters/emails to property owners requiring maintenance work to be accomplished. This program will now embark on the second round of SCM inspections and re-inspections.</i></p>	

2022 update	<i>Through 12/31/22, there are 6,867 permanent stormwater control measures (SCMs) located within Metro Nashville that were required to be installed by the development, during the grading permit process. Stormwater staff performed 1,355 inspections and/or re-inspections of structures during 2022.</i>	
1-8	It is recommended that the definition of a critical lot be expanded to include specific geological details and defined subjectively during plat review and that the critical lot concept be used in review of other developments.	MWS, Planning, Codes
2020 update	<i>From the recent update to this plan 2019-2020, it was agreed upon to convene a group of personnel from Metro Codes, Metro Planning, Metro Water and OEM to look at the larger picture to determine if this warrants pursuing wider critical lot oversight, and if so, how can this be achieved Metro wide. Currently, Planning does not have the ability to flag critical lots if they are existing, only new plats. Regulations will need to be discussed as well as processes and procedures for all critical lots, not just subdivisions.</i>	
2021 update	<i>The departments identified for this action item met and discussed how to proceed with this. There was discussion as to how extensive this will be to change, and that future discussions will need to happen.</i>	
2022 update	<i>Discussion has been happening, and future discussions are needed to proceed.</i>	
1-9	MWS Drainage Maintenance staff should make site visits in response to complaints or inquiries from property owners. Staff should be trained in retrofitting techniques and be comfortable providing retrofitting guidance during site visits.	MWS
2020 update	<i>Stormwater Group conducted a training session in FY20 with MWS Dispatchers and Call Center rep managers and staff to train them on the notification processes and routings needed to ensure that community stormwater concerns can be adequately considered by appropriate Stormwater staff.</i>	
2021 update	<i>MWS Stormwater Maintenance Group conducted 2,374 Stormwater Maintenance investigations in FY21 (July 2020 to June 2021).</i>	
2022 update	<i>FY22 – 2,601 Investigations completed July 1, 2021 to June 30, 2022.</i>	
1-10	Closed out – Combined with Goal #2	
1-11	It is recommended that Metro personnel participate in training in the use of the RSDE program.	MWS
2020 update	<i>The Residential Substantial Damage Estimator (RSDE) was not addressed at the 2019 conference, and this conference was cancelled for 2020. MWS will continue to look for a class on the RSDE for the plan review staff at Metro Development Services.</i>	
2021 update	<i>A training was conducted by FEMA for the Residential Substantial Damage Estimator, and staff from Metro Water, OEM and other agencies from the Community Planning Team all participated virtually.</i>	
2022 update	<i>As a community, we are working on the implementation of the new FEMA Substantial Damage Administrative Procedures program. This is expected to be rolled out in 2023.</i>	

1-12	The CPT recommends assisting the City of Goodlettsville with the FEMA repetitive loss buyout program and associated flood mitigation initiatives.	MWS, OEM, TEMA
2020 update	<i>MWS has received preliminary data for the dry creek study on July 31st, 2019 from USACE. Goodlettsville has requested a camera along the channel to assist with reliable real time monitoring of flood conditions. The area continues to be Goodlettsville's highest threat sector for a flood to suddenly impact residential occupancies in a life-threatening way. MWS will contact TEMA for future possibilities with funding options, and it is recommended that Goodlettsville also contact TEMA for more assistance.</i>	
2021 update	<i>Goodlettsville continues to have personnel monitor the weir. No further action has occurred.</i>	
2022 update	<i>Metro Stormwater maintains communication with Goodlettsville staff during flood events and remains ready to assist as/if needed.</i>	
1-13	The CPT recommends assisting local colleges and universities in obtaining outdoor early warning sirens through grant funding and connecting them to the city's existing early warning siren systems.	OEM
2020 update	<i>Belmont and TSU were interested in possibly having a new tornado siren located on their property. This information was sent on to those responsible for planning for the siren upgrades and additions in 2019-2020, however these locations were not ones picked based on current siren coverage and population. This will continue to be on the radar for future project opportunities.</i>	
2021 update	<i>Nothing new to report.</i>	
2022 update	<i>OEM continues to be available for discussion if a facility wishes to explore this avenue.</i>	
1-14	The satellite city of Oak Hill (located within Davidson County, TN) is aware of certain areas in their jurisdiction that have historically experienced flooding during significant rain events. In an effort to address these and any other such issues that may exist, Oak Hill has initiated a 3 Phase Drainage Study/Correction Plan. It is recommended to include this project from the City of Oak Hill in this Multi-Hazard Mitigation Plan as it mirrors actions with Metro Water Services and applies to the over goal.	City of Oak Hill
2020 update	<i>The USACE project on Browns Creek has not been funded by either Metro or the USACE. MWS will coordinate with the City of Oak Hill as the project moves forward.</i>	
2021 update	<i>This action item was delayed due to personnel changes with Oak Hill. No change on the status of funding through the USACE. The list of homes identified in the USACE study has been shared with the City of Oak Hill CPT member.</i>	
2022 update	<i>No change on the status of funding through the USACE, and it could be delayed for a couple years.</i>	
1-15	Based upon the priority list, the action plan recommends that Metro initiate design and construction of high priority capital improvement projects	MWS
2020 update	<i>MWS' ongoing leak detection contract was renewed for another 5-year term [with the same leak detection subcontractor who has been working with us for the past 15 years (WSO)]. In the next five years of the program, it is MWS' intent to implement permanent district metered areas (DMAs) utilizing existing pressure zone boundaries in an effort to detect leaks earlier.</i>	

	<i>The program will also continue to perform condition assessments on critical water transmission mains in the distribution system in order to catch defects prior to them becoming leaks or a structural failure in the pipe.</i>	
<i>2021 update</i>	<i>Nothing new to report.</i>	
<i>2022 update</i>	<i>With increased dedicated funding, MWS has increased construction of priority water infrastructure replacement capital projects. Additionally, the leak detection and condition assessment program on critical water transmission mains has expanded.</i>	
1-16	Completed – Closed out	MWS
1-17	Completed – Closed out	NES
1-18	In restoring MWS’ water and sewer facilities from 2010 Flood impacts, site-specific flood risk mitigation was employed as possible/feasible in bringing facilities back online. Further, it has been MWS’s practice since the May 2010 flood to incorporate flood mitigation into capital projects planned for the facilities that were impacted by the flood. Since the flood, the designs were modified to elevate the facilities above the flood of record to minimize the potential impacts of future floods.	MWS
<i>2020 update</i>	<i>MWS continues to work with FEMA regarding funding relating to the remaining project elements. MWS is currently moving one process-critical project forward, apart from FEMA funding (water plant process improvement project). One other project has been approved for FEMA funding with the design currently in the big acquisition process (WWTP floodproofing project).</i>	
<i>2021 update</i>	<i>Dry Creek WWTP was awarded a FEMA grant for the construction of a floodwall to protect the facility. This Dry Creek Flood Protection System is currently under design, which is anticipated to be completed within the next year.</i>	
<i>2022 update</i>	<i>Design of the Dry Creek WWPT Floodwall is complete and permitting process has been initiated.</i>	
1-19	Evaluate regulatory standards, infrastructure needs, and/or funding strategies to improve stormwater runoff and local flooding in rapidly redeveloping areas.	Codes, Planning, MWS
<i>2020 update</i>	<i>Newly added in 2019/2020 revision.</i>	
<i>2021 update</i>	<i>MWS continues to evaluate strategies in association with certain stormwater master planning activities that are currently planned.</i>	
<i>2022 update</i>	<i>Work has begun on a Stormwater Master Plan project to further identify stormwater/drainage issues in highly developed areas.</i>	
1-20	Create a central depository of geological events within Metro, to include landslides and sink holes within the county.	ITS/GIS, Codes, MWS, OEM, PW
<i>2020 update</i>	<i>Newly added in 2019/2020 revision.</i>	

2021 update	<p><i>The Community Planning Team has had separate meetings to discuss the feasibility of this action item, and how to proceed. MWS can provide regulatory sinkhole GIS data information to any Metro mapping depository once created.</i></p> <p><i>MWS Stormwater annually updates internal "permitted" sinkhole GIS data from TN Dept of Environment and Conservation to be used by plans reviewers in evaluating development plans, and this staff also uses "closed contours" on latest topo maps to identify sinkholes.</i></p>	
2022 update	<p><i>MWS Stormwater has updated our internal "permitted" sinkhole GIS data from TN Dept of Environment and Conservation. This data is used by staff in evaluating development plans. Staff also uses "closed contours" on latest topo maps to identify sinkholes.</i></p>	
1-21	<p>In conjunction with Action #1-13, the CPT acknowledges the importance of working with and assisting our local universities with emergency preparedness and hazard protection. Assist TSU in their work towards a robust hazard mitigation plan beyond this mitigation plan.</p>	TSU
2020 update	<p><i>Newly added in 2019/2020 revision.</i></p>	
2021 update	<p><i>Nothing new to report. TSU continues to be an active member of the Community Planning Team.</i></p>	
2022 update	<p><i>The University continued to transition from the pandemic response. The University updated its Emergency Operations Plan (EOP) to account for new pandemic response measures to aid in mitigating the impact on the campus population (faculty, staff, and students). This process included aiding in the identification of resources, along with the procurement, inventory, and distribution of personal protective equipment as well as the facilitation of housing and mass testing of the campus population. The University's footprint grew with the opening of a new 700-bed residential building on campus. The University worked to expand training to the new residence hall to staff and students to ensure overall preparedness for natural and man-made disasters. The University was recognized and recertified as a storm-ready University by the National Weather Services.</i></p>	
1-22	<p>Evaluate and create a process/strategy to advance the Nashville-Davidson County CRS rating to at least a 6, which would give the community a 20% discount on flood insurance.</p>	MWS, Metro Codes
2020 update	<p><i>Newly added in 2019/2020 revision.</i></p>	
2021 update	<p><i>In order to increase our CRS rating, we need a higher level of participants to assist in this, since it would require more than Metro Water, and would also need some full-time staff for this task. Metro remains at a Class 8.</i></p>	
2022 update	<p><i>After further evaluation of Metro's overall CRS considerations, the goal has been shifted to a Class 7 rating.</i></p>	
1-23	<p>Develop and maintain an Enhanced Damage Assessment Team to go in the field after the event to determine damage and run in FEMA's substantial damage estimator.</p> <p>This action item also needs to include a program to track the properties.</p>	MWS, Codes, OEM, ITS/GIS
2021 update	<p><i>Newly added 06/2021. Discussions between OEM and MWS on potential Strike Teams. More planning discussions to continue.</i></p>	

2022 update	<i>MWS has identified staff to serve on the Enhanced Damage Assessment Team.</i>	
1-24	Conduct essential training and annual exercises for all damage assessment teams, including the newly added team in item #1-23.	MWS, OEM, GIS
2021 update	<i>Newly added 06/2021. The training and exercises would include all the different teams, Codes/OEM, USAR, Red Cross and the new strike team.</i>	
2022 update	<i>OEM has been working towards new technology which could change the way the damage assessment teams work. This item was placed on a temporary hold.</i>	
2-1	Develop and conduct a multi-hazard, seasonal Public Awareness Program that provides citizens and businesses with accurate information describing the risk and vulnerability to natural hazards and is implemented on an annual basis.	OEM, MWS
2020 update	<i>A new group, 'Public Campaign Coordination Group' was created to accomplish this action item on an on-going basis. This group is multi-agency and is being led by Nashville OEM. This action item also pushed us to create a new section within this plan, Section 4-4 'Public Outreach'.</i>	
2021 update	<i>Due to all the real-world emergencies this past year, this group did not work on this item. The group is planning on convening again in early 2022. Metro Water will be initiating an outreach project for the newly revised FIRM Panels and FIS.</i>	
2022 update	<i>The members of the campaign continue to meet and share information.</i>	
2-2	Metro Water Services should request the state NFIP Coordinator to conduct Agent and Lender Workshops in support of the community's overall NFIP program efforts.	MWS
2020 update	<i>Need to have a discussion with the NFIP state coordinator, Amy Miller, to discuss training for insurance agents and lenders on NFIP topics.</i>	
2021 update	<i>Nothing new to report.</i>	
2022 update	<i>Nothing new to report.</i>	
2-3	MWS currently sends an annual mailing to the approximate 10,000 properties located within the 100-year floodplain. It is recommended that MWS Stormwater Division continue the mailing and that the mailing be modified to include other natural hazards of concern that have been identified through the hazard mitigation planning process.	MWS
2020 update	<i>MWS will create and evaluate the additional mailer list to satellite cities in Davidson County for the next annual mailer.</i>	
2021 update	<i>MWS has created the mailer list for 2021 which includes satellite cities in Davidson County. This mailer was sent out in October and was modified to include other natural hazards of concern.</i>	
2022 update	<i>MWS continues to send out these mailings on an annual basis, along with additional mailings for new floodplain properties associated with updated FIRM maps.</i>	

2-4	Completed – Closed out	MWS
2-5	Conduct, at a minimum, annual training on hazard mitigation tools for local government/responders.	MWS, OEM, GIS
<i>2021 update</i>	<i>Newly added 06/21. Training scheduled for field response personnel on SAFE in December.</i>	
<i>2022 update</i>	<i>MWS is pursuing Real Time Simulation (RTS) training in 2023.</i>	
3-1	Work is on-going. Closed out	MWS, OEM
3-2	Completed – Closed out	MWS, OEM
3-3	Closed out – re-evaluate at 2025 revision	MWS
3-4	Develop a financial strategy to design and construct large capital improvement projects. The strategy shall incorporate a cost-sharing plan to leverage local, state, and federal funding for stormwater management activities and projects.	MWS
<i>2020 update</i>	<i>The storm water improvement project on Murfreesboro Road funded through TDOT, MWS, and MPW has been completed. MWS is working with a consultant to evaluate the SW rates to plan for future funding needs.</i>	
<i>2021 update</i>	<i>MWS continues to evaluate strategies in association with certain stormwater master planning activities that are currently planned.</i>	
<i>2022 update</i>	<i>MWS continues to plan and complete priority capital drainage improvement projects. Additionally, MWS has initiated a Stormwater Master Planning project to further identify priority stormwater management projects across Metro.</i>	
3-5	The CPT recommends applying annually for potentially available HMGP and FMA grants.	MWS, OEM
<i>2020 update</i>	<i>MWS is currently working with TEMA to prepare and submit mitigation grant applications for additional home buyout projects.</i>	
<i>2021 update</i>	<i>Nothing new to report.</i>	
<i>2022 update</i>	<i>MWS continues to seek federal funds through FEMA and USACE for this purpose.</i>	