



## 4 MITIGATION STRATEGY

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**44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.**

This section presents the mitigation strategy updated by the Hazard Mitigation Planning Committee (HMPC) based on the risk assessment. The mitigation strategy was developed through a collaborative group process and consists of updated general goal statements to guide the jurisdictions in efforts to lessen disaster impacts as well as specific mitigation actions that can be put in place to directly reduce vulnerability to hazards and losses. The following definitions are based upon those found in FEMA publication 386-3, *Developing a Mitigation Plan* (April 2003):

- **Goals** are general guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. They are usually long-term, broad, policy-type statements.
- **Objectives** are overarching themes from the goals that provide direction for the development of mitigation actions.
- **Mitigation Actions** are specific actions that help achieve goals.

### 4.1 Goals and Objectives

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**44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.**

This planning effort is an update to an existing hazard mitigation plan. Therefore, the goals from the 2014 *Polk County Hazard Mitigation Plan* were reviewed to determine if they are still valid. MPO facilitated a discussion session with the HMPC during their second meeting to review and update the plan goals. To ensure that the goals are comprehensive and support State goals, the 2013 State Hazard Mitigation Plan goals were reviewed.

The planning committee decided to that the 2014 goals are still valid, with a few clarifications.

Goal 2 was revised to incorporate language about utilizing lessons learned to lessen the impact of future hazards. Goal 3 was revised to point the use of data collected throughout the county, and region, to utilize this information for “data-driven decision making and future outcomes.” The goals for the plan update are provided below. The new text for goals 2 and 3 is in italics:

1. Protect the public health, safety, and welfare by increasing public awareness of hazards and by encouraging collective and individual responsibility for mitigating hazard risks.
2. Improve capabilities, coordination, and opportunities at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities, including incorporation of lessons learned from previous events and exercises *to prevent or lessen impacts from future hazards.*
3. Improve data collection, use, and sharing to *improve data-driven decision making and future outcomes.*
4. Protect the most vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.

In addition to goals for this plan, Polk County has incorporated overarching objectives that help fully connect the plan goals to the mitigation actions. These objectives are:

1. Prevention
2. Property Protection
3. Natural Resource Protection
4. Emergency Services
5. Public Information

Through prevention the County seeks to ensure that tools such as land use planning, zoning, stormwater, building codes, subdivision ordinances, and natural resource/open space protection reduce the loss from future hazards, and when given the opportunity to update these tools each jurisdiction holistically revise current standards to alleviate the issues presented by hazards. Furthermore, jurisdictions should determine whether NFIP and other floodplain management programs are sufficient for full mitigation of flood risk, and look towards their regional watershed management plans to ensure that decision-making processes are taking previous planning efforts into account.

Property protection is an ongoing task within Des Moines and other Polk County communities. Recent flood events have shown great opportunity to acquire repetitive loss properties, areas that are in need of stormwater management retrofitting, and the promotion of flood insurance participation beyond those properties in special flood hazard areas.

Natural resource protection in an urbanized county like Polk is crucial. The built environment is infamous for reducing essential ecosystem services. Historically, wetlands across Central Iowa naturally provide protection from flooding, but due to development most have been drained and filled in to make way for growing cities. Protecting natural resources must be a critical piece of development in Polk County and jurisdictions should, again, look towards their watershed management plans and authorities to ensure that when they are making decisions regarding development natural resources are protected and ecosystem services are still functioning at an optimal level to ensure hazards are mitigated from the beginning.

Emergency services across the County respond to incidents related to hazards in this plan on a daily basis. In terms of mitigation however, alert systems, data sharing, partnerships with state and federal

organizations are all on the rise, and coordinated partnerships to ensure information is shared and utilized properly should continue to develop in order to protect from loss.

Finally, an informed public can have great effects on mitigation efforts. Understanding their risk throughout their day, being aware of what is coming, and understanding best practices for staying safe is crucial. In the digital age communities have a number of platforms to reach their constituents beyond bill inserts and physical newsletters. Therefore, it would behoove the county to increase a dialogue amongst jurisdictions to determine best practices on information sharing regarding mitigation, and to work together to continue to strengthen systems, such as Code Red, to ensure the public is wholly aware of hazards before, during, and after disaster events.

## 4.2 Identification and Analysis of Mitigation Actions

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**44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.**

During the second meeting of the HMPC, the results of the risk assessment update were provided to the HMPC members for review and the key issues were identified for specific hazards. Meeting #2 concluded with an introduction to mitigation actions to prompt discussions within and among the jurisdictions about any new mitigation actions as well as on-going actions from the existing plans. In addition, AMEC provided the HMPC with information on the Iowa Homeland Security and Emergency Management Division's funding priorities and the types of mitigation actions generally recognized by FEMA.

The focus of Meeting #3 was to update the mitigation strategy. For a comprehensive range of mitigation actions to consider, the HMPC reviewed the following information during Meeting #3:

- Existing Actions submitted in the previous mitigation plan,
- Key Issues from Risk Assessment (top 10 hazards),
- State Priorities for Hazard Mitigation Assistance Grants,
- Public Opinion from Surveys, and
- FEMA's 6 Categories of Mitigation Actions.

In development of each jurisdiction's final mitigation strategy for submission to the plan, the jurisdictions were encouraged to review the details of the risk assessment to address vulnerabilities specific to their jurisdiction. They were also provided a link to the publication, *FEMA Mitigation Action Ideas, 2013*. This document was developed by FEMA to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters.

The mitigation strategy update included a thorough review and status update of the existing actions. **Table 4.1** provides a summary of the number of actions that each jurisdiction identified in the previous plan. Please note that the Des Moines Water Works and the public school districts were not included as officially participating jurisdictions in the previous plan. As a result, there are no previous actions for the school districts.

**Table 4.1. Summary of Number of Actions in Previous Plan**

Jurisdiction	# of Actions in 2014 HMP
Polk County	5
City of Alleman	3
City of Altoona	1
City of Ankeny	15
City of Bondurant	3
City of Clive	18
City of Des Moines	11
City of Elkhart	5
City of Grimes	6
City of Johnston	8
City of Mitchellville	6
City of Pleasant Hill	11
City of Polk City	10
City of Runnells	4
City of Urbandale	17
City of West Des Moines	7
City of Windsor Heights	8
Des Moines Water Works	4
Ankeny Schools	3
Bondurant-Farrar School District	1
Dallas Center-Grimes Schools	1
Des Moines Independent Schools	10
Johnston School District	2
North Polk Schools	1
Southeast Polk Schools	1
Urbandale Schools	2
West Des Moines Schools	4
<b>Total</b>	<b>167</b>

Source: 2014 Polk County Hazard Mitigation Plan

Prior to Meeting #3, the list of actions submitted in the previous plan was emailed to all members of the HMPC. Each jurisdiction was instructed to complete the column titled “2013 Action Status” with one of the following status choices:

- Completed,
- Not Started/Continue in Plan Update,

- In Progress/Continue in Plan Update, or
- Delete.

Of the 167 actions in the previous plan, 23 have been completed, 22 were deleted or combined with other actions, and 122 were continued in the plan update. Appendix C contains the actions that were either completed or deleted from the mitigation strategy along with any applicable comments. The continued actions are discussed in additional detail, along with the new actions in **Section 4.3**.

The jurisdictions were encouraged to be comprehensive and include all appropriate actions to work toward becoming more disaster resistant. However, they were encouraged to maintain a realistic approach and were reminded that the hazard mitigation plan is a “living document”. As capabilities, vulnerabilities, or the nature of hazards that threaten each jurisdiction change, the mitigation actions can and should be updated to reflect those changes, including addition or deletion of actions, as appropriate.

As part of the meeting discussion, jurisdictions were instructed to consider the potential cost of each project in relation to the anticipated future cost savings. This type of discussion allowed the committee as a whole to understand the broad priorities and discussion of the types of projects most beneficial to all jurisdictions within Polk County.

## 4.3 Implementation of Mitigation Actions

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**44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.**

Jurisdictions were encouraged to meet with others in their community to finalize the actions to be submitted to the updated mitigation strategy. Throughout the discussion of the types of projects that the committee would include in the mitigation plan, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act regulations state that benefit-cost review is the primary method by which mitigation projects should be prioritized. Recognizing the federal regulatory requirement to prioritize by benefit- cost, and the need for any publicly funded project to be cost-effective, the HMPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the Iowa State Hazard Mitigation Plan. Due to many variables that must be examined during project development, the benefit/cost review at the planning stage, will primarily consist of a qualitative analysis. For each action, the jurisdictions included a narrative describing the types of benefits that could be realized with implementation of the action. Where possible, the cost was estimated as closely as possible with further refinement to occur as project development occurs. Cost-effectiveness will be considered in additional detail when seeking FEMA Hazard Mitigation Assistance grant funding for eligible projects identified in this plan. At that time, additional information will be researched to provide for a quantitative benefit-cost analysis.

STAPLEE is a tool used to assess the costs and benefits, and overall feasibility of mitigation actions. STAPLEE stands for the following:

- **Social:** Will the action be acceptable to the community? Could it have an unfair effect on a particular segment of the population?
- **Technical:** Is the action technically feasible? Are there secondary impacts? Does it offer a long-term solution?
- **Administrative:** Are there adequate staffing, funding, and maintenance capabilities to implement the project?
- **Political:** Will there be adequate political and public support for the project?
- **Legal:** Does your jurisdiction have the legal authority to implement the action?
- **Economic:** Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- **Environmental:** Will there be negative environmental consequences from the action? Does it comply with environmental regulations? Is it consistent with community environmental goals?

To provide a mechanism for jurisdictions to prioritize actions a modified STAPLEE worksheet was completed by MPO staff for each new and continued action submitted for the updated mitigation strategy. **Figure 4.1** is a sample of the STAPLEE worksheet. All actions submitted to the plan are indicated with a high, medium, or low priority level based on the modified STAPLEE score.

Figure 4.1. Modified STAPLEE Worksheet

**POLK COUNTY  
MULTI-JURISDICTIONAL  
LOCAL HAZARD MITIGATION PLAN**

<b>Action Title:</b>	<b>Jurisdiction:</b>
<b>Action ID:</b>	

Note: Make sure the Action ID Matches the Action ID in the spreadsheet. Action ID format for new actions is Jurisdiction-# (Ex. Allaman-1, Allaman-2, etc..)

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		
T: Is it Technically feasible and potentially successful?		
A: Does the jurisdiction have the administrative capacity to execute this action?		
P: Is it Politically acceptable?		
L: Is there Legal authority to implement?		
E: Is it Economically beneficial?		
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
<b>STAPLEE Score</b>		

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
<b>Mitigation Effectiveness Score</b>		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): \_\_\_\_\_

Local Priority Level:  High (33+ points)  Medium (20-32 points)  Low (less than 20 points)

Completed by (name/title/phone #): \_\_\_\_\_

The mitigation action summary table presenting the summary of continuing and new mitigation actions for each jurisdiction is provided in **Table 4.2**. In addition to the 83 actions that were continued from the previous plan, 74 new actions were identified, for a combined total of 157 actions in this updated mitigation strategy. Following the action summary table, additional details are provided each continuing and new action in **Table 4.3**. The detailed table serves as the action plan describing how each action will be implemented and administered by the local jurisdiction. The section identifying benefits or losses avoided if the action is implemented is primarily a qualitative review at this time. A more detailed and quantitative benefit-cost analysis was discussed and will be performed prior to implementation of actions when additional detailed project cost information has been developed.

**Table 4.2. Mitigation Action Summary—Continuing and New Actions**

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Polk County 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	Priority #6 Still working to complete Environmental review of proposed roadway corridor.	2	33	High
Polk County 2	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek through the Fourmile Creek Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	In Progress / Continue	Priority #2	4	31	Medium
Polk County 3	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Mud, Camp, and Spring Creek watersheds through the Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	In Progress / Continue	Priority #3	4	31	Medium
Polk County 4	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Walnut Creek watershed through the Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	NEW	Priority #4	4	31	Medium
Polk County 5	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Beaver Creek watershed through the Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	NEW	Priority #5	4	31	Medium
Polk County 6	Reconstruction of a Skunk River Crossing to assure emergency responders can cross the Skunk River during times of extreme flooding. In 2010, only one crossing in Polk County was open in a 30-mile section of the river.	River Flooding/ Infrastructure Failure/ Transportation Incident	Existing and New	Capital Improvement Program/Management Plan	NEW	Priority #7- Project is in planning stage- will begin flood modeling in 2019 to determine best location of improvements to an existing crossing.	4	36	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Polk County 7	Construct severe weather safe rooms for three Polk County Public Works Maintenance Facilities	Tornado	Existing and New	Hazard Mitigation Plan	NEW	Priority #8	1	37	High
Polk County 8	Update siren software to polygon based system	Tornado	Existing and New	Hazard Mitigation Plan	NEW	Priority #1	1	42	High
Alleman 1	Construct retention pond at Northeast 134	Flash Flooding	Existing	Capital Improvement Plan	Not Started / Continue	Plan to continue development would need retention pond. However, development plans have been tabled. This project is still a good idea if additional development occurs.	4	29	Medium
Alleman 2	Consider participation in the NFIP	River Flooding	Both	Hazard Mitigation Plan - floodplain management ordinance if adopted	New		2	33	High
Altoona 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	December 2018 Flood Plain Ordinance adopted.	2	33	High
Altoona 2	Stormwater detention basin improvement - Tuscany Pond; removed sediment from pond to regain capacity and construct new outfall.	Flash Flooding	Existing	Capital Improvement Plan; Hazard Mitigation Plan	New	None	4	33	High
Altoona 3	Secondary storm sewer installation	Flash flooding, Infrastructure Failure	New	Capital Improvement Plan; Hazard Mitigation Plan	Not started	None	4	31	Medium
Altoona 4	Storm sewer installation 4th St SW from Lion's Park to 5th Ave NW	Flash flooding	New	Capital Improvement Plan; Hazard Mitigation Plan	Not started	None	4	31	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Altoona 5	Adventureland Park Drainage Improvements - detention pond modifications, culvert improvements, stream bank stabilization	Flash flooding	New and Existing	Capital Improvement Plan; Hazard Mitigation Plan	Not started	None	2	31	Medium
Altoona 6	Traffic signal fiber	Infrastructure Failure/ Transportation Incident	Existing and new	CIP	In Progress / Continue	None	2	33	High
Altoona 7	Community Center Security Cameras	Public safety	Existing	CIP	Not started	None	2	29	Medium
Altoona 8	4 Safe rooms for multiple park sites	Tornado	New	Hazard Mitigation Plan	Not started	None	2	34	High
Altoona 9	Replace 5 severe weather sirens	Tornado/High wind	Existing	Hazard Mitigation Plan	Not started	None	3	42	High
Altoona 10	Addition of 4 new severe weather sirens	Tornado/High wind	Existing	Hazard Mitigation Plan	Not started	None	3	42	High
Altoona 11	Construction of new Fire Station #26	Structural Fire	New	Hazard Mitigation Plan	Not started	None	4	33	High
Altoona 12	Addition of new Firefighting Engine	Structural Fire	New	Hazard Mitigation Plan/Future CIP	Not started	None	4	33	High
Altoona 13	Sanitary sewer lining 5th Ave SW to 8th Ave SE, south of the railroad tracks	Infrastructure failure/Flash flooding	Existing	CIP	In progress/Continue	None	4	29	Medium
Altoona 14	Remove sump pump and footing tiles from sanitary sewers	Infrastructure failure/Flash flooding	Existing	CIP	In progress/Continue	Project is approximately 50% complete	4	25	Medium
Altoona 15	New water storage facility to replace existing 50,000 gallon tower	Infrastructure failure	New	CIP	Not started	Not at this time	4	29	Medium
Altoona 16	New water treatment plant	Infrastructure failure	New	CIP	Not started	Not at this time	4	31	Medium
Altoona 17	New well	Infrastructure failure	New	CIP	Not started	Not at this time	4	31	Medium
Altoona 18	Sanitary sewer lining all existing clay sewer mains	Infrastructure failure/Flash flooding	Existing	CIP	In progress/Continue	None	4	32	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Ankeny 1	Construct safe room(s) at Mel Ray Mobile Home Park	Tornado	New	Hazard Mitigation Plan	Not Started / Continue	Private residential mobile home facility currently without safe room(s)	4	33	High
Ankeny 2	Construct safe room(s) at Autumn Ridge Mobile Home Park	Tornado	New	Hazard Mitigation Plan	Not Started / Continue	Private residential mobile home facility currently without safe room(s)	4	33	High
Ankeny 3	Tradition Park Detention Basin Flood Improvements	Flash Flooding	Existing	Capital Improvements Program	In Progress / Continue	Emergency repairs completed. Mitigation improvements planned.	4	32	Medium
Ankeny 4	Westwinds Channel Fortification	Flash Flooding	Existing	Capital Improvements Program	In Progress / Continue	Project design about to begin.	4	32	Medium
Ankeny 5	Northcreek Channel Flood Prevention Measures	Flash Flooding	Existing	Capital Improvements Program	In Progress / Continue	Project design about to begin.	4	35	High
Ankeny 6	Sawgrass Park Dam Improvements	Flash Flooding	Existing	Capital Improvements Program	New	Project included in current capital improvements program.	4	34	High
Ankeny 7	Saylor Creek Tributary Channel Improvements	Flash Flooding,	Existing	Capital Improvements Program	In Progress / Continue	Design next year, construction to follow	4	32	Medium
Ankeny 8	Storm sewer/channel improvements Four Mile Creek bank stabilization	Flash Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	On-going long range project	4	35	High
Ankeny 9	Reconstruct storm water detention - Packard Pond improvements	Flash Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	No project schedule at this time.	4	29	Medium
Ankeny 10	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing	NFIP Floodplain Management Program	In Progress / Continue	Participated in multi-jurisdictional Fourmile Creek Study; .Continue to participate in watershed management. Provide floodway info for Firm map replacements.	2	33	High
Ankeny 11	Reconstruct storm water detention - Wildflower Public Pond improvements	Flash Flooding	Existing	Capital Improvements Program	In Progress / Continue	Project design scheduled for later this year.	4	29	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Ankeny 12	Storm sewer/channel improvements - SE Creekview Drive Improvements	Flash Flooding	Existing	Capital Improvements Program	In Progress / Continue	Construction of overall project being staged at this time.	4	29	Medium
Ankeny 13	NW Elm Lane Sanitary Sewer Replacement	Flash Flooding	Existing	Capital Improvements Program	New	Design the project next year, with construction to follow.	4	29	Medium
Ankeny 14	Briarwood Sanitary Sewer Upsizing / Replacement	Flash Flooding	New	Capital Improvements Program	New	Future planned improvement project	4	29	Medium
Ankeny 15	Central City Areas - Sewer Upsizing and Replacements	Flash Flooding	New	Capital Improvements Program	New project, studying scope now.	Determining scope, future improvement projects	4	29	Medium
Ankeny 16	Construct safe room(s) at On With Life Care Facility	Tornado	New	Hazard Mitigation Plan	Not Started / Continue	Special care facility currently without safe room(s)	4	35	High
Bondurant 1	Update tornado warning system	Tornado	Both	Hazard Mitigation Plan	In Progress / Continue	None	1	42	High
Bondurant 2	Generator at Public Safety Building	Windstorms/Rolling Power Outages	Existing	Hazard Mitigation Plan	Not Started/Continue	Application for funding submitted in 2018; tentative installation in 2019.	1	29	Medium
Bondurant 3	NW 2nd St. Culvert Expansion	Flooding	Existing/New	Hazard Mitigation Plan	In Progress / Continue	None	1	29	Medium
Bondurant 4	15th St. SW Bridge Replacement	Flooding	Existing/New	Hazard Mitigation Plan	In Progress / Continue	None	1	30	Medium
Bondurant 5	Mud Creek Channel Restoration	Flooding	Existing	Hazard Mitigation Plan	Not Started/Continue	None	1	30	Medium
Bondurant 6	Mud Creek Regional Detention Facility/Grant St. South Relocation	Flooding/ Regional Water Quality	New Structure	Hazard Mitigation Plan	Not Started	None	1	30	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Bondurant 7	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain \mgt. program	In Progress / Continue	None	1	33	High
Clive 1	Radio Upgrade	All	Upgrade		New	None	2	36	High
Clive 2	Install/Replace backup generators	All	Both	Hazard Mitigation Plan	New	None	4	34	High
Clive 3	Website Enhancement	All	Upgrade		New	None	1	33	High
Clive 4	Streambank Stabilization Projects	Flooding	Existing	Greenbelt Master Plan; 2014 Streambank Assessment; WC Watershed Master Plan	1% complete	None	4	33	High
Clive 5	Reconstruct Greenbelt Trail bridges	Flooding	Existing	Greenbelt Master Plan	New	None	4	32	Medium
Clive 6	Reconstruct NW 86th Street bridge	Flooding	Existing	Hazard Mitigation Plan	New	None	4	37	High
Clive 7	Reconstruct railroad bridge (7800 block University Blvd)	Flooding	Existing	Hazard Mitigation Plan	New	None	4	33	High
Clive 8	Little Walnut Creek floodplain acquisitions	Flooding	New	Greenbelt Master Plan	In Progress / Continue	None	4	33	High
Clive 9	Walnut Creek floodplain acquisitions	Flooding	Existing	Greenbelt Master Plan	In Progress / Continue	None	4	33	High
Clive 10	North Walnut Creek floodplain acquisitions	Flooding	Existing	Greenbelt Master Plan	In Progress / Continue	None	4	33	High
Clive 11	University Blvd Neighborhood Flood Mitigation Planning and Implementation	Flooding	Existing	Hazard Mitigation Plan	1st Phase of Buyout Program; BCA of Alternatives	None	1	41	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Clive 12	Indian Hills Neighborhood Flood Mitigation Planning and Implementation	Flooding	Existing	Hazard Mitigation Plan	BCA	None	1	35	High
Clive 13	Buffalo Road Secondary Water Source	All	Upgrade	Water System Master Plan	In Progress / Continue	None	4	29	Medium
Clive 14	Relocation of Porter Shelter	Flooding	Both	Greenbelt Master Plan	New	None	4	27	Medium
Clive 15	Swanson Blvd Flapgates	Flooding	Existing	Hazard Mitigation Plan	New	None	1	33	High
Clive 16	University Blvd Flood Mitigation Improvements (Minor)	Flooding	Both	Hazard Mitigation Plan	In Progress / Continue	None	1	33	High
Clive 17	Regional Stormwater Management Facilities (modifications)	Flooding	Existing	Walnut Creek Watershed Master Plan	New	None	4	29	Medium
Clive 18	Regional Stormwater Facilities (outside of Clive)	Flooding	New	Walnut Creek Watershed Master Plan	New	None	4	29	Medium
Clive 19	Regional Stormwater Facilities (within Clive)	Flooding	New	Walnut Creek Watershed Master Plan	New	None	4	29	Medium
Clive 20	Repetitive Loss Buyout Program	Flooding	Existing Program	Hazard Mitigation Plan	In Progress / Continue	None	1	27	Medium
Clive 21	Flood Alert Early Warning System Enhancements	Flooding	Upgrade	Hazard Mitigation Plan	In Progress / Continue	None	1	36	High
Des Moines 1	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	None	4	41	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Des Moines 2	Comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	Continued enrollment in the NFIP along with CRS program	2	33	High
Des Moines 3	Construct safe room(s) at Des Moines Municipal Housing Agency's multi-family units	Windstorms	Existing and New	Hazard Mitigation Plan	In Progress / Continue	None	4	42	High
Des Moines 4	Harden single family home scattered site Public Housing units	Windstorms	Existing and New	Hazard Mitigation Plan	In Progress / Continue	None	4	39	High
Des Moines 5	Treatment and removal of ash trees in response to onset of Emerald Ash Borer (EAB)	Animal/Crop/Plant Disease	Existing	EAB Mitigation Plan	In Progress / Continue	Removal began in 2010 & will continue through 2025	4	32	Medium
Des Moines 6	Des Moines River Flood Mitigation Improvements - Flood protection system improvements (levees, floodwalls, pump stations, etc.) to maintain FEMA accreditation despite increased flows identified in 2011 Des Moines River Regulated Flow Frequency Study.	River Flooding	Existing	Capital Improvement Plan	In Progress / Continue	None	4	35	High
Des Moines 7	Hamilton Drainage Area Stormwater Improvements - Storm sewer conveyance improvements to increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns.	Flash Flooding	Existing	Capital Improvement Plan	In Progress / Continue	None	4	29	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Des Moines 8	Leetown Creekway Stormwater Improvements - Increased storm sewer capacity between University Avenue and Dean Avenue and channel improvements from south of Dean Avenue to confluence with Fourmile Creek.	Flash Flooding	Existing	Capital Improvement Plan	In Progress / Continue	None	4	29	Medium
Des Moines 9	Closes Creek Stormwater Improvements - Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Flash Flooding	Existing	Capital Improvement Plan	In Progress / Continue	None	4	29	Medium
Des Moines 10	Crawford Creek Stormwater Improvements - Increased storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	Flash Flooding	Existing	Capital Improvement Plan	NEW	None	4	29	Medium
Des Moines 11	Sanitary Sewer Separation Projects - Install storm sewer to eliminate CSO's that discharge sanitary water to the river	Public Health	Existing	Capital Improvement Plan	In Progress / Continue (New to HMP List)	None	4	26	Medium
Des Moines 12	City-wide Small Watershed Flood Mitigation Projects - Identify and construct projects that increase storm sewer capacity and/or construct detention/G.I. to reduce flood risk concerns	Flash Flooding	Existing	Capital Improvement Plan	NEW	None	4	31	Medium
Des Moines 13	Storm Water Pump Station Rehabilitation - Updates to pump stations to provide resiliency	Public Safety	Existing	Capital Improvement Plan	In Progress / Continue (New to HMP List)	None	4	31	Medium
Des Moines 14	Voluntary acquisition and demolition of all single and two-family residential structures in the floodplain and repetitive loss properties. Estimated 220 structures would be acquired.	River/Creek Flooding	Existing	Hazard Mitigation Plan / NFIP floodplain mgt. program	In Progress / Continue (New to HMP List)	Acquired and removed 51 residential structures in 2018	1	36	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Des Moines 15	Revise Floodplain Development regulations to increase freeboard height, implement compensatory fill, and limit enclosures in the floodplain.	River/Creek Flooding	Existing and New	NFIP floodplain mgt. program	NEW	None	1	33	High
Des Moines 16	Construct safe room in new fire station(s)	Windstorms / Tornado	New	Capital Improvement Plan	NEW	Plan for one in new Fire Station(s)	4	33	High
Des Moines 17	Generator for new fire station(s)	Windstorms / Tornado / Winter Storm	New	Capital Improvement Plan	NEW	Plan for one in new Fire Station(s)	4	25	Medium
Des Moines 18	Construct safe room in new City Hall Annex	Windstorms / Tornado	New	Capital Improvement Plan	NEW	Plan for one in new City Hall Annex	4	33	High
Des Moines 19	Generator and 72-hour fuel storage for new City Hall Annex	Windstorms / Tornado / Winter Storm	New	Capital Improvement Plan	NEW	Plan for one in new City Hall Annex	4	27	Medium
Des Moines 20	Building inventory for Fire Dept. community risk assessment / analysis	Public Safety, Fire / Hazmat	Existing and New	Fire Accreditation	NEW	Ongoing	3	43	High
Des Moines 21	Regional NextGen 911 data improvements	Public Safety	N/A	Regional GIS MOU	NEW	Ongoing	3	43	High
Des Moines 22	Damage assessment data collection tools and standard operating procedures during and after emergency events	Public Safety / Flooding / Tornado / Winter Storm	Existing	Hazard Mitigation Plan	NEW		3	33	High
Elkhart 1	Construct safe room at Elkhart Memorial Park	Windstorms	New	Hazard Mitigation Plan	Not Started / Continue	NO BUILDING TO HAVE ONE YET	4	33	High
Elkhart 2	Construct safe room in NEW fire station	Windstorms	New	Capital Improvement Plan	Not Started / Continue	Plan to include in new station when built	4	33	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Elkhart 3	Generator for new fire station	Windstorms	New	Hazard Mitigation Plan	Not Started / Continue	Plan for one in NEW Fire Station	4	27	Medium
Elkhart 4	Generator at city water plant	Windstorms	Existing	Hazard Mitigation Plan	Not Started / Continue	Have a rental unit available if needed	4	31	Medium
Elkhart 5	Construct safe room at Elkhart Community Center	Windstorms	Existing	Hazard Mitigation Plan	Not Started / Continue	Plan to add on or construct new building	4	35	High
Grimes 1	Construct safe room at existing facilities	Windstorms	New/Existing	Hazard Mitigation Plan	Not Started / Continue	expanded to include all city facilities	1	35	High
Grimes 2	Generators at City Hall	Windstorms	Existing	Hazard Mitigation Plan	Not Started / Continue	None	2	29	Medium
Grimes 3	Generator at fire station	Windstorms	Existing	Hazard Mitigation Plan	Not Started / Continue	None	2	34	High
Grimes 4	Warning siren northeast and southwest areas of city	Windstorms	New	Hazard Mitigation Plan	Not Started / Continue	None	1	42	High
Grimes 5	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	None	2	33	High
Grimes 6	Update existing warning sirens to be compatible with single siren activation	Windstorms	Existing	Hazard Mitigation Plan	New	None	1	42	High
Johnston 1	Update outdoor warning system	Tornado/Wind	Both	Hazard Mitigation Plan	Not Started	All sirens need to be updated.	All (1-4)	42	High
Johnston 2	Construct Detention Basin Northglenn Neighborhood West of Merle Hay Road	Flood	New	Hazard Mitigation Plan	Not Started	None	4	33	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Johnston 3	Extend 72" Storm Sewer Pipe under Johnston Drive	Flood	New	Hazard Mitigation Plan	Not Started	Infrastructure extension will protect roadway from flooding impacts. Johnston Drive is an alternative route for Interstate 35/80 to Ankeny.	4	29	Medium
Johnston 4	Construct flood control structure on Johnston Drive	Flood	New	Hazard Mitigation Plan	Not Started	Structure would protect businesses along NW Beaver Drive from back water flooding.	4	33	High
Johnston 5	Multi-purpose Safe Room at Lew Clarkson Park	Tornado	New	Hazard Mitigation Plan	Not Started	None	4	34	High
Johnston 6	Continue to work with Iowa DOT to eliminate flooding at Northwest Beaver Drive (water impounded since the 2008 flood may be affecting the water table and may be polluted)	River Flooding	N/A	Storm Water Management Plan	In Progress / Continue	None	4	35	High
Johnston 7	Conduct flood impact study on Merle Hay and Beaver Creek area	River Flooding	N/A	Hazard Mitigation Plan	In Progress / Continue	None	4	37	High
Johnston 8	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	None	4	33	High
Mitchellville 1	Improve ditch and culvert drainage in northwest part of town	Flash Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	None	4	29	Medium
Mitchellville 2	Backup power generator for police/fire station	Windstorms	New	Hazard Mitigation Plan	Not Started / Continue	None	4	33	High
Mitchellville 3	New roof for police/fire station	Windstorms	Existing	Hazard Mitigation Plan	Not Started / Continue	None	4	30	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Mitchellville 4	Re-wiring the electrical system for police/fire station	Windstorms	Existing	Hazard Mitigation Plan	In Progress / Continue	Everything is complete except what feeds into the air conditioning	4	30	Medium
Mitchellville 5	New siren on east edge of town	Windstorms	New	Hazard Mitigation Plan	Not Started / Continue	None	4	42	High
Mitchellville 6	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	New	None	4	33	High
Pleasant Hill 1	Generators for lift stations: 6400 Southeast 6th Street; Northeast 80th Street; Vandalia Road; Harbor Lake Drive, and Southeast 60th Street	Windstorms	Existing	Capital Improvement Plan	In Progress / Continue	None	4	29	Medium
Pleasant Hill 2	Flood mitigation planning elevation of southeast connector so water passes underneath - current road is in flood zone	River Flooding	Existing and New	Hazard Mitigation Plan	In Progress / Continue	None	4	33	High
Pleasant Hill 3	Creation of storm water utility (with taxing and bonding authority) Explore increase to utilities fees to complete storm water utilities.	Flash Flooding	N/A	Hazard Mitigation Plan	Continue	None	2	29	Medium
Pleasant Hill 4	Relocation of and construction of new fire station	Windstorms	Existing	Capital Improvement Plan	Not Started / Continue	None	4	33	High
Pleasant Hill 5	Relocation of gas pumps for city vehicles which are in flood zone	River Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	None	4	26	Medium
Pleasant Hill 6	Safe room incorporation into new city facilities / construction	Windstorms	New	Hazard Mitigation Plan	In Progress / Continue	None	4	34	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Pleasant Hill 7	Regional detention facility at northeast 80th Street	Flash Flooding	New	Future Land Use Plan, Comprehensive Plan	In Progress / Continue	None	4	33	High
Pleasant Hill 8	Enhance combined development of Des Moines Area Regional GIS Partnership	Flash Flooding	N/A	Ongoing Project	In Progress / Continue	None	3	35	High
Pleasant Hill 9	Construction of new culvert at Little Four Mile Creek Drive 4400 block	Flash Flooding	New	Hazard Mitigation Plan	Not Started / Continue	None	4	32	High
Pleasant Hill 10	Pursue remedial flood mitigation actions associated with the South East Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	None	4	37	High
Pleasant Hill 11	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	In Progress / Continue	None	2	33	High
Pleasant Hill 12	Flood way buyout program	Flooding	New	Hazard Mitigation Plan	New	This program would buyout properties within the flood way	4	35	High
Pleasant Hill 13	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek through the Fourmile Creek Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	In Progress / Continue	None	4	31	Medium
Pleasant Hill 14	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Four Mile Creek watersheds through the Watershed Authority	Flash Flooding	Existing and New	Watershed Authority / Management Plan	In Progress / Continue	None	4	31	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Pleasant Hill 15	Management of Stream Buffers - along creek beds / river beds	River Flooding	Existing	Hazard Mitigation Plan & / Water Shed Action Plan	NEW	None	4	30	Medium
Pleasant Hill 16	Construction of new box culvert at Parkridge Ave across from the Cemetery	Flash Flooding	New	Hazard Mitigation Plan	Not Started / Continue	None	4	29	Medium
Polk City 1	Safe Room for: police department/fire department/ community center/city hall/ visitors at area lakes	Tornado	Existing	Capital Improvement Plan	Not Started / Continue	None	4	37	High
Polk City 2	Safe room for sports complex	Tornado	New	Capital Improvement Plan	Not Started / Continue	None	4	37	High
Polk City 3	Advocate for structural enhancements to Mile Long Bridge to bring to current DOT standards	River Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	On state highway, not responsibility of city	2	33	High
Polk City 4	Raise levee elevation for sewer treatment facility on East Broadway Street	River Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	None	4	27	Medium
Polk City 5	Advocate for expanding pumping capacity for sewer treatment facility pumping to Saylorville Reservoir	River Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	None	2	27	Medium
Polk City 6	Raise wellheads and associated electrical for Polk City Well Field on North 3rd Street and East Northside Drive	River Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	None	4	25	Medium
Polk City 7	Storm sirens at Hugg Drive and Westside Drive	Tornado	New	Hazard Mitigation Plan	NEW	None	1	42	High
Polk City 8	Lining of public sewers to mitigate infiltration of the main pump.	Flash Flooding	Existing	Hazard Mitigation Plan	NEW	None	4	27	Medium
Polk City 9	Culvert at N 3rd -Bedshed Drive to mitigate water running over the road flooding buildings	Flash Flooding	Existing	Hazard Mitigation Plan	NEW	None	4	25	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Polk City 10	Join the National Flood Insurance Program	River Flooding	New Existing	Hazard Mitigation Plan	NEW	None	2	33	High
Runnells 1	Backup power generator for community center at 108 Brown Street	Tornado	New	Hazard Mitigation Plan	Not Started / Continue	Working on community betterment grant of Polk Co.	4	31	Medium
Runnells 2	Document electronic backup for city critical documents	Tornado	N/A	Hazard Mitigation Plan	Not Started / Continue	None	3	25	Medium
Runnells 3	Development of new lagoon at sewer station to mitigate overflow in high rains	Flash Flooding	New	Hazard Mitigation Plan	Not Started / Continue	None	4	27	Medium
Runnells 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing and New	NFIP floodplain mgt. program	New	None	2	33	High
Urbandale 1	Oxbow Construction	Flash Flooding	NEW	Hazard Mitigation Plan	NEW	The identification and creation of oxbows along creeks in City owned property. Partnership with Polk/Dallas Counties and Watersheds.	4	32	High
Urbandale 2	Flood way buyout program	Flooding	NEW	Hazard Mitigation Plan	NEW	This program would buyout properties within the flood way.	4	35	High
Urbandale 3	Buyout Property Redesign Program	Flooding	NEW	Hazard Mitigation Plan	NEW	This program would take newly acquired flood way property from the buyout program and redesign the property to lessen flooding. This could be oxbows, water retention systems or new technology or systems yet to be developed.	4	27	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Urbandale 4	Police Station Expansion and Fleet Storage	All Hazards Response	Existing and New	CIP pages 9 & 11	NEW	Planned in 2024+	4	35	High
Urbandale 5	Police Station - Douglas Entrance	Flash Flooding	Existing	CIP	NEW	Planned for 2019	4	31	High
Urbandale 6	Fire: Rescue Truck Replacement	Structural Fire	Existing	CIP page 13	NEW	This is the planned replacement of the heavy rescue truck. Planned for 2024.	4	29	Medium
Urbandale 7	Fire: Truck Replacement	Structural Fire	Existing	CIP page 14	NEW	This is the planned replacement of a pumper. Planned for 2021.	4	29	Medium
Urbandale 8	Fire: Truck	Structural Fire	NEW	CIP page 15	NEW	This is the purchase of a new pumper for Station 43. Planned for 2019.	4	29	Medium
Urbandale 9	Fire: Tender	Structural Fire	NEW	CIP page 16	NEW	This is the purchase of water tender. Planned 2024+	4	29	Medium
Urbandale 10	Looped Fiber Connection Between City Facilities	Infrastructure Failure	NEW	CIP page 17	NEW	This is running fiber along arterial streets to provide a looped system for voice and data between buildings. Planned for 2019, 2020 and 2021.	4	26	Medium
Urbandale 11	Phone and Network Upgrade	Infrastructure Failure	Existing	CIP page 18	NEW	This is networking upgrades for a new phone system and building security.	4	26	Medium
Urbandale 12	Drainage Improvements-Various Locations	Flash Flooding	Existing	CIP page 41	NEW	in progress	4	31	Medium
Urbandale 13	Intake Rebuilding	Flash Flooding	NEW	CIP page 42	NEW	Rebuilding 40 failed intakes per year. Planned in 2019, 2020 and 2021	4	30	Medium
Urbandale 14	Aurora Avenue Railroad Crossing	Infrastructure Failure	NEW	CIP page 45	NEW	Replacement of railroad crossing at Aurora Ave., NW Urbandale Drive and 112 <sup>th</sup> Street	4	33	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Urbandale 15	Hickman Road at 128 <sup>th</sup> Street	Transportation Incident	NEW	CIP page 50	NEW	Add dual left lanes and right lanes at intersection	2	25	Medium
Urbandale 16	Interchange Modifications and Collector Distributor Connections- Interstate 35/80 and Highway 141 / NW Urbandale Drive / Meredith	Transportation Incident	Existing	CIP page 51	NEW	in progress	2	33	High
Urbandale 17	100th Street Interchange at I-35/80	Transportation Incident	Existing	CIP# ST06-11	NEW	in progress	2	27	Medium
Urbandale 18	72 <sup>nd</sup> Street Replacement with Storm Sewer	Flash Flooding	NEW	CIP page 56	New	A new storm sewer system would be installed with the Street paving.	4	33	High
Urbandale 19	104 <sup>th</sup> Street with Storm Sewer	Flash Flooding	NEW	CIP page 58	NEW	This would install storm sewer with the street paving.	4	33	High
Urbandale 20	Battery Backup Signalization	Infrastructure Failure	NEW	CIP page 71	NEW	Install battery backup at 70 <sup>th</sup> & Meredith, 72 <sup>nd</sup> & Meredith, 72 <sup>nd</sup> & Aurora, 72 <sup>nd</sup> & Douglas, NW U & Aurora, 100 <sup>th</sup> & Plum, 104 <sup>th</sup> & Meredith, 121 <sup>st</sup> , 123 <sup>rd</sup> , 125 <sup>th</sup> and 128 <sup>th</sup> & Meredith	4	35	High
Urbandale 21	Water Main Projects	Structural Fire	NEW	CIP page 85 - 98	NEW	Install 12" water main along Dennis Drive 100th to 01st to complete loop, 100th Douglas to Dennis to complete loop, 70th Water Main - Douglas to Aurora - upgrade 4" and 6" to 8", Monroe Court Main - 70th to 72nd, Monroe Court Main - 70th to 72nd, Monroe Court Main - 72nd to Roseland, Roseland Main - 70th to 72nd, 67th Main - Madison to Aurora upgrade 4" to 8".	4	24	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Urbandale 22	Warning siren at Alice's Road	Tornado	New	Budget page 31	NEW	Provide outdoor warning siren to expansion area	1	42	High
Urbandale 23	Traffic Signal Battery Back up	Infrastructure Failure	NEW	Budget page 55	NEW	TBD	1	35	High
Urbandale 24	Storm Sewer inflow elimination program	Flash Flooding	NEW	Budget page 69	NEW	This would create an inflow program and to divert inflow from sanitary system to storm sewer system	4	27	Medium
Urbandale 25	Storm water grant programs	Flash Flooding	NEW	Budget page 71	NEW	Continued running of City's public/private partnership to alleviate storm water issues on private property.	4	26	Medium
Urbandale 26	Storm shelters in Public Parks	Tornado	NEW	Hazard Mitigation Plan	NEW	This would be the construction of storm shelters in designated parks. This could also be the construction of a Giov. Shelter in WCRP/as part of the proposed building(s).	1	34	High
Urbandale 27	Creek Bank Stabilization	Flooding/Erosion	NEW	Hazard Mitigation Plan	NEW	This program would provide for creek bank stabilization at various creeks throughout the Parks system	4	29	Medium
Urbandale 28	Community Scholarship for swimming lessons	Flooding	N/A	Hazard Mitigation Plan	NEW	We are seeing an increase in the number of community members who cannot swim.	1	37	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Delaware Township 1	Standby Generator Installation	Infrastructure Failure	New	Hazard Mitigation Plan	Not Started	New	1	32	High
Delaware Township 2	Township Plow Purchase	Winter Storm	New	Hazard Mitigation Plan	Not Started	New	2	32	High
West Des Moines 1	Elevation of I-35 Bridge over Raccoon River and Highway 28 Bridge over Raccoon River to mitigate washout	River Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	DOT Project	4	32	High
West Des Moines 2	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	River Flooding	Existing	Hazard Mitigation Plan	Not Started / Continue	DOT Project	4	31	Medium
West Des Moines 3	Lining of public sewers in the Valley Junction Area to mitigate infiltration at the Main Pump-2 Phases	Flash Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	50% Complete	4	29	Medium
West Des Moines 4	Lining of public sewers in the Fairmeadows Creek Area to mitigate infiltration of the main pump	Flash Flooding	Existing	Hazard Mitigation Plan	In Progress / Continue	50% Complete	4	29	Medium
West Des Moines 5	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code (Title 9, Ch. 12)	Flash Flooding	Existing	NFIP floodplain mgt. program, Comprehensive Plan	Not Started/New	New Proposal	3	32	High
West Des Moines 6	Design MidAmerican Energy RecPlex to function as an essential facility (evacuation center) during emergency response. Classify as a Flood Design - Class 4. Ensure connection to roadway, loading dock and primary structure are built at ASCE Design Flood Elevation guidelines. Harden building elements to provide storm shelter for building and recreational field users.	Flash Flooding, Windstorms, Winter storm	New	NFIP floodplain mgt. program	Not Started/New	New Proposal	2&4	34	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
West Des Moines 7	Map and buffer Tier II facilities within City and adjacent to City perimeter. Develop emergency response and subsequent evacuation routes for HAZMAT incidents based on these mappings.	HAZMAT Incident, Transportation Incident	Existing	Hazard Mitigation Plan, Comprehensive Plan	Not Started/New	New Proposal	3	32	High
West Des Moines 8	Implement recommended storm water improvements from the Westown-PCP drainage study.	Flash Flooding	Existing and New	Hazard Mitigation Plan, Comprehensive Plan, CIP	Not Started/New	New Proposal	3&4	31	Medium
West Des Moines 9	Installation of ice protection structures at regional radio communications infrastructure sites.	Winter storms, Windstorms	New	Hazard Mitigation Plan	Not Started/New	New Proposal	1&4	32	High
West Des Moines 10	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code	Flash Flooding	Existing	NFIP floodplain mgt. program, Comprehensive Plan	Not Started/New	New Proposal	3&4	32	High
West Des Moines 11	Develop evacuation routes for hazard incidents, flooding incidents, and serve weather incidents.	HAZMAT Incident, Transportation Incident	Existing	Hazard Mitigation Plan, Comprehensive Plan	Not Started/New	New Proposal	3	37	High
West Des Moines 12	Map Tier II facilities within City and adjacent to City perimeter.	HAZMAT Incident, Transportation Incident	Existing	Hazard Mitigation Plan, Comprehensive Plan	Not Started/New	New Proposal	3	32	High
West Des Moines 13	In conjunction with redevelopment, identify and implement storm water drainage improvement recommendations within the Blue Creek drainage basin.	Flash Flooding	Existing and New	Hazard Mitigation Plan, Comprehensive Plan, CIP	Not Started/New	New Proposal	1&3	32	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
West Des Moines 14	Enhance current floodplain management efforts by updating the Floodplain Management Ordinance, which includes new Flood Insurance Rate Maps, associated ordinance language approved by IDNR/FEMA, and increased requirements for City facilities including public services, emergency services, and similar structures that are critical to maintaining City functions in an emergency to be elevated a minimum of one (1) foot above the 500-year flood.	Flash Flooding	Existing and New	NFIP floodplain mgt. program, Hazard Mitigation Plan, Comprehensive Plan, CIP	Not Started/New	New Proposal	3&4	36	High
West Des Moines 15	SE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: 19th St. & Woodland Ave. to Grand Ave. & Railroad Avenue to Lincoln St. & HWY 28 to Hwy 28 & Prospect Ave.	Flash Flooding, Transportation Incident	Existing and New	Hazard Mitigation Plan	Not Started / Continue	Projects are under study.	4	34	High
West Des Moines 16	NE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: Hwy. 28 & N. of Ashworth Rd. to Hoak Dr. & IA Interstate RR to Office Park Road & 15th St. to Ashworth Rd. & 11th St. to Ashworth Rd. & 9th St. to Grand Ave. & 9th St. to Grand Ave. & 8th St. to 5th St. & Prospect Ave. to 5th St. & Vine St. to Hwy 28 & Vine St. to Hwy 28 & Lincoln St. to Walnut Creek Levee (Des Moines) to Hwy. 28 & N. of Ashworth Rd.	Flash Flooding, Transportation Incident	Existing and New	Hazard Mitigation Plan	In Progress / Continue	Walnut Creek storm outfall & pump station portion to be completed by 2019. Other projects are under study	4	37	High
West Des Moines 17	Raccoon River - Bank Stabilization	River Flooding, Transportation Incident	Existing	5 Year CIP	New	Delayed due to private property owner	4	29	Medium
West Des Moines 18	Grand Avenue Stormwater Pump Station Near Raccoon River Dr.	River Flooding, Transportation Incident	New	5 Year CIP	New	Under design. Scheduled for construction in 2019	4	29	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
West Des Moines 19	Blue Creek Basins Stormwater Improvements ( 5 Basins)	Flash Flooding	Existing and New	Hazard Mitigation Plan, 5 Year CIP	New	4 Locations eligible for FEMA reimbursement due to damage from the 6/30/2019 storm. Other projects are under study.	3&4	30	Medium
West Des Moines 20	Iowa Interstate Railroad Bridge near Raccoon River Park Entrance and Raccoon River Park Soccer Complex Culvert	Flash Flooding, Transportation Incident	Existing	5 Year CIP	Not Started / Continue	New Proposal	4	27	Medium
West Des Moines 21	Fairmeadows Creek - 27th & Vine Culvert	Flash Flooding	Existing	5 Year CIP	New	Under design. Scheduled for construction in 2019.	4	27	Medium
West Des Moines 22	Walnut Creek Watershed Management Authority Misc. Projects	Flash Flooding	Existing	5 Year CIP	New	Projects under Study.	4	30	Medium
West Des Moines 23	62nd & Railroad Ave Sanitary Sewer Gate Structure Replacement	Infrastructure Failure	Existing	5 Year CIP	New	Under design. Scheduled for construction in 2019.	4	27	Medium
West Des Moines 24	8th Street Reconstruction - I-235 to Clegg Road	Transportation Incident	Existing	5 Year CIP	New	New Proposal	4	31	Medium
West Des Moines 25	S. 88th Street Railroad Crossing improvements- Near Raccoon River Drive	Transportation Incident	Existing	5 Year CIP	New	New Proposal	4	31	Medium
Windsor Heights 1	Install residential check valves at Washington Avenue and 70th Street	Flash Flooding	Existing	Storm Water Management Plan	Not Started / Continue	Not funded yet.	4	27	Medium
Windsor Heights 2	Replace storm sewer intakes	Flash Flooding	Existing	Storm Water Management Plan	In Progress / Continue	In progress, FY20 Funding in Budget	4	28	Medium
Windsor Heights 3	Identify potential future shelter sites	Windstorms	Existing & New	Hazard Mitigation Plan	Not Started / Continue	New	4	33	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Windsor Heights 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	River Flooding	Existing & New	NFIP floodplain mgt. program	In Progress / Continue	Continued compliance, just updated Flood Plain Maps and held community meeting.	1	33	High
Windsor Heights 5	Walnut Creek bank stabilization	River Flooding	Existing	Storm Water Management Plan	NEW	In progress, FY20 Funding in Budget	4	30	Medium
Des Moines Water Works 1	Upgrade Interior Drainage Pumping System inside the levee protected area at Fleur Drive Water Treatment Plant.	Flash Flooding	Existing	Capital Improvement Plan	NEW	No action planned in 2018 or 2019.	4	35	High
Des Moines Water Works 2	Relocate grounds maintenance facility to the dry side of the levee system to reduce repetitive loss potential.	River Flooding	New	Capital Improvement Plan	NEW	Funds have been included in 2019 capital improvement budget for construction in 2019.	4	35	High
Des Moines Water Works 3	Evaluate and repair flood gates located at the Fleur Drive Water Treatment Plant.	River Flooding	Existing	Capital Improvement Plan	NEW	Evaluation of flood gate structure and completion of minor repairs in 2019. Any major repairs will need to be deferred.	4	35	High
Des Moines Water Works 4	Evaluation of ring levee protecting Fleur Drive Water Treatment Plant.	River Flooding	Existing	Capital Improvement Plan	NEW	Evaluation of structural integrity of levee and completion of minor repairs in 2019. Any major repairs will need to be deferred.	4	36	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Ankeny Schools 1	Multi-purpose Safe Rooms District Wide	Tornado	Both	Hazard Mitigation Plan	NEW	Cost continues to be a factor.	4	35	High
Ankeny Schools 2	Emergency HVAC Shut-Off	Hazardous Materials	Both	Hazard Mitigation Plan	NEW	In the planning process	2	29	Medium
Ankeny Schools 3	Safety Film/Glass	Intruder	New	Hazard Mitigation Plan	NEW	Install ballistic glass on new elementary in strategic locations	1	35	High
Ankeny Schools 4	Safety Film/Glass	Tornado	Existing	Hazard Mitigation Plan	NEW	Applied to south and west windows in classrooms	4	35	High
Ankeny Schools 5	Back-up Facility Generators	Tornado	Existing	Hazard Mitigation Plan	Completed	Generator installed on District Data Center.	4	29	Medium
Bondurant-Farrar Schools 1	Safety Glass	Tornado	Both	Hazard Mitigation Plan	NEW	None	4	33	High
Bondurant-Farrar Schools 2	Storm Safe Room at Anderson Elementary	Tornado	Existing	Hazard Mitigation Plan	NEW	None	4	33	High
Dallas Center-Grimes Schools 1	Construction of safe rooms in existing or new school buildings	Tornado	Existing and New	Hazard Mitigation Plan	NEW	None	4	35	High
Des Moines Schools 1	DAS and repeaters- (Distributed antenna system) As Des Moines Public Schools becomes more energy efficient, cellular and radio communications are blocked within our buildings. In order to combat this, we need to add DAS antennas and repeaters. This improves communication capabilities for not only DMPS staff, but also all emergency responders.	Infrastructure Failure	Existing	Hazard Mitigation Plan (this is what was on the last one, is this the same this time?)	Shovel ready project when funding is available	New	1	26	Medium

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Des Moines Schools 2	Virtual, remote server farm service for disaster recovery due to flood, tornado, windstorm. Our servers are in a building that is in a flood plain. Our back-up system is downtown which also has the potential to flood. In order to recover from a disaster we need the ability to transfer all systems to a remote 3rd party.	Infrastructure Failure	Existing	Hazard Mitigation Plan (this is what was on the last one, is this the same this time?)	Shovel ready project when funding is available	New	1	21	Medium
Des Moines Schools 3	Backup Generation at all of our schools and administrative offices	Infrastructure Failure	Existing	hazard mitigation plan	Shovel ready project when funding is available	New	1	23	Medium
Des Moines Schools 4	Construct new safe rooms at various elementary schools	Tornado	Existing	Hazard Mitigation Plan	Continuing	Cowles, Jackson, and Madison Elementary Safe rooms complete, Lovejoy to be completed in 2019, and others to follow over next 5 years.	1	33	High
Des Moines Schools 5	Construct a multipurpose room as a safe room-Jefferson Elementary	Tornado	Existing	Hazard Mitigation Plan	NEW	did not complete	1	33	High
Des Moines Schools 6	Construct a multipurpose room as a safe room-Lovejoy Elementary	Tornado	Existing	Hazard Mitigation Plan	NEW	completing summer 2019	1	33	High
Des Moines Schools 7	Construct a multipurpose room as a safe room-Studebaker Elementary	Tornado	Existing	Hazard Mitigation Plan	NEW	did not complete	1	33	High
Des Moines Schools 8	Construct a multipurpose room as a safe room-Wright Elementary	Tornado	Existing	Hazard Mitigation Plan	NEW	did not complete	1	33	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Johnston Schools 1	Sprinkle facility at 6510 NW 62nd when repurposing the building	Fire	Existing	Hazard Mitigation Plan	New	None	4	24	Medium
Johnston Schools 2	Replace and upgrade of emergency communication radio system	All including tornado and active shooter	Existing	Emergency Operation Plan	New	None	4	35	High
North Polk Schools 1	Conduct needs analysis and feasibility study for safe rooms at Central Elementary and North Polk Junior/Senior High School	Tornado	Existing	Hazard Mitigation Plan	NEW	Funding restrictions, still priority.	1	33	High
Southeast Polk Schools 1	Contraction of Multi-purpose Safe Rooms District Wide	Tornado/Wind	New	Capital Improvements Plan	New	None	4	35	High
Southeast Polk Schools 2	Double-entry systems in each school; bullet-resistant glass	Intruder	New	HQ safety plan	New	None	4	42	High
Southeast Polk Schools 3	Internal and outward-facing electronic communications for emergency/disaster mitigation	Multi-hazard	New	HQ Safety Plan and Hazard Mitigation	New	None	4	36	High
Southeast Polk Schools 4	Emergency Radios--Cabinet Members (6)	Multi-hazard	New	HQ Safety Plan and Hazard Mitigation	New	None	2	32	High
Southeast Polk Schools 5	Replace antiquated district surveillance cameras and install new systems in buildings without cameras	Multi-hazard	New	HQ Safety Plan and Hazard Mitigation	New	None	4	32	High
Urbandale Schools 1	NOAA Weather Radios at District Buildings	Tornado	Existing	Hazard Mitigation Plan	NEW	Deferred due to technology	4	33	High
Urbandale Schools 2	Move Generator from Middle School to Jensen Elementary	Infrastructure Failure	Existing	Hazard Mitigation Plan	NEW	Completed at Karen Acres, not Jensen	4	31	Medium
Urbandale Schools 3	Implement Emergency Operations Plan	Multiple Threats	Existing	Hazard Mitigation Plan	New	None	2	37	High

Action ID	Mitigation Project / Activity Description	Primary Hazard Addressed	Existing or New Structures	Planning / Implementation Mechanism	2018 Action Status	2018 Action Status Comment	Goal #	STAPLEE Score	Priority
Urbandale Schools 4	Safe Room at New Elementary School	Tornado/Severe Weather	New	Hazard Mitigation Plan/EOP	New	None	1	37	High
Urbandale Schools 5	"Safety Center" Electronic Safety Plan APP	Multiple Threats	Existing	Hazard Mitigation Plan/EOP	New	None	1	33	High
Urbandale Schools 6	Ballistic film and Glazing	Active Shooter	New and Existing	Hazard Mitigation Plan/EOP	New	None	4	39	High
Urbandale Schools 7	Digital Radios for District EOP Staff	Multiple Threats	Existing	Hazard Mitigation Plan/EOP	New	None	4	34	High
Urbandale Schools 8	Internal Locking Capabilities at District Buildings	Active Shooter	Existing	Hazard Mitigation/EOP	New	None	4	35	High
Urbandale Schools 9	Sally Port at Karen Acres	Active Shooter	Existing	Hazard Mitigation/EOP	New	None	1	37	High
Urbandale Schools 10	Sally Port at MS	Active Shooter	Existing	Hazard Mitigation/EOP	NEW	None	1	37	High
Urbandale Schools 11	Sally Port at HS	Active Shooter	Existing	Hazard Mitigation/EOP	NEW	None	1	37	High
Urbandale Schools 12	Sally Port at Webster Elementary	Active Shooter	Existing	Hazard Mitigation/EOP	NEW	None	1	37	High
West Des Moines Schools 1	Installation of FEMA compliant safe rooms/areas in nine elementary school buildings.	Tornado	Existing	Hazard Mitigation Plan	NEW	None	4	37	High
West Des Moines Schools 2	Installation of FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Tornado	Existing	Hazard Mitigation Plan	NEW	None	4	37	High
West Des Moines Schools 3	Installation of generator(s) to serve the FEMA compliant safe rooms/areas in nine elementary buildings.	Tornado	Existing	Hazard Mitigation Plan	NEW	None	4	31	Medium
West Des Moines Schools 4	Installation of generator (s) to serve the FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Tornado	Existing	Hazard Mitigation Plan	NEW	None	4	31	Medium

**Table 4.3. Mitigation Action Implementation Strategy --- Continuing and New Actions**

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Polk County 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	Area Cities	Existing Resources	N/A	Availability of Flood Insurance to residents and businesses in the City and proactive management of any future development in floodplain areas to minimize risk.	N/A
Polk County 2	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek through the Fourmile Creek Watershed Authority	Funding	DPW	15 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	\$40 million	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	25 Years
Polk County 3	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Mud, Camp, and Spring Creek watersheds through the Watershed Authority	Funding	DPW	11 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	\$25 million	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	25 Years
Polk County 4	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Walnut Creek watershed through the Watershed Authority	Funding	DPW	14 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	\$20 million	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	25 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Polk County 5	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to the Beaver Creek watershed through the Watershed Authority	Funding	DPW	26 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	\$30 million	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	25 Years
Polk County 6	Reconstruction of a Skunk River Crossing to assure emergency responders can cross the Skunk River during times of extreme flooding. In 2010, only one crossing in Polk County was open in a 30-mile section of the river.	Funding	DPW	Possibly the Iowa DOT	State Grants, Local funds, HMGP	\$5 million	If the 2010 flood occurred again, some emergency response times to medical emergencies or fire protection would exceed 40 minutes due to only one Skunk River crossing being open to vehicular traffic. By reconstructing another crossing that is capable of remaining open during flood events, then emergency response times could be reduced to 10 to 15 minutes.	8 Years
Polk County 7	Construct severe weather safe rooms for three Polk County Public Works Maintenance Facilities	Funding	DPW	N/A	Local funds, HMGP	\$750,000	Provide safe working environment for employees during severe weather events.	4 Years
Polk County 8	Update siren software to polygon based system	Funding	EMA	Communication Centers, EMA, local jurisdictions	Local Funds, HMPG	\$400,000	Outdoor warning sirens are manual based systems in the 3 communications centers. The technology provides either all sirens to turn on or quadrants. Upgrading the system to polygon based will provide an automated system alleviate human error and follow the storm path vs. an area that isn't. Public Safety is an issue due to either underwarned or overwarned.	10 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Alleman 1	Construct retention pond at Northeast 134	Funding	Mayor/City Council	Iowa Homeland Security and Emergency Management; Iowa Department of Natural Resources	HMGP, FMA, PDM, General Fund	TBD	Reduce damages to existing structures as well as prevent damage to future structures that may be constructed in area slated for potential development	10 years
Alleman 2	Consider participation in the NFIP	Staff Time	Mayor/City Council	Iowa Department of Natural Resources	No funding necessary	N/A	Allow owners of existing structures to purchase flood insurance, offsetting any flood damage to structures as well as provide a mechanism for the City to regulate any future development in designated floodplains	2 years
Altoona 1	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	City Engineer	IDNR, FEMA	Existing Resources	N/A	Flooding, infrastructure damage, property damage, erosion	Ongoing
Altoona 2	Stormwater detention basin improvement - Tuscany Pond; removed sediment from pond to regain capacity and construct new outfall.	Construction access	Public Works/Public Utilities	None	Stormwater funds	\$610,000	Regain capacity to prevent flash flooding, property damage.	2020-2022
Altoona 3	Secondary storm sewer installation	Construction easement acquisition.	Public Utilities	None	Stormwater funds	\$1,400,000	Property damage to residents	Ongoing

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Altoona 4	Storm sewer installation 4th St SW from Lion's Park to 5th Ave NW	Construction easement acquisition.	Public Utilities	None	Stormwater funds	\$470,000	Property damage to residents, eliminate street flooding.	2020
Altoona 5	Adventureland Park Drainage Improvements - detention pond modifications, culvert improvements, stream bank stabilization	Construction access, easement acquisition	Public Utilities	Adventureland Park	Stormwater funds	\$130,000	Property damage to residents, erosion reduction.	2020-2023
Altoona 6	Traffic signal fiber	None identified	Public Works/Engineering	DOT	Existing resources	\$30,000	Traffic safety	Ongoing
Altoona 7	Community Center Security Cameras	Funding	Public Works	None	Budget	\$10,000	Security/safety	2020
Altoona 8	4 Safe rooms for multiple park sites	Funding	Public Works	None	Budget, Safe Room Grants	TBD by Engineer	Provide safe shelter park patrons	10 years
Altoona 9	Replace 5 severe weather sirens	Funding	EMS/Public Works	None	Budget	\$75,000	Public Service Warnings	5 years
Altoona 10	Addition of 4 new severe weather sirens	Funding	EMS/Public Works	None	Budget	\$25,000	Public Service Warnings	2 years
Altoona 11	Construction of new Fire Station #26	Funding	Public Safety	None	Budget/Grants	\$3 million	Public Safety	5 years
Altoona 12	Addition of new Firefighting Engine	Funding	Public Safety	None	Budget/Grants	\$600,000	Public Safety	2 years
Altoona 13	Sanitary sewer lining 5th Ave SW to 8th Ave SE, south of the railroad tracks	None identified	Public Utilities	None	Sanitary Sewer Fund	TBD	Reduces flooding, backups	Ongoing
Altoona 14	Remove sump pump and footing tiles from sanitary sewers	None identified	Public Utilities	None	Sanitary Sewer Fund/Stormwater Fund	TBD	Reduces flooding, backups	Ongoing
Altoona 15	New water storage facility to replace existing 50,000 gallon tower	Property acquisition/Engineering Funding	Public Utilities	None	Water Fund	TBD	Provides additional potable water storage for public use	5 Years
Altoona 16	New water treatment plant	Property acquisition/Engineering Funding	Public Utilities	None	Water Fund	TBD	Provides additional potable water for public use	10 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Altoona 17	New well	Property acquisition/Engineering Funding	Public Utilities	None	Water Fund	TBD	Provides additional potable water for public use	10 years
Altoona 18	Sanitary sewer lining all existing clay sewer mains	None identified	Public Utilities	None	Sanitary Sewer Fund	TBD	Reduces flooding, backups	Ongoing
Ankeny 1	Construct safe room(s) at Mel Ray Mobile Home Park	Lack of funding, Space and Authority	City Manager's Office	Mel Ray Park Owners	PDM, HMGP	TBD by engineer	Personal loss to residents and other occupants from tornado / wind dangers	8 Years
Ankeny 2	Construct safe room(s) at Autumn Ridge Mobile Home Park	Lack of funding, Space and Authority	City Manager's Office	Autumn Ridge Ownership	PDM, HMGP	TBD by engineer	Personal loss to residents and other occupants from tornado / wind dangers	8 Years
Ankeny 3	Tradition Park Detention Basin Flood Improvements	Construction difficulties, seasonal access	Public Works	Tradition Homeowners Association	Stormwater Enterprise Funds and FEMA	\$470,000	Protection for adjacent and downstream properties in multi-family developments.	2 Years
Ankeny 4	Westwinds Channel Fortification	Access to site, construction difficulties	Public Works	FEMA	Stormwater Enterprise Funds and FEMA	\$400,000	Protect large waterway from flood damage and deep ravine bank slides.	2 Years
Ankeny 5	Northcreek Channel Flood Prevention Measures	Access to Site, traffic control, horizontal constraints	Public Works	FEMA, townhome association	Stormwater Enterprise Funds and FEMA	\$210,000	Additional damage to adjacent properties and downstream properties will be avoided.	2 Years
Ankeny 6	Sawgrass Park Dam Improvements	Dewatering pond, funding	Public Works	FEMA	PDM, HMGP	\$455,000	Protection for dam embankment and improved water quality.	6 Years
Ankeny 7	Saylor Creek Tributary Channel Improvements	Access to waterway, funding	Public Works	FEMA	Stormwater Enterprise Funds and FEMA	\$800,000	Protect waterway from flood damage and bank erosion.	5 Years
Ankeny 8	Storm sewer/channel improvements Four Mile Creek bank stabilization	Construction difficulties, Property acquisition	Public Works / Municipal Utilities	None	Adjacent resident participation	\$250,000	Additional property damage and erosion damage avoided	8 Years
Ankeny 9	Reconstruct storm water detention - Packard Pond improvements	Property access, homeowner cooperation	Public Works	Private Resident	PDM, HMGP	\$200,000	Downstream flooding and stream erosion	6 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Ankeny 10	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	Multi-agency funding required, Property acquisition	City Manager's Office	IDNR, FEMA, Polk County, Des Moines	Existing Resources	N/A	Control and reduce flooding, infrastructure damage, property damage, erosion	Ongoing
Ankeny 11	Reconstruct storm water detention - Wildflower Public Pond improvements	Construction difficulties, Access to site	Public Works	None	Stormwater Enterprise Funds, PDM, HMGP	\$350,000	Protect downstream properties from flooding and erosion. Improved detention.	2 Years
Ankeny 12	Storm sewer/channel improvements - SE Creekview Drive Improvements	Construction access, Maintaining access	Public Works	None	Stormwater Enterprise Funds, Assessments	\$1.8 Million	Flooding of commercial and industrial businesses avoided	1 Year
Ankeny 13	NW Elm Lane Sanitary Sewer Replacement	Access, traffic control, staging of project	Municipal Utilities	None	Sewer Enterprise Funds	\$75,000	Control basement sewer back-ups and flooding	3 Years
Ankeny 14	Briarwood Sanitary Sewer Upsizing / Replacement	Property access, staging of project	Municipal Utilities	None	Sewer Enterprise Funds	\$1.5 Million	Control possible basement sewer back-ups and flooding	6 Years
Ankeny 15	Central City Areas - Sewer Upsizing and Replacements	Impact on residences, funding	Municipal Utilities	None	Sewer Enterprise Funds	\$2 Million	Control and eliminate basement sewer back-ups and flooding	7 Years
Ankeny 16	Construct safe room(s) at On With Life Care Facility	Lack of funding, Space and authority	City Manager's Office	Private Care Provider	PDM, HMGP	TBD by Engineer	Personal loss to facility residents from tornado / wind dangers	8 Years
Bondurant 1	Update tornado warning system	Funding	Fire Dept/Mayor /City Council	IHSEM; PCEM	Grants	\$400,000	Improve the City's ability to provide outdoor warning of severe weather, enabling residents to take life- saving action.	2 years
Bondurant 2	Generator at Public Safety Building	Budget	Fire Chief/ City Admin.	None	General Funding/ Grants	\$150,000	Allows for continuous operations of Emergency Operations during power outages	1 year

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Bondurant 3	NW 2nd St. Culvert Expansion	None	Public Works/City Admin.	None	Bond/Grant Funding	\$600,000	Increased capacity during Flooding Events	1 year
Bondurant 4	15th St. SW Bridge Replacement	Permitting/ ROW acquisition	Public Works/City Admin.	N/A	TIF	\$2.8 Million	Increased capacity during Flooding Events	1 year
Bondurant 5	Mud Creek Channel Restoration	Funding/Permitting	Public Works/City Admin/ Mayor & Council	N/A	Bond/Grant Funding/Storm Water Fund	\$750,000	Decrease restriction in the water flow	3 years
Bondurant 6	Mud Creek Regional Detention Facility/Grant St. South Relocation	Funding/Property Acquisition/	Public Works/City Admin/ Mayor & Council	N/A	Bond/Grant Funding/Storm Water Fund	\$8.5 Million	Increased capacity during Flooding Events/Regional Water Quality	5 years
Bondurant 7	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	City Admin.	IDNR, FEMA	Existing Resources	N/A	Regulatory, prevents flooding and property loss	Ongoing
Clive 1	Radio Upgrade	Funding	Public Works	None Specified	Capital Equipment Program	TBD	Improve interoperability of communications	TBD
Clive 2	Install/Replace backup generators	Funding	Admin	None Specified	Capital Equipment Program	\$250,000	Continuity of Service	5 years
Clive 3	Website Enhancement	Funding	Admin	County/ State	General Fund	\$10,000	Improved communication/risk knowledge	1 year
Clive 4	Streambank Stabilization Projects	Funding	Public Works	None Specified	Stormwater Utility	\$25,000,000	Improve stream channel conveyance	25 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Clive 5	Reconstruct Greenbelt Trail bridges	Funding	Public Works	None Specified	Capital Improvement Plan	\$5,000,000	Improve stream channel conveyance/reduce backwater flooding	10 years
Clive 6	Reconstruct NW 86th Street bridge	Funding	Public Works	None Specified	Capital Improvement Plan	\$5,000,000	Improve stream channel conveyance/reduce backwater flooding	10 years
Clive 7	Reconstruct railroad bridge (7800 block University Blvd)	Funding	Public Works	Railroad Company	State/RR	\$5,000,000	Improve stream channel conveyance/reduce backwater flooding	10 years
Clive 8	Little Walnut Creek floodplain acquisitions	Funding	Parks	None Specified	REAP	\$500,000	Preserve floodplain function	3 years
Clive 9	Walnut Creek floodplain acquisitions	Funding	Parks	None Specified	REAP	\$500,000	Preserve floodplain function	5 years
Clive 10	North Walnut Creek floodplain acquisitions	Funding	Parks	None Specified	REAP	\$500,000	Preserve floodplain function	5 years
Clive 11	University Blvd Neighborhood Flood Mitigation Planning and Implementation	Funding	Com Dev	ACE; FEMA; WMA	FEMA	TBD	Reduce flooding impacts	5 years
Clive 12	Indian Hills Neighborhood Flood Mitigation Planning and Implementation	Funding	Com Dev	ACE; FEMA; WMA	FEMA	TBD	Reduce flooding impacts	5 years
Clive 13	Buffalo Road Secondary Water Source	Funding	Public Works	WDSM WW	Water Utility	\$250,000	Reduce potential for loss of water	3 years
Clive 14	Relocation of Porter Shelter	Funding	Parks	None Specified	Capital Improvement Plan	\$1,000,000	Remove structure from floodway	5 years
Clive 15	Swanson Blvd Flapgates	funding	Public Works	None Specified	Stormwater Utility	\$250,000	Reduce street flooding	3 years
Clive 16	University Blvd Flood Mitigation Improvements (Minor)	Funding	Public Works	None Specified	Stormwater Utility	\$1,000,000	Reduce flooding impacts	1-5 years
Clive 17	Regional Stormwater Management Facilities (modifications)	Funding	Public Works	WMA	Stormwater Utility	\$5,000,000	Reduce downstream flood impacts	10 years
Clive 18	Regional Stormwater Facilities (outside of Clive)	Funding/Regional Cooperation	Public Works	ACE; FEMA; WMA	Stormwater Utility	\$5,000,000	Reduce downstream flood impacts	10 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Clive 19	Regional Stormwater Facilities (within Clive)	Funding	Public Works	ACE; FEMA; WMA	Stormwater Utility	\$5,000,000	Reduce downstream flood impacts	10 years
Clive 20	Repetitive Loss Buyout Program	Funding	Com Dev	Iowa Homeland Security and Emergency Management; FEMA	Stormwater Utility	\$25,000,000	Increase public safety and reduce flood damage and	10 years
Clive 21	Flood Alert Early Warning System Enhancements	Funding	Public Works	DSM, WDSM, Urbandale, IFC, WMA	Capital Equipment Program	TBD	Improve early warning of flood hazard potential	TBD
Des Moines 1	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	Land acquisition, Permitting, Funding	Public Works Department	IDOT, USACE	PDM, HMGP	TBD	Impacts levee certification for SE Des Moines Levee which protects portions of Des Moines and Pleasant Hill including the Wastewater Reclamation Facility.	TBD

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines 2	Comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Community Development Department	Engineering Department	Existing Resources	N/A	Availability of Flood Insurance to residents and businesses in the City and proactive management of any future development in floodplain areas to minimize risk.	Ongoing
Des Moines 3	Construct safe room(s) at Des Moines Municipal Housing Agency's multi-family units	Space constraints	Housing Service Department	Engineering Department	City General Operating Fund / Disposition Proceeds	TBD	Reduce injuries and property damage	TBD
Des Moines 4	Harden single family home scattered site Public Housing units	Space constraints	Housing Service Department	Engineering Department	City General Operating Fund / Disposition Proceeds	TBD	Reduce injuries and property damage	TBD
Des Moines 5	Treatment and removal of ash trees in response to onset of Emerald Ash Borer (EAB)	EAB insect has been discovered in the city. Cost and logistics of treatment and removal.	Public Works Department	MidAmerican Energy Corp. and Tree Des Moines TreeKeepers	City General Operating Fund, Storm Water Utility Fund	\$9.6 million	Avoid excess rainfall runoff	7 Years
Des Moines 6	Des Moines River Flood Mitigation Improvements - Flood protection system improvements (levees, floodwalls, pump stations, etc.) to maintain FEMA accreditation despite increased flows identified in 2011 Des Moines River Regulated Flow Frequency Study.	USACE permitting, Funding	Public Works Department	USACE	Stormwater Utility, USACE, Iowa Flood Mitigation Program	\$71.7 million	Impacts FEMA accreditation of three City of Des Moines operated Corps of Engineer levees that protect the downtown area.	5 Years
Des Moines 7	Hamilton Drainage Area Stormwater Improvements - Storm sewer conveyance improvements to increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns.	None Identified	Public Works Department	None Identified	Stormwater Utility	\$23 million	Improvements to be designed to reduce risk of property damage due to flash flooding up to the 1% annual chance flood event	5+ Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines 8	Leetown Creekway Stormwater Improvements - Increased storm sewer capacity between University Avenue and Dean Avenue and channel improvements from south of Dean Avenue to confluence with Fourmile Creek.	None Identified	Public Works Department	None Identified	Stormwater Utility	\$7.8 million	Improvements to be designed to reduce risk of property damage due to flash flooding up to the 1% annual chance flood event	1 Year
Des Moines 9	Closes Creek Stormwater Improvements - Increase storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	None Identified	Public Works Department	None Identified	Stormwater Utility	\$24.2 million	Improvements to be designed to reduce risk of property damage due to flash flooding up to the 1% annual chance	5 Years
Des Moines 10	Crawford Creek Stormwater Improvements - Increased storm sewer capacity and/or construct detention/G.I. to reduce identified flood risk concerns	None Identified	Public Works Department	None Identified	Stormwater Utility	\$6 million	Improvements to be designed to reduce risk of property damage due to flash flooding up to the 1% annual chance	5 Years
Des Moines 11	Sanitary Sewer Separation Projects - Install storm sewer to eliminate CSO's that discharge sanitary water to the river	None Identified	Public Works Department	None Identified	Stormwater Utility and Sanitary Sewer Fees	\$68.9 million	Eliminates discharges of raw sanitary sewer water to the river	5 Years
Des Moines 12	City-wide Small Watershed Flood Mitigation Projects - Identify and construct projects that increase storm sewer capacity and/or construct detention/G.I. to reduce flood risk concerns	None Identified	Public Works Department	None Identified	Stormwater Utility	\$10 Million	Improvements to be designed to reduce risk of property damage due to flash flooding up to the 1% annual chance	Ongoing
Des Moines 13	Storm Water Pump Station Rehabilitation - Updates to pump stations to provide resiliency	None Identified	Public Works Department	None Identified	Stormwater Utility	\$8.4 million	Improvements to update pump stations and provide resiliency	3 Years
Des Moines 14	Voluntary acquisition and demolition of all single and two-family residential structures in the floodplain and repetitive loss properties. Estimated 220 structures would be acquired.	Owner resistance, Funding	Engineering Department	Community Development Department	HMGP, FMA, PDM, RFC, CDBG, Local funds, State funds	\$30+ million	Reduce injuries and property damage and increase CRS Score	15+ Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines 15	Revise Floodplain Development regulations to increase freeboard height, implement compensatory fill, and limit enclosures in the floodplain.	Developer resistance, resistance from property owners currently in floodplain	Engineering Department	Community Development Department	Existing Resources	N/A	Reduce injuries and property damage and increase CRS Score	1 Year
Des Moines 16	Construct safe room in new fire station(s)	Need new building	CMO/Facilities	Fire Department	General Fund	>\$250,000 each	Place of safety in case of storms - within Critical Facility	Ongoing
Des Moines 17	Generator for new fire station(s)	Need new building	CMO/Facilities	Fire Department	General Fund	\$250,000 each	Backup power for Critical Facility	Ongoing
Des Moines 18	Construct safe room in new City Hall Annex	Need new building	CMO/Facilities	Information Technology	General Fund	>\$250,000	Place of safety in case of storms - within Critical Facility. This is a critical communications facility/data center supporting government, school, utility, public safety, and medical services in Des Moines.	5 year
Des Moines 19	Generator and 72-hour fuel storage for new City Hall Annex	Need new building	CMO/Facilities	Information Technology	General Fund	\$250,000	Backup power for Critical Facility. This is a critical communications facility/data center supporting government, school, utility, public safety, and medical services in Des Moines.	5 year
Des Moines 20	Building inventory for Fire Dept. community risk assessment / analysis	Funding	Fire Department	Information Technology	Existing Resources	\$100,000	Reduce injuries and property damage	Ongoing
Des Moines 21	Regional NextGen 911 data improvements	None Identified	Information Technology	Polk County EMS, Westcom	NextGen 911 Grant	\$36,000 Annually	Preparation for statewide migration to NG911 location-based call routing / dispatching.	Ongoing

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines 22	Damage assessment data collection tools and standard operating procedures during and after emergency events	Funding / Resources / Communication	Information Technology	Community Development, Other Jurisdictions	Existing Resources	TBD	Provide better communication and assistance to public and other jurisdictions during emergency events.	Ongoing
Elkhart 1	Construct safe room at Elkhart Memorial Park	Need new building	Mayor	Community	PDM, HMGP, Community donations	TBD by Engineer	Safety of residents	5 Years
Elkhart 2	Construct safe room in NEW fire station	Looking for suitable location	Mayor	Fire Grants, Community	PDM, HMGP, Grants, Community Donations	>\$250,000	Place of safety in case of storms	5 Years
Elkhart 3	Generator for new fire station	Cost	Mayor	Community	HMGP 5%, City funds, Donations	<\$250,000	Safe room heat in Winter	5 Years
Elkhart 4	Generator at city water plant	Cost	Mayor	Community	HMGP 5%, Community funds	<\$250,000	Loss of water source for fires	2 Years
Elkhart 5	Construct safe room at Elkhart Community Center	Cost	Mayor	Community	PDM, HMGP	TBD by Engineer	Place of safety in case of storms	5 Years
Grimes 1	Construct safe room at existing facilities	Cost	City Administration	None	PDM, HMGP	TBD by Engineer	Injury or death of community members unable to find shelter	3 Years
Grimes 2	Generators at City Hall	Costs	City Administration	None	HMGP 5%	<\$250,000	City services being interrupted	3 Years
Grimes 3	Generator at fire station	Costs	City Administration	None	HMGP 5%	<\$250,000	Delay in emergency response, freeze damage to equipment	3 Years
Grimes 4	Warning siren northeast and southwest areas of city	Securing property and power supply	City Administration	None	HMGP 5%	<\$250,000	Providing residents advanced warning of an approaching storm	18 months
Grimes 5	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	IDNR, FEMA	Existing Resources	N/A	Regulation of future construction in floodplain areas and availability of flood insurance in City limits	Ongoing

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Grimes 6	Update existing warning sirens to be compatible with single siren activation	None Identified	City Administration	None	HMGP	TBD by Engineer	Communication of risk to residents	5 years
Johnston 1	Update outdoor warning system	Funding	Public Safety	Iowa Homeland Security and Emergency Management; Polk County Emergency Management		TBD	Improve the City's ability to provide outdoor warning of severe weather, enabling residents to take life-saving action.	5 Years
Johnston 2	Construct Detention Basin Northglenn Neighborhood West of Merle Hay Road	Funding	Public Works	Iowa Homeland Security and Emergency Management; Polk County Emergency Management	Storm Water Utility	\$3.2 Million	Detain storm water flows to mitigate storm sewer flow downstream.	5 Years
Johnston 3	Extend 72" Storm Sewer Pipe under Johnston Drive	Funding	Public Works	Iowa Homeland Security and Emergency Management; Polk County Emergency Management	Storm Water Utility	TBD	Protect roadway from flooding. Johnston Drive is a detour route for Interstate 35/80	5 years
Johnston 4	Construct flood control structure on Johnston Drive	Funding	Public Works	Iowa Homeland Security and Emergency Management; Polk County Emergency Management	Storm Water Utility	TBD	Protect Businesses along NW Beaver Drive from back water flooding.	5 years
Johnston 5	Multi-purpose Safe Room at Lew Clarkson Park	Cost	Parks Department	None Identified	PDM, HMGP	TBD	Life/Survivability	5 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Johnston 6	Continue to work with Iowa DOT to eliminate flooding at Northwest Beaver Drive (water impounded since the 2008 flood may be affecting the water table and may be polluted)	Inter-governmental cooperation	Community Development	DOT, Army Corp of Engineers	Existing Staff Resources, HMGP, PDM, FMA	<\$250,000	Reduce or eliminate property damage, maintain roadways lost due to flooding	5 Years
Johnston 7	Conduct flood impact study on Merle Hay and Beaver Creek area	Costs	Community Development	DOT, Army Corp of Engineers	PDM if it results in projects	<\$250,000	Reduce or eliminate property damage, maintain roadways lost due to flooding	5 Years
Johnston 8	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	IDNR, FEMA	Existing Resources	N/A	Mitigate damages to new development in flood prone areas as well as allow residents and businesses to purchase flood insurance.	Ongoing
Mitchellville 1	Improve ditch and culvert drainage in northwest part of town	None provided.	None provided.	Iowa Homeland Security and Emergency Management	Bond funds, CDBG, HMGP, PDM	TBD by engineer	Prevent flooding to nearby outbuildings and basement in nearby residences	1 Year
Mitchellville 2	Backup power generator for police/fire station	None provided.	None provided.	Iowa Homeland Security and Emergency Management	General Funds, Blake Trust Account, HMGP 5%	\$30,000	Provide backup power to police/fire critical services	2 Years
Mitchellville 3	New roof for police/fire station	None provided.	None provided.	None	Blake Trust Account	\$5,000	Avoid additional damages to structure and contents	1 Year
Mitchellville 4	Re-wiring the electrical system for police/fire station	None provided.	None provided.	None	General Fund, Blake Trust Account	\$3,500-\$4,000	Needs to be completed before generator can be installed	1 Year
Mitchellville 5	New siren on east edge of town	None provided.	None provided.	Iowa Homeland Security and Emergency Management	General Funds, HMGP 5%	\$20,000	Provide advanced outdoor warning for citizens to take shelter	1 Year

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Mitchellville 6	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None provided.	None provided.	IDNR, FEMA	Existing Resources	N/A	Mitigate damages to new development in flood prone areas as well as allow residents and businesses to purchase flood insurance.	Ongoing
Pleasant Hill 1	Generators for lift stations: 6400 Southeast 6th Street; Northeast 80th Street; Vandalia Road; Harbor Lake Drive, and Southeast 60th Street	Not all lift stations lifted are actively in use, budget & time restraints	City Public Works	City Council, City Manager	Capital Improvement Plan Funds, HMGP 5%	\$40,000 per generator	Reduce physical damage to structures	1 Year
Pleasant Hill 2	Flood mitigation planning elevation of southeast connector so water passes underneath - current road is in flood zone	Time & budget restraints	City of Des Moines City Manager	City Council, City Manager, City of Des Moines	N/A, PDM if results in a fundable project	\$100 million for entire project	Flooding potential is reduced and potential damage to structures is minimized	5 Years
Pleasant Hill 3	Creation of storm water utility (with taxing and bonding authority) Explore increase to utilities fees to complete storm water utilities.	Politically & Socially difficult to increase user fees	Newly Created Stormwater Utility Agency	Stormwater coordinator, City council, Community development	N/A	\$40-50,000	Stormwater system is kept current to avoid any losses due to flooding, backups, or other stormwater related issues	2 to 5 Years
Pleasant Hill 4	Relocation of and construction of new fire station	Time, Budget restraints	City Fire	City Fire, City Council, Funding sources	Capital Improvement Plan Funds	TBD by engineer	More adequate services for fire employees could produce faster response times, better equipment storage, loss of life, prevention of damages	3 Years
Pleasant Hill 5	Relocation of gas pumps for city vehicles which are in flood zone	Land acquisition	Public Works	City Council	HMGP, FMA, PDM	TBD by engineer	Provide continued access to public vehicles during an emergency event	3 Years
Pleasant Hill 6	Safe room incorporation into new city facilities / construction	time and budget restraints	Community Development	City Council, City Staff, funding agencies	HMGP, PDM	TBD by engineer	Minimize loss of life	N/A

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Pleasant Hill 7	Regional detention facility at northeast 80th Street	time and budget restraints	City Public Works	Regional entities, City Council, City Manager	N/A	\$4 million	reduce flooding risks and potential damage to structures	1 Year
Pleasant Hill 8	Enhance combined development of Des Moines Area Regional GIS Partnership	time restraints, skill capabilities & financial resources	Community Development, City of Des Moines IT	Metro Cities, Des Moines IT	City Budget, HMGP 5%	<\$250,000	Provide accurate and reliable data for emergency professionals to provide immediate and successful responses	5 Years
Pleasant Hill 9	Construction of new culvert at Little Four Mile Creek Drive 4400 block	time and budget restraints	Department of Public Works	City Engineer	HMGP, FMA, PDM	\$1.5 Million	reduce flooding risks and potential damage to structures	Ongoing
Pleasant Hill 10	Pursue remedial flood mitigation actions associated with the South East Des Moines (SEDM) Levee, US 65	time and budget restraints	Iowa DOT, USACE and others TBD	City Council	PDM, HMGP	TBD	reduce flooding risks and potential damage to structures	TBD
Pleasant Hill 11	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	IDNR, FEMA	Existing Resources	N/A	Mitigate damages to new development in flood prone areas as well as allow residents and businesses to purchase flood insurance.	Ongoing
Pleasant Hill 12	Flood way buyout program	Funding	TBD	FEMA	FEMA	TBD	Eliminate buildings within known flooding areas	2019 and Beyond
Pleasant Hill 13	Construction of Storm Water Detention Basins, Buffer Strips, and Channel Improvements to Fourmile Creek through the Fourmile Creek Watershed Authority	Funding	City Public Works	15 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	TBD	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	Ongoing

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Pleasant Hill 14	Construction of Storm Water Detention Basins, buffer Strips, and Channel Improvements to Four Mile Creek watersheds through the Watershed Authority	Funding	City Public Works	11 Watershed Authority members, including Cities, Counties, and Soil Conservation Districts.	State Grants, Local funds, HMGP	TBD	Mitigate damages caused by flooding by providing stormwater detention and channel improvements	Ongoing
Pleasant Hill 15	Management of Stream Buffers - along creek beds / river beds	Funding	Parks/Public Works	Corps of Engineers, DNR	FEMA, General Fund, Storm Water Utility Fund, Fed/State Grants	TBD	Public Safety, reduced flooding	Ongoing
Pleasant Hill 16	Construction of new box culvert at Parkridge Ave across from the Cemetery	time and budget restraints	Department of Public Works	City Engineer	HMGP, FMA, PDM	\$1.5 Million	reduce flooding risks and potential damage to structures	Ongoing
Polk City 1	Safe Room for: police department/fire department/community center/city hall/visitors at area lakes	Funding	City Administration	None Identified	City General Fund, Safe Room Grant, HMGP, PDM	TBD by engineer	Provide refuge for life safety during tornado events	10 Years
Polk City 2	Safe room for sports complex	Funding	City Administration	None Identified	City General Fund, Safe Room Grant, HMGP, PDM	TBD by engineer	Provide refuge for life safety during tornado events	10 Years
Polk City 3	Advocate for structural enhancements to Mile Long Bridge to bring to current DOT standards	Not within our jurisdiction	City Administration	None Identified	Iowa DOT, US DOT	N/A	Mitigate interruption of this key access point	Ongoing
Polk City 4	Raise levee elevation for sewer treatment facility on East Broadway Street	Funding	City Administration/Public Works	None Identified	City	TBD by engineer	Mitigate potential flood damage to sewer treatment facility	15 years
Polk City 5	Advocate for expanding pumping capacity for sewer treatment facility pumping to Saylorville Reservoir	Not within our jurisdiction	City Administration/Public Works	None Identified	N/A	N/A	Mitigate flood damages caused by sewer backup	Ongoing

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Polk City 6	Raise wellheads and associated electrical for Polk City Well Field on North 3rd Street and East Northside Drive	Funding	City Administration/ Public Works	None Identified	City	TBD by engineer	Mitigate potential damage to wellheads and electrical components from flooding	5-10 Years
Polk City 7	Storm sirens at Hugg Drive and Westside Drive	Funding	City Administration/ Public Works	None Identified	City	TBD by engineer	Provide advance outdoor warning of severe weather to allow residents to take shelter	5 Years
Polk City 8	Lining of public sewers to mitigate infiltration of the main pump.	Funding	City Administration/ Public Works	None Identified	City	TBD by engineer	mitigate damage to the pump as well as damages that could occur if pump is non- operational	5 Years
Polk City 9	Culvert at N 3rd -Bedshed Drive to mitigate water running over the road flooding buildings	Funding	City Administration/ Public Works	None Identified	City	TBD by engineer	Mitigate water going over the road	5 Years
Polk City 10	Join the National Flood Insurance Program	Staff Time	City Administration	Iowa Dept. of Natural Resources	N/A	N/A	This will enhance the City's ability to regulate development in floodplain areas as well as allow residents and businesses to purchase flood insurance	1 Year
Runnells 1	Backup power generator for community center at 108 Brown Street	Funding	Mayor's Office		HMGP 5%	\$30,000	Provide alternate power during power outages for community center which can be used during various hazard events such as extreme cold, extreme heat, etc.	1 Year
Runnells 2	Document electronic backup for city critical documents	Time constraint Funding	Mayor's Office	Summit- software programs	General Funds	TBD	Provide for continuity of government if primary documents are lost	1 Year
Runnells 3	Development of new lagoon at sewer station to mitigate overflow in high rains	Funding	Mayor's Office	Msa Professionals Des Moines Water Works	Sewer funds, CDBG grants	\$250,000	Prevent overflow of sewage during flash flooding. This may also help prevent sewer backup in basements.	5 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Runnells 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	IDNR, FEMA	Existing Resources	N/A	Mitigate damages to new development in flood prone areas as well as allow residents and businesses to purchase flood insurance.	Ongoing
Urbandale 1	Oxbow Construction	None	Engineering & Public Works	IDNR	GOB	\$100,000	Reduces Flooding & Water Quality	On-going
Urbandale 2	Flood way buyout program	Funding	TBD	FEMA	FEMA	\$6,752,124	Eliminate buildings within known flooding areas	2019 and beyond
Urbandale 3	Buyout Property Redesign Program	Funding	Engineering & CD	FEMA	FEMA	TBD	Lessen the impact of storm waters to eliminate/reduce flash flooding.	2019
Urbandale 4	Police Station Expansion and Fleet Storage	Funding	Engineering & Public Works	None	TBD	\$3,827,000	Adequate space in building/quicker response in inclement weather	Next 5 years
Urbandale 5	Police Station - Douglas Entrance	Solution identification	Engineering & Public Works	None	HMGP	TBD	Prevent flooding of building	ASAP
Urbandale 6	Fire: Rescue Truck Replacement	None	Fire	None	GOB	\$525,000	Replacement of truck that has reached the end of useful life	2024
Urbandale 7	Fire: Truck Replacement	None	Fire	None	GOB	\$550,000	Replacement of truck that has reached the end of useful life	2021

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Urbandale 8	Fire: Truck	None	Fire	None	GOB	\$522,673	Needed fire apparatus for new station opening Fall of 2019	2019
Urbandale 9	Fire: Tender	None	Fire	None	GOB	\$250,000	Needed to supply water in areas not serviced by city water mains	TBD
Urbandale 10	Looped Fiber Connection Between City Facilities	None	Technology	None	Capital Project Fund (Interest)	\$450,000	Provides redundant fiber connections	2019 - 2021
Urbandale 11	Phone and Network Upgrade	None	Technology	None	Capital Project Fund (Interest)	\$347,500	Replacing the City's antiquated phone system	2019
Urbandale 12	Drainage Improvements- Various Locations	None	Engineering & Public Works	None	Storm Water Utility Fund	\$1,250,000	Replacement of problematic storm sewer/drainage areas	On-going
Urbandale 13	Intake Rebuilding	None	Engineering & Public Works	None	Storm Water Utility Fund	\$750,000	Provides for the rebuilding of failed intakes	2019-2021
Urbandale 14	Aurora Avenue Railroad Crossing	None	Engineering & Public Works	None	TIF	\$74,000	Improves safety of this railroad crossing	2020
Urbandale 15	Hickman Road at 128 <sup>th</sup> Street	None	Engineering & Public Works	City of Clive, IDOT	GOB/City of Clive/ICAAP/Traffic Safety/IA DOT	\$3,500,000	Improves safety and capacity for this intersection	2020
Urbandale 16	Interchange Modifications and Collector Distributor Connections- Interstate 35/80 and Highway 141 / NW Urbandale Drive / Meredith	None	Engineering & Public Works	IDOT	IDOT	\$55,000,000	Improves safety and capacity of Interstate and on/off ramps	2030
Urbandale 17	100th Street Interchange at I-35/80	None	Engineering & Public Works	IDOT	TIF	\$3,500,000	Improves safety and capacity of Interstate and on/off ramps	To be completed in 2019
Urbandale 18	72 <sup>nd</sup> Street Replacement with Storm Sewer	None	Engineering & Public Works	None	Road Use Tax/Storm Water Utility	\$1,900,500	Replacement of a 25' Street and inadequate storm sewer	2019
Urbandale 19	104 <sup>th</sup> Street with Storm Sewer	None	Engineering & Public Works	None	TIFF/Storm Water Utility/Private Funding	\$4,520,200	Reconstruction of road to include storm sewer	2019

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Urbandale 20	Battery Backup Signalization	None	Engineering & Public Works	IDOT	Road Use Tax/IDOT TS Grant	\$91,000	Will allow traffic signals to operate during power outage improving safety	2020
Urbandale 21	Water Main Projects	None	Urbandale Water Utility	None	Water Revenue	\$3,209,600	Improved needed fire flows	2019 - 2024
Urbandale 22	Warning siren at Alice's Road	None	EP	None	Operating budget	\$23,500	Outdoor warning	2019
Urbandale 23	Traffic Signal Battery Back up	None	Engineering & Public Works	None	Operating budget	\$15,900	Safety	2019
Urbandale 24	Storm Sewer inflow elimination program	None	Engineering & Public Works	USSD & UWHSD	Operating budget	\$1,000,000	Backup Prevention	On-going
Urbandale 25	Storm water grant programs	None	Engineering & Public Works	Residents	Operating budget	\$100,000	Stream Bank Protection	On-going
Urbandale 26	Storm shelters in Public Parks	Funding	Parks	None	Operating budget/CIP	TBD	Provide shelter for those in the parks when there is severe weather	2020 and beyond
Urbandale 27	Creek Bank Stabilization	Funding	Parks	FEMA	FEMA/Operating Budget	TBD	Lessen the impact of erosion on the creek banks	2019 and beyond
Urbandale 28	Community Scholarship for swimming lessons	Funding	Parks	None	Unknown	TBD	Decrease the possibility of drowning following flooding events	2019 and beyond
Delaware Township 1	Standby Generator Installation	Funding	Fire Department	None	Grants	\$25,000	Allow for continued FD operations during lack of grid power	5 years
Delaware Township 2	Township Plow Purchase	Funding	Township	None	General Fund, Grants	\$10,000	Allow for continued FD operations during winter storms. Also long term cost savings over using contractor for township owned property snow removal	TBD
West Des Moines 1	Elevation of I-35 Bridge over Raccoon River and Highway 28 Bridge over Raccoon River to mitigate washout	Cost	Iowa DOT	None	N/A	TBD by engineer	Closure of critical regional transportation route	6 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
West Des Moines 2	Pursue remedial flood mitigation actions associated with the Southeast Des Moines (SEDM) Levee, US 65	Cost	Iowa DOT, USACE, and others TBD	Non	PDM ,HMGP	TBD	Closure of critical regional transportation route	TBD
West Des Moines 3	Lining of public sewers in the Valley Junction Area to mitigate infiltration at the Main Pump-2 Phases	Cost, workload	Department of Public Works	EPA, IDNR	PDM, HMGP	\$810,000 / Phase 1 \$785,000 / Phase 2	Property damage due to sewer backup. Capacity deficiencies at WWTP.	1 Year
West Des Moines 4	Lining of public sewers in the Fairmeadows Creek Area to mitigate infiltration of the main pump	Cost, workload	Department of Public Works	EPA, IDNR	PDM,HMGP	\$2.3 million	Property damage due to sewer backup. Capacity deficiencies at WWTP.	5 Years
West Des Moines 5	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code (Title 9, Ch. 12)	None	Development Services, Engineering Services	ASCE, FEMA, ICC, IDNR	Existing Resources	N/A	Reduction in potential property value losses from flooding and climate events. Social cohesion of communities through DFE.	1 Year
West Des Moines 6	Design MidAmerican Energy RecPlex to function as an essential facility (evacuation center) during emergency response. Classify as a Flood Design - Class 4. Ensure connection to roadway, loading dock and primary structure are built at ASCE Design Flood Elevation guidelines. Harden building elements to provide storm shelter for building and recreational field users.	Cost, Existing Development Review Process	Development Services, Engineering Services, WestCom	ASCE, FEMA, ICC, PDM, HMPG	General Funds	TBD	Establishment of a critical facility during storm events and hazards for a large amount of residents.	1 Year
West Des Moines 7	Map and buffer Tier II facilities within City and adjacent to City perimeter. Develop emergency response and subsequent evacuation routes for HAZMAT incidents based on these mappings.	None	Development Services, Engineering Services	FEMA, Polk County	Existing Resources, PDM	N/A	Increased interdepartmental and intergovernmental cooperation during a critical event.	1 Year

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
West Des Moines 8	Implement recommended storm water improvements from the Westown-PCP drainage study.	Existing Infrastructure	Engineering Services	Unknown	PDM	TBD	Reduction in potential property and life safety losses due to poor planning and flood water anticipation. Movement towards zero-discharge watershed region.	3 Years
West Des Moines 9	Installation of ice protection structures at regional radio communications infrastructure sites.	Cost	Westcomm	Unknown	General Funds, 911 Surcharge	\$20,000 per site times five (5) sites (\$100,000 Total)	Reduction in potential property and life safety losses due to damage to critical communications infrastructure.	3 Years
West Des Moines 10	Incorporate and adopt recommended ASCE Flood Resistant Design and Construction Guidelines into City Building Code and Floodplain Management section of City Code	None	Development Services, Engineering Services	ASCE, FEMA, ICC, IDNR	Existing Resources	N/A	Reduction in potential property value losses from flooding and climate events. Social cohesion of communities through DFE.	1 Year
West Des Moines 11	Develop evacuation routes for hazard incidents, flooding incidents, and serve weather incidents.	None	Development Services, Engineering Services	FEMA, Polk County	Existing Resources, PDM	N/A	Increased interdepartmental and intergovernmental cooperation during a critical event.	1 Year
West Des Moines 12	Map Tier II facilities within City and adjacent to City perimeter.	None	Development Services, Engineering Services	FEMA, Polk County	Existing Resources, PDM	N/A	Increased interdepartmental and intergovernmental cooperation during a critical event.	1 Year
West Des Moines 13	In conjunction with redevelopment, identify and implement storm water drainage improvement recommendations within the Blue Creek drainage basin.	Existing Infrastructure	Engineering Services	Unknown	PDM	TBD	Reduction in potential property and life safety losses due to poor planning and flood water anticipation. Movement towards zero-discharge watershed region.	3 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
West Des Moines 14	Enhance current floodplain management efforts by updating the Floodplain Management Ordinance, which includes new Flood Insurance Rate Maps, associated ordinance language approved by IDNR/FEMA, and increased requirements for City facilities including public services, emergency services, and similar structures that are critical to maintaining City functions in an emergency to be elevated a minimum of one (1) foot above the 500-year flood.	None	Development Services	IDRN, FEMA	PDM	N/A	Reduction in potential property and life safety losses due to poor planning and flood water anticipation.	Continuous
West Des Moines 15	SE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: 19th St. & Woodland Ave. to Grand Ave. & Railroad Avenue to Lincoln St. & HWY 28 to Hwy 28 & Prospect Ave.	Funding, Cost, workload	Department of Engineering Services	None	Storm Sewer Fee Funds, City Bonds. Possible TIF Funds, Possible FEMA Funding	\$28,000,000	Reduce and protect from flooding and damage to commercial and residential properties and public infrastructure.	TBD
West Des Moines 16	NE Basins Stormwater Improvements (Valley Junction Area) approximate boundary: Hwy. 28 & N. of Ashworth Rd. to Hoak Dr. & IA Interstate RR to Office Park Road & 15th St. to Ashworth Rd. & 11th St. to Ashworth Rd. & 9th St. to Grand Ave. & 9th St. to Grand Ave. & 8th St. to 5th St. & Prospect Ave. to 5th St. & Vine St. to Hwy 28 & Vine St. to Hwy 28 & Lincoln St. to Walnut Creek Levee (Des Moines) to Hwy. 28 & N. of Ashworth Rd.	Funding, Cost, workload	Department of Engineering Services	Des Moines, USACE	Storm Sewer Fee Funds, City Bonds. Possible TIF Funds, Possible FEMA Funding	\$17,500,000	Reduce and protect from flooding and damage to commercial and residential properties and public infrastructure.	TBD

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
West Des Moines 17	Raccoon River - Bank Stabilization	Funding, USACE Permitting, Obtaining Easements	Department of Engineering Services	DNR, USACE, North Raccoon River WMC	Storm Sewer Fee Funds, City Bonds, Possible FEMA Funds	\$1,310,000	Reduce and protect from flooding and damage to Raccoon River Road and private and public properties.	5 Years
West Des Moines 18	Grand Avenue Stormwater Pump Station Near Raccoon River Dr.	USACE Permitting, Obtaining Easements	Department of Engineering Services	DNR, USACE, North Raccoon River WMC	Storm Sewer Fee Funds, City Bonds, Possible FEMA Funds	\$385,000	Reduce and protect from flooding and damage to Raccoon River Road and private and public properties.	2 Years
West Des Moines 19	Blue Creek Basins Stormwater Improvements ( 5 Basins)	Funding, Cost, workload	Department of Engineering Services	FEMA	Storm Sewer Fee Funds, City Bonds, Possible FEMA Funds	\$3,100,000	Reduce and protect from flooding and damage to commercial and residential properties and public infrastructure.	6 Years
West Des Moines 20	Iowa Interstate Railroad Bridge near Raccoon River Park Entrance and Raccoon River Park Soccer Complex Culvert	Funding, Cost, Workload, Railroad requirements.	Department of Engineering Services	U. P. Railroad	Storm Sewer Fee Funds, City Bonds, Possible FEMA Funds	\$1,230,000	Reduce and protect from flooding and damage to railroad tracks and public infrastructure.	5 Years
West Des Moines 21	Fairmeadows Creek - 27th & Vine Culvert	None	Department of Engineering Services	None	Storm Sewer Fee Funds, City Bonds. Possible TIF Funds,	\$640,000	Reduce and protect from flooding and damage commercial and residential properties and public infrastructure.	2 Years
West Des Moines 22	Walnut Creek Watershed Management Authority Misc. Projects	None	Department of Engineering Services	Walnut Creek WMA, USACE	Storm Sewer Fee Funds, City Bonds, Possible FEMA Funds	\$150,000	Reduce and protect from flooding and damage commercial and residential properties and public infrastructure.	2 Years
West Des Moines 23	62nd & Railroad Ave Sanitary Sewer Gate Structure Replacement	Funding, workload	Department of Engineering Services	EPA, IDNR, WRA	Sanitary Sewer Fee Funds, City Bonds.	\$400,000	Protect from property damage due to sewer backup during heavy rains and flood events	2 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
West Des Moines 24	8th Street Reconstruction - I-235 to Clegg Road	Funding, cost, workload	Department of Engineering Services / Iowa DOT	IDOT, FHWA, MPO	Gas Tax Funds, City Bonds, Possible TIF Funds, Possible STPBG Funds	\$4,615,000	Reduce traffic accidents and congestion. Improved safety for 8th Street access to I-235.	6 Years
West Des Moines 25	S. 88th Street Railroad Crossing improvements- Near Raccoon River Drive	Funding, cost, workload	Department of Engineering Services	IDOT, U. P. Railroad	Gas Tax Funds, City Bonds, Possible DOT Traffic Safety Funds	\$725,000	Public Safety	3 Years
Windsor Heights 1	Install residential check valves at Washington Avenue and 70th Street	Funding	Sanitary Sewer District	None Identified	Sewer Fund	\$2,000 per home	Prevent water back-up in homes	1 Year
Windsor Heights 2	replace storm sewer intakes	None Identified	Department of Public Works	None identified	Stormwater Utility Fund	\$5,000 per intake	Improves flow of runoff	2 Years
Windsor Heights 3	Identify potential future shelter sites	Funding	Fire Department	None Identified	Department Salaries	<\$250,000	Life safety	5 Years
Windsor Heights 4	Continue to comply with the NFIP by enforcing floodplain management ordinance, including regulating/ monitoring new construction and substantial improvements in the SFHA; and participating in floodplain identification and mapping.	None Identified	Floodplain Manager	IDNR, FEMA	Existing Resources	N/A	Regulatory, Prevents flooding and property loss	Ongoing
Windsor Heights 5	Walnut Creek bank stabilization	Access to property	DPW/ Engineering	FEMA/DPW/ Contractors	HMGP, WIRB Grant	TBD by engineer	Erosion, Property loss	Ongoing
Des Moines Water Works 1	Upgrade Interior Drainage Pumping System inside the levee protected area at Fleur Drive Water Treatment Plant.	Lack of available funds.	DMWW Engineering Department	N/A	CIP or outside funding source currently unknown to DMWW.	\$900,000 in 2019 dollars.	Areas inside the ring levee flood during rain events when levee gates and storm water valves are closed. These improvements would mitigate interior flooding.	5 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines Water Works 2	Relocate grounds maintenance facility to the dry side of the levee system to reduce repetitive loss potential.	None Identified	DMWW Engineering Department	N/A	CIP	\$700,000 in 2019 dollars.	Recurrent property damage when existing grounds maintenance facility floods.	2 Years
Des Moines Water Works 3	Evaluate and repair flood gates located at the Fleur Drive Water Treatment Plant.	Lack of available funds for any major repairs.	DMWW Engineering Department	N/A	Operation budget for annual evaluation and CIP or outside funding source currently unknown to DMWW for completion of any required repairs.	TBD by engineer	Flooding of the treatment plant due to leakage at levee gate.	As Needed
Des Moines Water Works 4	Evaluation of ring levee protecting Fleur Drive Water Treatment Plant.	Lack of available funds for any major repairs.	DMWW Engineering Department	N/A	Operation budget for annual evaluation and CIP or outside funding source currently unknown to DMWW for completion of any required repairs.	TBD by engineer	Flooding due to leakage through or under levee.	As Needed
Ankeny Schools 1	Multi-purpose Safe Rooms District Wide	Cost	Safety Manager	None Identified	PDM, HMGP	TBD by engineer	Life/Survivability	6 Years
Ankeny Schools 2	Emergency HVAC Shut-Off	Cost	Safety Manager	JCI		TBD	Life/Survivability	2 Years
Ankeny Schools 3	Safety Film/Glass	Cost	Safety Manager	None Identified		\$10,000	Life/Survivability	2 Years
Ankeny Schools 4	Safety Film/Glass	Cost	Safety Manager	None Identified	PDM, HMGP	\$250,000	Life/Property	2 Years
Ankeny Schools 5	Back-up Facility Generators	Cost	Safety Manager	None Identified	PDM, HMGP	TBD by engineer	Network Systems/Vital Data	4 Years
Bondurant-Farrar Schools 1	Safety Glass	Funding	BFCSD District Office		LOST, PPEL, HMGP, PDM	\$50-100K	Life, Property	1-2 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Bondurant-Farrar Schools 2	Storm Safe Room at Anderson Elementary	Funding	BFCSD District Office		LOST, PPEL, HMGP, PDM	TBD by Architect/Engineer	Life/Survivability	5-10 Years
Dallas Center-Grimes Schools 1	Construction of safe rooms in existing or new school buildings	Funding	School Board	Iowa Homeland Security and Emergency Management, FEMA	LOST (Local Option Sales Tax), PPEL (Voted Equipment Levy), HMGP, PDM	\$1 Million to \$2 Million (TBD)	Life Safety	Ongoing
Des Moines Schools 1	DAS and repeaters- (Distributed antenna system) As Des Moines Public Schools becomes more energy efficient, cellular and radio communications are blocked within our buildings. In order to combat this, we need to add DAS antennas and repeaters. This improves communication capabilities for not only DMPS staff, but also all emergency responders.	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Technology and Operations department	HMGP, PDM, PPEL, SWP	\$4,520,345 for all schools	As school buildings become more energy efficient, cellular and handheld radio signals are blocked. This means if all network and power were lost, there would be no ability to communicate in each school. These antennas would allow staff and emergency responders to communicate in emergency situations	As funding is available
Des Moines Schools 2	Virtual, remote server farm service for disaster recovery due to flood, tornado, windstorm. Our servers are in a building that is in a flood plain. Our back-up system is downtown which also has the potential to flood. In order to recover from a disaster we need the ability to transfer all systems to a remote 3rd party.	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Technology and Operations department	HMGP, PDM, PPEL, SWP	\$750,000	Would allow the school district to quickly recover after disasters which would allow school to reopen more quickly. DMPS serves 33,000 students and 5000 staff.	As funding is available

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines Schools 3	Backup Generation at all of our schools and administrative offices	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Technology and Operations department	HMGP, PDM, PPEL, SWP	\$4.5 million	Would allow the school district to quickly recover after disasters which would allow school to reopen more quickly. DMPS serves 33,000 students and 5000 staff. Would allow the school district buildings to work as shelters in emergency operations where power is lost	As funding is available
Des Moines Schools 4	Construct new safe rooms at various elementary schools	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Operations Department	HMGP, PDM, PPEL, SWP	TBD by engineer	Life Safety of students and staff sheltered in safe room areas	
Des Moines Schools 5	Construct a multipurpose room as a safe room-Jefferson Elementary	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Operations Department	HMGP, PDM, PPEL, SWP	TBD by engineer	Life Safety of students and staff sheltered in safe room areas	5 Years
Des Moines Schools 6	Construct a multipurpose room as a safe room-Lovejoy Elementary	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Operations Department	HMGP, PDM, PPEL, SWP	TBD by engineer	Life Safety of students and staff sheltered in safe room areas	5 Years
Des Moines Schools 7	Construct a multipurpose room as a safe room-Studebaker Elementary	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Operations Department	HMGP, PDM, PPEL, SWP	TBD by engineer	Life Safety of students and staff sheltered in safe room areas	5 Years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Des Moines Schools 8	Construct a multipurpose room as a safe room-Wright Elementary	Funding	Iowa Homeland Security and Emergency Management Division, FEMA	Operations Department	HMGP, PDM, PPEL, SWP	TBD by engineer	Life Safety of students and staff sheltered in safe room areas	5 Years
Johnston Schools 1	Sprinkle facility at 6510 NW 62nd when repurposing the building	Funding	School Board	None other than city to meet fire codes	District facility budget	TBD by engineer	protect students and staff in the event of a fire	5 Years
Johnston Schools 2	Replace and upgrade of emergency communication radio system	Funding	School Board	City of Johnston	District budget	TBD by engineer	Communication during emergency event throughout district and with emergency responders	5Years
North Polk Schools 1	Conduct needs analysis and feasibility study for safe rooms at Central Elementary and North Polk Junior/Senior High School	Funding	DPW/School Board	N/A	Existing Staff Resources	<\$250,000	N/A	4 Years
Southeast Polk Schools 1	Contraction of Multi-purpose Safe Rooms District Wide	Funding	Building and Grounds Department	Polk County Emergency Management	PDM, HMGP, bonds, sales tax, PPEL	\$400,000 to \$1,000,000 per school	Life Safety of students and staff	2 to 10 years
Southeast Polk Schools 2	Double-entry systems in each school; bullet-resistant glass	Funding	District Office	Local law enforcement and Polk County Emergency Management	PPEL, At-Risk, SAVE, HMGP	\$1,000,000	Screening of would-be building occupants for greater safety of students and staff	2 years
Southeast Polk Schools 3	Internal and outward-facing electronic communications for emergency/disaster mitigation	Funding	District Office and Safety/Security Committee	Local law enforcement, fire, and EMS and Polk County Emergency Management	PPEL, At-Risk, SAVE, HMGP	\$25,000	Increased information, decreased response time, life safety of students and staff	5 years
Southeast Polk Schools 4	Emergency Radios--Cabinet Members (6)	Funding	District Office	Local law enforcement, fire, and EMS	PPEL, At-Risk, HMGP	\$5,000	Increased administrative communications when an outage occurs	1 year

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Southeast Polk Schools 5	Replace antiquated district surveillance cameras and install new systems in buildings without cameras	Funding	District Office and Technology Department	Local law enforcement, fire, and EMS	PPEL, At-Risk, HMGP	\$400,000	Life and safety of students and staff	5 years
Urbandale Schools 1	NOAA Weather Radios at District Buildings	Funding	Building and Grounds	None Identified	General Funds	\$1,000	Ensure information on watches and warnings issued is received by personnel at all bodings in district to take necessary measures to shelter students and staff and/or make decisions regarding modifications to dismissal	1 Year
Urbandale Schools 2	Move Generator from Middle School to Jensen Elementary	None	Building and Grounds	None Identified	General Funds	\$3,500	Provide back-up power in the event of outage	1 Year
Urbandale Schools 3	Implement Emergency Operations Plan	None	Administration	None Identified	General Fund	\$1,000	Comprehensive plan for multiple threats. Allows staff to be utilized effectively in the event of several types of emergency	1 Year
Urbandale Schools 4	Safe Room at New Elementary School	None	Administration	Stahl Construction/DLR Group	General Obligation Bonds	\$4M	Safe space for students and staff in the new elementary school	2 years
Urbandale Schools 5	"Safety Center" Electronic Safety Plan APP	Funding	Administration	None Identified	General Fund	\$5,000	App for Staff and students that creates a safety plan on their cell phone	1 Year
Urbandale Schools 6	Ballistic film and Glazing	Funding	Building and Grounds	None Identified	PPEL	\$30,000	Protection at Entrances	2 Years
Urbandale Schools 7	Digital Radios for District EOP Staff	None	Administrative	Electronic Engineering	PPEL	130k	District wide communication with connection to Westcomm	2 Years
Urbandale Schools 8	Internal Locking Capabilities at District Buildings	Scheduling/Funding	Building and Grounds	None Identified	PPEL	120k	Ability to lock classrooms from inside the classroom	2 years

Action ID	Mitigation Project / Activity Description	Obstacles to Implementing	Responsible Office	Partners	Potential Funding Source	Cost Estimate	Benefits	Timeline
Urbandale Schools 9	Sally Port at Karen Acres	None	Building and Grounds	Walsh Door	PPEL	\$7,500	Ability to control access to the School	1 year
Urbandale Schools 10	Sally Port at MS	None	Building and Grounds	Walsh Door	PPEL	\$7,500	Ability to control access to the School	1 Year
Urbandale Schools 11	Sally Port at HS	None	Building and Grounds	None Identified	PPEL	120k	Ability to control access to the School	3 Years
Urbandale Schools 12	Sally Port at Webster Elementary	None	Building and Grounds	None Identified	PPEL	\$80,000	Ability to control access to the School	3 Years
West Des Moines Schools 1	Installation of FEMA compliant safe rooms/areas in nine elementary school buildings.	Funding	School Board	FEMA, IA HSEMD	Sales Tax Proceeds, PPEL, Grants	TBD (Project Designer)	Protect lives of students at school buildings	5 Years
West Des Moines Schools 2	Installation of FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Funding	School Board	FEMA, IA HSEMD	Sales Tax Proceeds, PPEL, Grants	TBD (Project Designer)	Protect lives of students at school buildings	5 Years
West Des Moines Schools 3	Installation of generator(s) to serve the FEMA compliant safe rooms/areas in nine elementary buildings.	Funding	School Board	FEMA, IA HSEMD	Sales Tax Proceeds, PPEL, Grants	TBD (Project Designer)	Protect lives of students at school buildings	5 Years
West Des Moines Schools 4	Installation of generator (s) to serve the FEMA compliant safe rooms/areas in two Jr. High buildings and one Freshman High School.	Funding	School Board	FEMA, IA HSEMD	Sales Tax Proceeds, PPEL, Grants	TBD (Project Designer)	Protect lives of students at school buildings	5 Years

Acronyms: DPW = Department of Public Works; CIP = Capital Improvement Plan; HMGP = Hazard Mitigation Grant Program; PDM = Pre-disaster Mitigation grant; FMA = Flood Mitigation Assistance; CDBG = Community Development Block Grant; TIF=Tax Increment Financing; GOB = General Obligation Bond; TBD = To Be Determined; PPEL = Physical Plant and Equipment Levy; SWP = Schoolwide Program